Annual Report
2013-2014

INSTITUTE OF CHEMICAL TECHNOLOGY

(University under section 3 of the UGC Act 1956)
Elite Status & Centre of Excellence - Government of Maharashtra

Nathalal Parekh Marg, Matunga, Mumbai - 400 019, India
Tel: +91-22-33611111/2222, Fax: +91-22-33611020
Website: www.ictmumbai.edu.in

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BOARD OF MANAGEMENT

Padmavibhushan Dr. R. A. Mashelkar, FRS,FNA
Chancellor
CSIR Bhatnagar Fellow and
President Global Research Alliance
Former Director General CSIR and Secretary, DSIR, GOI
National Chemical Laboratory, Pune.

Professor G. D. Yadav, FNA
Vice-Chancellor, Chairperson
R.T. Mody Distinguished Professor;
J.C. Bose National Fellow (DST-GOI)
Institute of Chemical Technology, Mumbai.

Padmashree Dr. Gyan Chandra Mishra
Member (nominated by the Chancellor)
Director,
National Centre for Cell Science, Pune

Shri Kishore V. Mariwala
Member (nominated by the Chancellor)
Industrialist and
Distinguished Alumnus
Mumbai.

Shri A.S. Dani
Member (nominated by the Chancellor)
Vice- Chairman
Asian Paints Ltd.
Mumbai.

Shri Sanjay Kumar
Member (Nominee of State Govt.)
Principal Secretary
Deaprtment of
Higher and Technical Education,
Govt. of Maharashtra.

Dr. S. K. Mahajan
Member (Nominee of State Govt.)
Director,
Technical Education & SPA
Directorate of Technical Education,
Govt. of Maharashtra

Professor M. Barma
Member (Nominee of UGC)
Director,
Tata Institute of Fundamental
Research (TIFR).

Professor M.D. Teli
Member (Senior Professor)
Department of Fibres and
Textile Processing Technology
Institute of Chemical Technology,
Mumbai.

Professor P. R. Vavia
Dean, Academic Programme
Department of Pharmaceutical Science
and Technology Institute of
Chemical Technology, Mumbai.

Professor K. S. Laddha
Dean, Infrastructure and Campus Development
Department of Pharmaceutical
Science and Technology
Institute of Chemical Technology, Mumbai.

Smt. K. V. Marathe
Member (Senior Associate Professor)
Department of Chemical Engineering
Institute of Chemical Technology,
Mumbai.

Professor S. R. Shukla
Secretary (Registrar)
Department of Fibres and Textile
Processing Technology
Institute of Chemical Technology,
Mumbai.

INSTITUTE AUTHORITIES

Professor G. D. Yadav
Vice-Chancellor
R.T. Mody Distinguished Professor
J.C. Bose National Fellow (DST-GOI)
President, Technological Association
Tel.: 91-22-3361 1001; Fax: 91-22-3361-1002/1020
vc@ictmumbai.edu.in
gd.yadav@ictmumbai.edu.in

Professor S. R. Shukla
Registrar
Tel.: 91-22-3361 1016/2815
registrar@ictmumbai.edu.in
sr.shukla@ictmumbai.edu.in

Professor P. R. Vavia
Dean, Academic Programmes,
Tel.: 91-22-3361 1026/2220
dean.ap@ictmumbai.edu.in
pr.vavia@ictmumbai.edu.in

Professor A. B. Pandit
Dean, Research, Consultancy and Resource Mobilisation and I/c Dean, Students Affairs and Human Resource Development (from November 2013)
Tel.: 91-22-3361 1030/2012
dean.rcrm@ictmumbai.edu.in
ab.pandit@ictmumbai.edu.in

Professor K. S. Laddha
Dean, Infrastructure and Campus Development
Tel.: 91-22-3361 1030/2216
dean.icd@inctmumbai.edu.in
ks.laddha@ictmumbai.edu.in

Professor (Smt.) Smita S. Lele
Controller of Examinations
Tel.: 91-22-3361 1027/2533
control.exam@ictmumbai.edu.in
ss.lele@ictmumbai.edu.in

Professor P. M. Bhate
Dean, Students Affairs and Human Resource Development
Vice President, Technological Association (up to November 2013)
Tel.: 91-22-3361 2706
dean.sahrd@ictmumbai.edu.in
pm.bhate@ictmumbai.edu.in

HEADS OF DEPARTMENTS & CO-ORDINATORS OF CENTRES

Professor S. S. Bhagwat
Head, Department of Chemical Engineering
Coordinator CTM,
Coordinator, Center of excellence in process intensification
Tel.: 91-22-3361 2001/2011
ss.bhagwat@ictmumbai.edu.in

Professor N. Sekar
Head, Department of Dyestuff Technology
Coordinator, UGC CAS in Physico- Chemical Aspects of Textiles, Fibres, Dyes and Polymers
Tel.: 91-22-3361 2701/2707
n.sekar@ictmumbai.edu.in

Professor R. V. Adivarekar
Head, Department of Fibres and Textile Processing Technology
Tel.: 91-22-3361 2801
rv.adivarekar@ictmumbai.edu.in

Professor Rekha S. Singal
Head, Department of Food Engineering and Technology
Tel.: 91-2-3361 2501
rs.singal@ictmumbai.edu.in

Professor P. R. Vavia
I/c Head, Department of Oils, Olechemicals & Surfactant Technology (From November 2013)
Tel.: 91-22-3361 1026/2220
pr.vavia@ictmumbai.edu.in

Professor P. M. Bhate
I/c Head, Department of oils, Olechemicals & Surfactant Technology (up to November 2013)
Tel.: 91-22-3361 2706
pm.bhate@ictmumbai.edu.in

Professor P. A. Mahanwar
Head, Department of Polymer and Surface Engineering
Tel.: 91-22-3361 2411/2401
pa.mahanwar@ictmumbai.edu.in

Professor (Smt.) P. V. Devarajan
Head, Department of Pharmaceutical Sciences and Technology
Coordinator, UGC Centre for Advanced Studies in Pharmaceutical Sciences and Technology
Tel: 91-22-3361 2201
pv.devrajan@ictmumbai.edu.in

Dr. (Smt.) V. D. Deshpande
Head, Department of Physics
Tel.: 91-22-3361 2651
vd.deshpande@ictmumbai.edu.in

Dr. D. D. Sarode
Head, Department of General Engineering
Tel.: 91-22-3361 2751
dd.sarode@ictmumbai.edu.in

HEADS OF DEPARTMENTS & CO-ORDINATORS OF CENTRES

Professor B. M. Bhanage
Head, Department of Chemistry
Coordinator, UGC DRS
Tel.: 91-22-3361 2601
bm.bhanage@ictmumbai.edu.in

Professor A. M. Lali
Head, DBT-ICT Centre
for Energy Biosciences
Coordinator, M.Tech. Course in
Bioprocess Technology
Tel.: 91-22-3361 2301
am.lali@ictmumbai.edu.in

Dr. A. K. Sahu
Head, Department of Mathematics
Tel.: 91-22-3361 2676
ak.sahu@ictmumbai.edu.in

Professor V. G. Gaikar
Coordinator, Technical Education
Quality Improvement Programme
Coordinator, ICT-DAE Centre for
Chemical
Engineering Education and Research
Coordinator, UGC-NRC-CE
Tel.: 91-22-3361 2013/1029
vg.gaikar@ictmumbai.edu.in

Professor A. B. Pandit
Co-coordinator, ICT-DAE Centre for
Chemical Engineering Education
and Research
Tel.: 91-22-3361 2012 / 1030
ab.pandit@ictmumbai.edu.in

Shri. Amogh Lokhande
Librarian
Prof. M. M. Sharma Library
Tel.: 91-22-3361 1130
library@ictmumbai.edu.in
as.lokhande@ictmumbai.edu.in

Dr. G. S. Shankarling
Coordinator, Perfumery and
Flavour Technology
Tel.: 91-22-3361 2708
gs.shankarling@ictmumbai.edu.in

Dr. Laxmi Ananthanarayan
Coordinator, Food Biotechnology
Tel.: 91-22-3361 2506
l.ananthanarayan@ictmumbai.edu.in

Dr. U. S. Annapure
Head Warden
Tel.: 91-22-3361 2506
us.annapure@ictmumbai.edu.in

Professor R.V. Jayaram
Coordinator Green Technology
Tel.: 91-22-3361 2607
rv.jayaram@ictmumbai.edu.in

OFFICERS OF THE INSTITUTE

Shri. A. M. Sathye
Assistance Registrar
(Administration)
Tel.: 91-22-3361 1156

Smt. S. S. Chavhan
Assistance Registrar
(Academic)
Tel.: 91-22-3361 1201

Ms. S. A. Bhavsar
P.A. to Vice Chancellor
Tel.: 91-22-3361 1001

Shri. Prafulla Joshi
O. S. D. (Finance)
Tel.: 91-22-3361 1256

Shri. V. R. Shintre
O. S. D (Pension)
Tel.: 91-22-3361 1165

Shri. S. H. More
O. S. D. (Examination Section)
Tel.: 91-22-3361 1203

Shri. Farhad Tariq
O. S. D. (ICT Hostel)
Tel.: 91-22-3361 1452

WARDENS AT ICT

Hostel 1
Dr. P. D. Vaidya
Tel.: 91-22-3361 2014

Hostel 2
Professor Radha V. Jayaram
Tel.: 91-22-3361 2607

Hostel 3
Dr. Shalini Arya
Tel.: 91-22-3361 2513

Hostel 4
Professor S. T. Mhaske
Tel.: 91-22-3361 2412

Hostel 5
Dr. U. S. Annapure
Tel.: 91-22-3361 2507

ADMINISTRATIVE STAFF
(VICE CHANCELLOR'S & REGISTRAR'S OFFICE)

Ms. Sanghamitra Bhavsar

P. A. to Director

Smt. Anushka Bhandare

Jr. Typist cum Clerk

Shri. Santosh Patil

Hawaldar

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Assistant Registrar

Shri. R. B. Sawant

Superintendent

Shri. S. H. More

OSD, Thesis Section

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Sr. Clerk

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Jr. Typist Clerk

Shri. V. A. Mulam

Jr. Typist Clerk

Smt. Urvashi Vanjara

Jr. Typist Clerk

Shri. S. V. Pawar

Jr. Typist Clerk

Shri. S. K. Sawant

Peon

Shri. Samudra Prashant

Peon

FINANCE & ACCOUNTS

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O. S. D. (Finance)

Mrs. Sayali Loke

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Assistant Accountant

Smt. Smita Kinjale

Assistant Accountant

Shri. B. G. Dingankar

Assistant Cashier

S. Y. Chandivade

Assistant Accountant

Shri. S. A. Dombale

Account Clerk

Shri. S. Udmale

Sr. Accounts Clerk

Smt. S. P. Kadam

Sr. Accounts Clerk

Shri. L. D. Bagul

Daftari

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Peon

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ADMINISTRATION

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Sr. Clerk

Shri. V. R. Shintre

OSD Pension Unit

Smt. Lalita Chauhan

Receptionist

Ms. Pradnya Mahendrakar

Telephone Operator

Shri. Ganesh Masale

Filling cum Dispatch Clerk

Shri. K. P. Bhole

Hawaldar

Shri. C. R. Borade

Peon

STORES AND MATERIALS ACQUISITION

Shri. S. D. Salim

Stores Superintendent

Shri. V. S. Sawant

Sr. Typist Clerk

Mrs. M M Amberkar

Store Assistant

Ms. Smita S. Waghmare

Jr. Typist Clerk

Shri. Nitin Avad

Jr. Typist Clerk

Shri. N. S. Pujare

Jr. Typist Clerk

Shri. M. P. Matal

Laboratory Attendant

Shri. P. G. Desai

Laboratory Attendant

SECURITY STAFF

Shri. S. K. Phavade

Hawaldar

Shri. R. G. Tondalekar

Watchman

Shri. A. R. Khan

Watchman

Shri. K. T. Gurav

Watchman

SWEEPER STAFF

Mrs. L. H. Solanki

Shri. J. K. Waghela

PROFILE

INSTITUTE OF CHEMICAL TECHNOLOGY

(University under Section 3 of UGC Act of 1956;
Elite Status and Centre of Excellence- Govt. of Maharashtra, on par with IITs, IISc and IISERs)

Established on October 1, 1933 as University Department of Chemical Technology (popularly called UDCT) of the University of Bombay (now Mumbai), with the noble intention of advancing India's knowledge reserves in chemical science and technology, the Institute has grown to become a premier (deemed) university devoted to education, training, research and industrial collaboration in chemical engineering, chemical technology, applied chemistry, pharmacy, biotechnology and bio-processing. The then UDCT grew in stature over the years and was granted partial autonomy by the University of Mumbai in 1985, which was taken to the next echelon under the concept of autonomy propagated by the University Grants Commission (UGC). Due to its size and spread of activities, it was converted into University Institute of Chemical Technology (UICT) on 26th January, 2002 and under the TEQIP of the World Bank it was granted full autonomy in 2004. Upon a strong recommendation of the UGC through a peer review process, the autonomous institute status was finally converted in to a Deemed-to-be-University by the Ministry of Human Resource Development (MHRD), Govt. of India, on 12 September 2008; a strong recommendation was made that the ICT should be fully supported and its activities strengthened by the Government and the new (deemed) University should commence its functioning from academic year 2009-10. Thus, three Convocations have so far taken place in 2012, 2013 and 2014. Based on its stellar performance over the years, the Government of Maharashtra granted it the

Elite Status and Centre of Excellence in the State Assembly on April 20, 2012. This is a singular distinction accorded to any institute in the entire country and speaks volumes about the achievements of the ICT.

The ICT entered into the 82th Foundation Year on October 1, 2013. A large number of individuals, faculty, students, alumni and support staff have rendered yeomen services and been responsible for growth of ICT for its glory and glitter over last 8 decades. The list of achievements of this great centre of learning is voluminous and ever since its inception, the Institute has been a fertile breeding ground for some of India's most gifted minds. The Institute's alumni have distinguished themselves in all walks of life, be it in industry, academia, government or public service in India as well as abroad. Some of the rare international honours have been bestowed upon them and some have been role models, serving the nation.

Currently, the ICT has on its roll 1100 UG students, 450 Masters Students and 710 Ph D students.It is a unique Deemed University, with unparalleled record, funded by the State of Maharashtra, receiving various grants and projects from the UGC, DAE, DBT, DST, CSIR, ICMR, MFC, MOEF and other agencies including Indian and foreign industries. Several Centres of Excellence have been created through the support of central agencies, which have been mainly responsible to nurture quality in education and research. The Institute's strong multi-disciplinary research programmes have helped create a unique learning environment that places great emphasis on synergizing knowledge from several sources to develop creative and effective solutions to many of the problems faced in industry and society and it this eclectic combination of a rigorous and up-to-date curriculum, excellent laboratory and demonstration facilities, world-renowned faculty and a conducive learning environment brimming with the next generation of great minds that sets the Institute apart from its competitors. The ICT is held in high esteem by other premier institutes, industry and government for many of its unique characteristics and achievements. The magic mantra for the ICT's success is a concoction of dedicated faculty, meritorious students, admirable support staff, distinguished alumni, strong connectivity with industry, and assistance to all needy students, a grand alumni association and above all relevance of our courses in wealth creation. It is unsurprising thus that the Institute of Chemical Technology is ranked as the best chemical engineering and chemical technology teaching and research institute in India and among the 10 top institutions in the world in an annual ranking of chemical engineering programs conducted by the Georgia Institute of Technology, USA.

DEPARTMENTS AND CENTRES OF EXCELLENCE

The ICT functions through 11 full-fledged departments and several centres of excellence, which have a long track record of running quality courses at Master's and doctoral level:

1. Department of Chemical Engineering (1933)
2. Department of Dyestuff Technology (1944)
3. Department of Fibres and Textiles Processing Technology (1933)
4. Department of Food Engineering and Technology (1943)
5. Department of Oils, Oleochemicals and Surfactants Technology (1943)
6. Department of Pharmaceutical Sciences and Technology (1943)
7. Department of Polymer and Surface Engineering (1946) (Department of Polymer Engineering and Technology

and Department of Surface Coating Technology were merged into one in March 2009)

8. Department of Chemistry (1952)
9. Department of Physics (1966)
10. Department of Mathematics (1966)
11. Department of General Engineering (1952)

Every major department of the ICT is recognized by the UGC under its Special Assistance Programmes (SAP) such as COSIST, DRS, DSA and Centre of Advanced Studies (CAS), which are as follows:

1. CAS in Physico-Chemical Aspects in Textiles, Fibres, Dyes, and Polymers (since 1963, currently in Phase VII)
2. CAS in Chemical Engineering (since 1990, currently in Phase V)
3. UGC Networking Resource Centre in Chemical Engineering (since 2008)
4. CAS in Food Engineering and Technology (since 2008)
5. CAS in Pharmaceuticals Sciences and Technology (since 2009)
6. DRS for Department of Chemistry (2009)

COURSES OF STUDY

1. Bachelor of Chemical Engineering (B. Chem. Eng.)
2. Bachelor of Technology (B. Tech.) in
   - Dyestuff and Intermediates Technology
   - Fibres and Textiles Processing Technology
   - Food Engineering and Technology
   - Oils, Oleochemicals and Surfactants Technology
   - Pharmaceuticals Chemistry and Technology
   - Polymer Engineering and Technology
   - Surface Coating Technology
3. Bachelor of Pharmacy (B. Pharm.)
4. Master of Chemical Engineering (M. Chem. Eng.)
5. Master of Technology (M. Tech.) in
   - Dyestuff and Intermediates Technology
   - Fibres and Textiles Processing Technology
   - Food Engineering and Technology
   - Oils, Oleochemicals and Surfactants Technology
   - Pharmaceuticals Chemistry and Technology
   - Polymer Engineering and Technology
   - Surface Coating Technology
   - Perfumery and Flavour Technology
   - Bioprocess Technology (with special emphasis on Downstream Processing)
   - Food Biotechnology
6. Master of Pharmacy (M. Pharm.) in
   - Drug Delivery Technology
   - Medicinal Chemistry
   - Medicinal Natural Products
7. M.E. (Plastics Engineering)
8. Ph.D.(Tech.) in Chemical Engineering, all branches of Chemical Technology, Green Technology, Nanotechnology and Pharmacy
9. Ph.D.(Sci.). in
   - Chemistry (Inorganic, Organic and Physical)
   - Physics
   - Applied Mathematics
   - Biotechnology
   - Textile Chemistry
10. Direct Ph.D. (Tech.) after Bachelor's Degree in Faculty of Technology
11. Diploma in Chemical Technology Management
12. M.Sc. by papers (two years- four semester) (Chemistry, Physics, Engineering Mathematics, Textile Processing) all after B. Sc.

13. M.Tech. in Green Technology (4-Semester full time; 6-semester, part time for practitioners from industry)

All Ph.D. programmes are now redesigned with course work as per UGC regulations.

ACCOLADES AND RECOGNITIONS GALORE

1. In the 10th BioSpectrum Top BT Schools Survey done in April-May 2013, ICT Mumbai had emerged as the No.1 Biotech School in India.
2. Hon'ble Shri Kapil Sibal, Minister of Communications and Information Technology and Law and Justice presented the "Tata Chemicals Best Industry linked Institute in Chemical Engineering Award' instituted by AICTE-CII on ICT in Delhi on 7th March, 2013 at the inaugural function of Global University Industry Congress 2013. Professor G.D. Yadav, Vice Chancellor received it. This was based on the annual survey conducted by AICTE CII.
3. The Melinda and Bill Gates Foundation USA has awarded three important grants to ICT projects recently which speaks volumes of ICT's standing internationally. Two doctoral students of Professor Vandana Patravale namely Ms. Swati Vyas and Ms. Priyanka Prabhu received a grant of US $100,000 from the Bill and Melinda Gates Foundation to develop the first ever eco-friendly nanovaccine for nasal immunisation as part of the foundations' Grand Challenges Explorations (GCE) initiative.
4. Based on its stellar performance and national and international accolades, the ICT is declared as Elite Institute and Centre of Excellence by Government of Maharashtra on 20th April 2012 in the State Assembly, on par with national institutes of importance such as IITs, IISc and IISERs.
5. The MHRD had evaluated all deemed universities in 2009 and granted "A" grade only to 38 universities among 135. The ICT is rated with "A" grade. It is the only one among 4 in Maharashtra State, the other 3 being centrally funded TIFR, TISS and CIFE.
6. The ICT has also been rated as Number One Institute by National Project Implementation Unit (A Govt. of India Unit for World Bank Assisted Project for Technical education) in its study on 'Impact Evaluation of Technical Education Quality Improvement Program (TEQIP – I)' among 127 World Bank's TEQIP funded Institutes, all over India published in October, 2010. Now TEQIP-II has begun and we are once again the leader. The second phase of TEQIP has begun with several innovative concepts and the ICT has been granted a Centre of Excellence in Process Intensification for Process Industries. The ICT is identified as the lead institute and will mentor some others.
7. Biospectrum magazine in August 2011 has also rated ICT's programme as Number One among all biotechnology programmes in the country two years in succession.
8. A survey was published by Professor Jude Sommerfeld of Georgia Tech., USA in January 2012 showing that the ICT is Number One Institute in India far ahead of several others including IITs, and it is also number 4 in the world in Chemical Engineering. This rank has been maintained since 1970s. The ICT produced 405 research papers in international journals during 2013-14which is a record in India for a faculty strength of 82.

9. The ICT has produced average of 4 papers per faculty at an average expenses of Rs. 22 lakhs in last couple of years. Whereas IITB has an average of 2.5 papers per faculty at an average expenses of 38 lacs and similarly IISc has an average of 3.5 papers per faculty at an average expenses of 88 lacs in the year 2012. It is also noteworthy that students per faculty ratio is much higher as compared to these institutes.
10. The ICT has the PhD students per faculty ratio of 8.6 versus 0.89 (IIT-B) and 3.5 (IISc). This is a record for a State owned institute/university whose performance is exceptionally outstanding.
11. The UGC decided to recognize faculty who has supervised as single guides at least 15 PhDs, of which at least 5 should be during last 5 years . The ICT has a record of 14 faculty who qualified for special grants. The Vice Chancellor Professor G. D. Yadav is the topmost among all academics with supervision of 76 PhDs. and 80 Masters degree holders. He is the only serving faculty in the State to be a Fellow of the TWAS- the Academy of the Developing World, Trieste, Italy, including Fellowship of INSA.. He was recently invited by the Royal Society of Chemistry, UK, to be Fellow for his truly outstanding contributions to chemical sciences and particularly as Vice Chancellor and R.T. Mody Distinguished Professor for promotion of ICT.
12. Indeed, the ICT, with a meagre budget, is number one in terms of publications and citations per faculty in the country and in world as well.
13. All admissions are on basis of merit and as per government policy in place as regards reservations. No Ph D candidate is admitted without fellowship (JRF:Rs 14000 p.m. (Non-GATE+ 30% HRA) and Rs. 16000 (GATE) plus 30% HRA. There were 639 Ph D students and 451 Masters students on the roll during 2012-13, which is a record for a monolithic institute on a campus of 16 acres. Besides, UGC-SBR (SAP) Fellowship: 380, UGC-Single Girl Child Fellowship:6, DST-INSPIRE Ph D Fellowships: 8. The UGC has sanctioned 380 SBR Ph D. fellowships during 2012-13, which itself is a record.
14. There are 340 UG scholarship including merit-cum-means scholarships which range from Rs 10,000 to Rs 1,00,000 per student per annum which have been created through endowments, donations, trusts, philanthropists and industries.
15. The UDCT Alumni Association (UAA) helps the ICT in several activities and have the strongest connectivity with the ICT. UAA has been helping the students in many of their programmes, including interest-free loans.
16. The First Convocation of the ICT was held on March 6, 2012 which was addressed by Hon'ble Shri Prithviraj Chavan, Chief Minister of Maharashtra, Hon'ble Shri Rajesh Tope, Minister for Higher and Technical Education, and Padma Bhhushan Dr R.A. Mashelkar, Chancellor of ICT. It was a grand function witnessed by over 1500 persons including distinguished alumni, parents of graduating students, past directors, past presidents of UAA, well wishers, and industrialists and a galaxy of achievers, The Second Convocation was addressed by Shri Mukesh Ambani, Chairman and Managing Director, Reliance Industries Ltd, and also one of our most Distinguished Alumni and Superstars on 15th March, 2013. Shri Rajesh Tope was the Guest of Honour. The

Maharashtra Government has promised land for a satellite campus in addition to the existing campus.BHARATRATNA Professor C.N.R. Rao, National Research Professor, Linus Pauling Research Professor and Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore was the Chief Guest for the Third Convocation of the Institute held on 8th March, 2014. PADMAVIBHUSHAN Professor M.M. Sharma, Former Director and Emeritus Professor of Eminence, ICT was the Guest of Honour.

17. The UGC has started a unique scheme called Faculty Recharge under which 6 positions have been sanctioned during 2013-14who will receive salaries and benefits like central university faculty. This is again a great achievement. Four INSPIRE fellows of DST have been working on the campus.
18. A large number of Memoranda of Understanding (MOU) have been signed for academic and research collaboration with foreign and Indian universities, Indian and foreign industries. Purdue University, University of Illinois, Urbana Champaign, University of Saskatchewan, University of British Columbia, University of Waterloo, University of Alberta, Western University, Canada, RMIT, Australia, Bradford University, UK, GEMS, France, are a few foreign universities. The CSIR laboratories- Central Drug Research Institute (CDRI), Indian Institute of Petroleum (IIP) Dehradun, Indian Institute of Chemical Technology (IICT), Hyderabad, National Environmental Engineering Research Institute (NEERI), Nagpur, National Chemical Laboratory (NCL), Pune, Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar, IIT-Bombay, Department of Atomic Energy's Homi Bhabha National Institute (HBNI), Mumbai, Shivaji University, Kolhapur and College of Engineering Pune (COEP) are some of them.
19. In January 2014, Padma list declared by Government of India includes: Padma Vibhushan on Dr R.A. Mashelkar, Chancellor of the institute, and Padma Bhushan on Professor J.B. Joshi, former Director of ICT.

STATISTICAL DATA OF ICT, IIT-BOMBAY AND IISC BANGALORE

Sr. No.			ICT	IIT- Bombay	IISc. Bangalore
1	Number of Departments		11	15	45
2	Number of Faculty		82	504	570
3	Number of Programs		11	11	9
4	Number of Students **(No.of Ph Ds per faculty)**		Ph.D.-710 **(8.6)** Masters: 451 **(5.5)** UG:1100 **(13.2)** Total: 2260 (**27.6**)	PhD -450 **(0.89)** MTech-701 MMgmt-123 MDes-59 MPhil-14 MSc-PhD Dual-55 MSc-198 Dual Deg-242 5 Year Int. MSc-28 Total Masters: 1420 **(2.8)** BTech-607 **(1.2)** Prep. Course-7 Total-2484 **(4.9)** (for 2011- 2012)	PhD-1712 Int. PhD-238 Total: 1950 **(3.4)** BS-84 Masters-737 MSc(Engg) 300 Total Masters: 1037**(1.8)** PhD extended-166 Total-3237 **(5.6)** (as on 2011)
5	Number of Papers (No. of papers per faculty)	Year 2011 Year 2012 Year 2013	247 **(3.0)** 326 **(3.9)** 330 **(4.0)**	1252 **(2.5)** 1279 **(2.5)** 1049 **(2.0)**	1862 **(3.3)** 2050 **(3.5)** 1570 **(2.8)**
6	Expenditure		Rs. 18.5 **(0.22)** crores (Govt Aid)	Rs. 186.09 **(0.37)** crores (as on 31-03-2012) (as per website)	Rs. 500 **(0.88)** crores (Source: The Mint & The Wall Street Journal as published on 7th December 2011)

Number in Bold indicates figures per faculty

CHANCELLOR

Padmavibhushan
Dr. R.A. Mashelkar,

National Research Professor, is presently also the President of Global Research Alliance, a network of publicly funded R&D institutes from Asia-Pacific, Europe and USA with over 60,000 scientists.

Dr. Mashelkar served as the Director General of Council of Scientific and Industrial Research (CSIR), with thirty-eight laboratories and about 20,000 employees for over eleven years. He was also the President of Indian National Science Academy and President of Institution of Chemical Engineers (UK).

Dr. Mashelkar is on the Board of Directors of several reputed companies such as Reliance Industries Ltd., Tata Motors Ltd., Hindustan Unilever Ltd., GeneMedix Life Sciences Ltd., Indigene Pharmaceutifcals Ltd., ICICI Knowledge Park, Thermax Ltd., Piramal Life Sciences Ltd., and KPIT Cummins Infosystems Ltd. He is a member of the Scientific Advisory Board of the Microsoft. Dr. Mashelkar is only the third Indian engineer to have been elected (1998) as Fellow of Royal Society (FRS), London in the twentieth century. He was elected Foreign Associate of National Academy of Science (USA) in 2005, Associate Foreign Member, American Academy of Arts & Sciences (2011); Foreign Fellow of US National Academy of Engineering (2003); Fellow of Royal Academy of Engineering, U.K. (1996), Foreign Fellow of Australian Technological Science and Engineering Academy (2008) and Fellow of World Academy of Art & Science, USA (2000).

In August 1997, Business India named Dr.Mashelkar as being among the 50 path-breakers in the post- Independent India. In 1998, Dr.Mashelkar won the JRD Tata Corporate Leadership Award, the first scientist to win it. In June, 1999, Business India did a cover story on Dr.Mashelkar as "CEO OF CSIR Inc.", a dream that he himself had articulated, when he took over as DG, CSIR in July 1995. On 16 November 2005, he received the Business Week (USA) award of 'Stars of Asia' at the hands of George Bush (Sr.), the former President of USA. He was the first Asian Scientist to receive it.

Deeply connected with the innovation movement in India, Dr. Mashelkar is currently the Chairman of India's National Innovation Foundation, Reliance Innovation Council, Thermax Innovation Council and Marico Innovation Foundation.

Thirty universities have honoured him with honorary doctorates, which include Universities of London, Salford, Pretoria, Wisconsin and Delhi.

The President of India honoured Dr.Mashelkar with Padmashri (1991), Padmabhushan (2000) and Padmavibhushan (2014), which are the highest civilian honours in recognition of his contribution to nation building.

When Dr. Mashelkar took over as the Director General of CSIR, he enunciated "CSIR 2001: Vision & Strategy". This was a bold attempt to draw out a corporate like R&D and business plan for a publicly funded R&D institution. This initiative has transformed CSIR into a user focused, performance driven and accountable organization. This process of transformation has been recently heralded as one of the ten most significant achievements of Indian Science and Technology in the twentieth century.

Dr.Mashelkar has been propagating a culture of innovation and balanced intellectual property rights regime for over a decade. It was through his sustained and visionary campaign that growing awareness of Intellectual Property Rights (IPR) has dawned on Indian academics, researches and corporates. He spearheaded the successful challenge to the US patent on the use of turmeric for wound healing and also the patent on Basmati rice. These landmark cases have set up new paradigms in the protection of India's traditional knowledge base, besides leading to the setting up of India's first Traditional Knowledge Digital Library. In turn, at an international level, this has led to the initiation of the change of the International Patent Classification System to give traditional knowledge its rightful place. As Chairman of the Standing Committee on Information Technology of World Intellectual Property Organization (WIPO), as a member of the International Intellectual Property Rights Commission of UK Government and as Vice Chairman on Commission in Intellectual Property Rights, Innovation and Public Health (CIPIH) set up by World Health Organization (WHO), he brought new perspectives on the issue of IPR and the developing world concerns.

In the post-liberalized India, Dr.Mashelkar has played a critical role in shaping India's S&T policies. He was a member of the Scientific Advisory Council to the Prime Minister and also of the Scientific Advisory Committee to the Cabinet set up by successive governments. He has chaired twelve high powered committees set up to look into diverse issues of higher education, national auto fuel policy, overhauling the Indian drug regulatory system, dealing with the menace of spurious drugs, reforming Indian agriculture research system, etc. He has been a much sought after consultant for restructuring the publicly funded R&D institutions around the world; his contributions in South Africa, Indonesia and Croatia have been particularly notable.

Dr.Mashelkar has won over 70 awards and medals, which include S.S. Bhatnagar Prize (1982), Pandit Jawaharlal Nehru Technology Award (1991), G.D. Birla Scientific Research Award (1993), Material Scientist of Year Award (2000), IMC Juran Quality Medal (2002), HRD Excellence Award (2002), LalBahadurShastri National Award for Excellence in Public Administration and Management Sciences (2002), World Federation of Engineering Organizations (WFEO) Medal of Engineering Excellence by WFEO, Paris (2003), Lifetime Achievement Award by Indian Science Congress (2004), the Science medal by the Academy of Science for the Developing World (2005), AshutoshMookherjee Memorial Award by Indian Science Congress (2005), etc.

PROLOGUE

Professor G.D. Yadav
Vice Chancellor and R.T. Mody Distinguished Professor
J.C. Bose National Fellow

I am pleased to present to you the Annual Report for the Academic Year: July 2013-June 2014. The previous report for AY 2012-13 was greatly admired for its content and many would not believe that an institute owned by a State Government, situated on a tiny land of 16 acres, could surpass all branded institutes in terms of productivity per capita and also per rupee spent. The current report will further heighten your curiosity. We would like to set our own targets and achieve them.

In nutshell, where does ICT stand in the comity of institutes of higher learning during 2013-14?

THE I.C.T. : CULTURE, CREATIVITY AND CONNECTIVITY

- No. 1 in India, 4 globally in publications in Chemical Engineering
- 9 UG, 16 PG, 29 Ph D programs, 1 PGDCTM for entrepreneurship
- Interdisciplinary M Tech programmes in Bio-processing Tech., and Green Technology
- Green Chemistry as a course in Chemical Engineering since 1998
- 710 Ph D Students with full Ph.D. fellowship
- 451 Masters
- 1100 UG students
- 340 UG Scholarship: Merit-cum-means
- Rs. 10,000; 100,000 per student
- 10.27 Ph D per faculty
- Almost all departments UGC-SAP
- 20 Endowment Chairs
- 46 Endowment Visiting Fellowships
- 10 endowments for library
- An Endowment for e-Governance and Maintenance
- India's three Ph Ds in E & T from ICT in 1941-42
- 407 papers: 2012-13
- 191 Patents in last 10 years
- 104 Industrial projects in 2012-13
- Highest publications/faculty member
- Best institute-industry interaction in India
- > 500 first generation entrepreneurs
- 2 Chemical Engineering alumni Fellows of Royal Society London.
- ICT Technologies-Section 25 company

Our idea was to provide detailed information of the various academic, extra-curricular and extension profile. This report also demonstrates a trend as to who are the most prolific faculty members, which departments have been consistently producing high quality research and within the ICT itself, and how others could learn from each other. As the Vice Chancellor, I have allowed everybody to excel and set goals and compare themselves with international yardsticks. That is the only way individuals and institutes can grow. However, in this process, those who take freedom for granted and get away with mediocrity are exposed. This report is no exception. The ICT has been in the news for its splendid accomplishments and stellar performance as an institute of not only of national but also of international importance, having its own distinct identity among a plethora of branded institutes for the past 82 years.

This is the fourth year of the new avatar of the report which has undergone an impressive change in presentation. The ICT has not only to compete nationally but also internationally to attract talented faculty, students and industry sponsored projects having academic punch but practical relevance. Thus, it was necessary for us to collate and present the relevant information in the Annual Report and the Handbook in a different format, including the Diary which is being printed since 2011. Several photographs have been interspersed depicting the activities of the students, faculty, support staff and UDCT Alumni Association (UAA), which demonstrate the vitality of the institute. Firstly the profiles of individual faculty, with a statement on research interests and its impact, laboratory facilities, research group and some representative publications have been included, besides their annual activity report. This is also a reflection of their past performance and potential as leaders of tomorrow. The Departmental profiles have also witnessed dramatic changes, showing strengths and weaknesses of individuals and as groups or departments. Many of the ICT faculty members have been professionally very active and been members of some of the prestigious national and international committees and have brought laurels to the institute.

I am proud to state we have been a literally transparent institute. In public institutes, there is no secret. That is literally seen in my renovated office and the premises!! In past four years, several renovations, modernizations and activities for welfare of students, faculty and support staff have been carried out silently through munificent donations in cash and kind including cement, paint, medical assistance, books, etc.

During last three years, almost Rs. 30.00 crores have been received as donation and matching grants of Rs 50 lakhs per year totalling Rs. 2.00 crores from the UGC. We now can boast of 340 under graduate scholarships, valued at Rs 10,000 to Rs 1.00 lakh per student, majority of them are on merit-cum-means basis, given through special endowments in the ICT, trusts, individuals, industries associations, and anonymous donors. This is a record in recent times for the ICT.

CHEMCON-2013

The year witnessed a mega event of valedictory function of 80th Foundation Day of the Institute. As part of the celebrations of Jubilee of 8-decades, ICT in collaboration with Indian Institute of Chemical Engineers (IIChE) organized the 66th Annual Session of IIChE, CHEMCON-2013, during 27-30 December, 2013.

Shri Pranab Mukherjee, Hon'ble President of India was the Chief Guest for the inaugural function. Shri K. Sanakaranarayanan, Hon'ble Governor of Maharashtra, presided over the function. His speech is reproduced below. Shri Jayant Rajaram Patil, Cabinet Minister of Rural Development, Government of Maharashtra and Hon'ble Shri Rajeshji Tope, Minister for Higher and Technical Education, Government of Maharashtra were the Guest of Honours.

Professor G.D. Yadav received "Dr. B. P. Godrej Life Time Achievements Award" of the IIChE for 2013 in recognition of his monumental contributions to the Chemical Engineering profession at the hands of Hon'ble President of India.

The mega event with an overall theme of "Innovative Approaches for Food Security and Health Care for Better Tomorrow" was also hosted as a Joint Indo-North American Symposium. CHEMCON 2013 brought together the main stakeholders of Chemical Engineering/ Technology profession; students, teachers, researchers and industry practitioners to discuss the current trends and future developments in the field of Chemical Engineering/ Technology. This Congress hosted over 50 invited talks by eminent researchers/ professionals/ academics Worldwide. This mega event was supported by various industries. The programme also included Job Mela and various Cultural programmes.

This year wonderful news for ICT was received about the twin glory that has come to our Alma Mater : Dr. R.A. Mashelkar has been conferred with a Padma Vibhushan, and Professor J.B. Joshi has been conferred with a Padma Bhushan. Heartiest congratulations to both the SUPER STARS of ICT.

Hon'ble Shri Kapil Sibal, Minister of Communications and Information Technology and Law and Justice presented the "Tata Chemicals Best Industry linked Institute in Chemical Engineering Award' instituted by AICTE-CII on ICT in Delhi on 7th March, 2013 at the inaugural function of Global University Industry Congress 2013. Professor G.D. Yadav, Vice Chancellor received it. This was based on the annual survey conducted by AICTE CII.

ACCOLADES RECEIVED BY FACULTY OF ICT

During the year, Professor G.D. Yadav has also been bestowed with –

- I.C.C.- D.M. Trivedi Lifetime Achievement Award for his Contributions to Indian Chemical Industry (Education & Research) for the year 2012.
- "PSN Award for the year 2012 for excellence in Science and Technology" in a function to be held in PSN college of Engineering & Technology, Tirunelveli, Tamilnadu

During the year a number of Faculty of ICT was also honoured with various national as well as international awards. The full list in included in individual departments. To name a few :

- Professor A.M. Lali was honoured by the VASVIK award in the category of 'Biological Sciences and Technology' by Vividhlaxi Audyogik Samshodhan Vikas Kendra, Mumbai.
- Professor Padma V. Devarajan was selected for the "Professor C.J. Shishoo Award for Research in Pharmaceutical Sciences" by the Association of Pharmaceutical Teacher of India, Bangalore.
- Dr. Parag Gogate was chosen for the "SCEJ Award for Outstanding Asian Researcher and Engineer" by the Society of Chemical Engineers, Japan.
- A group from ICT having Dr. Parag Nemade, Dr. Vishwanth Dalvi, Dr. Siddharth Kasturirangan, Dr. Sachin Mathpati, Dr. Neetu Jha and Dr. Ashish Mishra have been awarded a grant under "Re-invent the Toilet Challenge" of DBT and Bill and Melinda Gates Foundation.
- Professor B.M. Bhanage was selected for the fellowship of Royal Society of Chemistry, UK.
- Professor M.D. Teli was honored with "TAI-Ratna Award" on the occasion of Platinum Jubilee Celebration of Textile Association India, in recognition of his contribution to the Textile Education, Research and Industry.
- Dr. Parag Gogate received the "SCEJ Award for Outstanding Asian Researcher and Engineer' given by The Society of Chemical Engineers, Japan. It has been given to him in SCEJ annual meeting held in March 2014.
- Dr. Parag Gogate has been selected as the Member, Editorial Board, Ultrasonics Sonochemistry (2014 onwards.
- Dr. D.V. Pinjari was a recipient of Fulbright

Nehru Fellowship program. Currently, he is in University: Georgia Institute of Technology, Atlanta (USA) on this programme. He has also received M. P. Chary Memorial Award 2013 for research and technological contribution (below 35 years), Swiss Government Excellence Scholarship 2013 and Young Associate, Maharashtra Academy of Science (2013).

VARIOUS EVENTS IN THE ICT

- The Cultural Committee, Institute of Chemical Technology planned a Celebration of 122nd Birth Anniversary of Dr. B. R. Ambedkar on 15th April 2013. Dr. B.L. Mungekar (M.P., Rajyasabha) was the Chief Guest of this programme. He paid homage to Dr B R Ambedkar by delivering a lecture on "Dr. Ambedkar's life and contributions".
- On the occasion of Independence Day, the Flag Hoisting Ceremony was held on August 15, 2013 in the Main Porch of the Main Building of the Institute. Dr. S. Banerjee, Former Chairman, Atomic Energy Commission and Former Secretary, Atomic Energy was the Chief Guest. The programme included national anthem and patriotic songs.
- The Dasara pooja was celebrated on the campus in all laboratories and hostels in October 2013.
- 11th November, 2013 was celebrated as National Education Day in the memory of Shri Maulana Abul Kalam Azad (11 Nov. 1888 – 22 Feb. 1958) who was an eminent educationist a great leader of India's freedom struggle and the first Minister of Education.
- On the eve of National Education Day, Professor George Stephanopoulos, Arthur D. Little Professor of Chemical Engineering Massachusetts Institute of Technology, USA met all the faculty members and interacted with them on Monday, November 11, 2013. He also delivered a lecture on "Controlled Formation of Nanostructures with Desired Geometries".

Professor C.N.R. Rao - recipient of BHARATRATNA

Dr. R.A. Mashelkar - recipient of PADMAVIBHUSHAN

Professor J.B. Joshi - recipient of PADMABHUSHAN

- On the occasion of the Republic Day, the Flag Hosting Ceremony was be held on January 26, 2014 at the Main Building of the Institute. Shri R.V. Gogri, Vice-Chairman and Managing Director, Aarti Industries Ltd. was the Chief Guest. The programme included national anthem and patriotic songs.
- The Annual Day of the Institute was celebrated on March 8, 2014 where Professor R. K. Shevgaonkar, Director, Indian Institute of Technology-Delhi was invited as the Chief Guest and the "UAA Distinguished Orator". On this occasion, various merit awards were given to the faculty, support staff and the undergraduate and post-graduate students.

CONVOCATION FUNCTION

BHARATRATNA Professor C.N.R. Rao, National Research Professor, Linus Pauling Research Professor and Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore was the Chief Guest for the Third Convocation our Institute held on 8th March, 2014. PADMAVIBHUSHAN Professor M.M. Sharma, Former Director and Emeritus Professor of Eminence, ICT was the Guest of Honour.

The Chancellor, PADMAVIBHUSHAN Dr. R.A. Mashelkar presented Institute's first D.Sc. (Honoris Causa) to Professor C.N.R. Rao and Professor M.M. Sharma.

During the function, recipient of Padma awardees were felicitated -

- Professor C.N.R. Rao - recipient of BHARATRATNA
- Dr. R.A. Mashelkar - recipient of PADMAVIBHUSHAN
- Professor J.B. Joshi - recipient of PADMABHUSHAN

The third batch of the students under the deemed to be university status was bestowed with their respective degrees on this occasion. It included –

- Bachelor's Degrees - B.Chem.Engg., B.Tech., B.Pharm. - 217 candidates
- Masters Degree - M.Chem.Engg., M.Tech., M.Pharm. M.E. (Plastic Engg.), M.Sc. - 202 candidates
- Post Graduate Diploma in Chemical Technology Management - 24 candidates
- Doctorate Degree - 70 candidates

Dr. R.A. Mashelkar, Chancellor, Institute of Chemical Technology presided over the function. The function was graced by students alongwith their parents, alumnus and other dignitaries.

A large number of parents of the graduating class attended along with several dignitaries. All the speeches are reproduced elsewhere.

MOUS SIGNED DURING 2013-14

1.	Kirloskar Integrated Technologies Ltd.	July 2013
2.	ADDIS ABABA Science and Technology University, Addis Ababa, Ethiopia	Sept 2013
3.	EID Parry (India) Ltd.	Oct 2013
4.	Queensland University of Technology, Australia	Nov 2013
5.	Institute of Science, Mumbai	Jan 2014
6.	Universitat De Valencia (Spain)	Feb 2014
7.	Tata Institute of Social Sciences	April, 2014

Shri B.S. Rajpurohit, Distinguished alumni of ICT has donated Rs. 50.00 lakhs for creation of "Shri. B.S. Rajpurohit Visiting Professorship in Polymer Science and Technology Endowment' on October, 2013.

Dr. Prakash Trivedi, Pace Polymer Technology Pvt. Ltd. has donated Rs. 1,00,000/- on March, 2014 for the creation of "Shri D. M. Trivedi Lecture in Green Chemistry and Technology Endowment".

The institute and individual faculty and students have been receiving accolades on all fronts. We have filed a record number of patents, continued to publish in high impact factor journals, and introduced several new courses. International collaborations have been on the rise.

The ICT can boast of its proud record with regard to number of Ph D fellowships and the UGC has been the main source. Indeed, all these departments have also got infrastructure funding from the UGC.

A lot of new infrastructure has been created and state of the art equipment added. I am personally overwhelmed by the generosity and magnanimity of all these fine individuals and industries. However, it is my cherished dream that no student be without assistance and all PG and Ph D students must get full fellowships with HRA. On that note, a record of 710 Ph D students with full fellowships, including 386 UGC

Special Assistance Programme fellowships, have been in place. This is the magic of the 16-acre land located in Matunga !!. As I have been professing, more so lately, please join this grand effort of institute building and be part of the list of donors, whether in cash or kind. No single individual can build any grand monument; there are many hands at work. Lend me your hands, if you are reading my report as an alumnus, philanthropist or industrialist. Help the institute and some unfortunate students or support staff. However, if you are a critic, do let me know your candid opinion so that I will take steps to amend errors in administration and delivery of justice. This applies to the presentation of this Annual Report also.

We have joined with DTE admissions procedure during 2013-14 for B. Chem. Eng., B. Tech. and B. Pharm. Programmes.

UGC BSR Ph.D. FELLOWSHIPS DURING 2013-14

Department	2007 - 2008	2008 – 2009	2009 – 2010	2010 – 2011	2011 – 2012	2012 – 2013	2013 – 2014	Total
Chemical Engineering	10	10	15	15	18	18	17	93
Food Engineering & Technology	10	10	15+1*	15	15	15	15	96
Pharmaceutical Science and Technology	10	10	15+1*	15	15+1*	15+*2	15+2	101
Physico Chemical Aspects of Textile, Fibres, Polymers and Dyes' – CAS – Phase VII	10	10	15	15	15	15	15	95
Centre for Green Technology	-	-	15	15	15	15	15	75
UGC Non-SAP	-	-	02	02	02	-	-	6
UGC-SAP Chemistry	-	-	05+1*	05	10	10	10	41
Polymer Engineering and Technology	-	-	-	-	05	05	05	15
Total	40	40	85	82	96	95	94	532

*Supernumery : Single girl child; + Other project based fellowships are not included.

The magic mantra for ICT's success is a concoction of dedicated faculty, meritorious students, admirable support staff, distinguished alumni, strong connectivity with industry, assistance to all needy students, a grand alumni association and above all relevance of our courses in wealth creation. It is unsurprising thus that the ICT is ranked as the best chemical engineering and chemical technology teaching and research institute in India and as number 4 in the world. Different authorities have duly recognized our spectacular performance over the years.

The Technological Association deals with the students activities under the guidance of the Vice Chancellor (as President) and one senior faculty member as

Vice President. Professor Prakash M. Bhate and then Dr. R.R. Deshmukh provided an excellent leadership to streamline all activities. A large number of students come to the ICT campus from all over the country and participate in several intercollegiate programmes such as Exergy, Young Researchers Choice Competition (YRCC), Young Researchers Conference (YRC) and Sports Saga. The hostellers celebrate different festivals and the Hostel Day is a great fun.

The UAA has been assisting several students programmes including factory visits, arrangement of seminar, competitions, scholarships, etc. UAA has been providing short term interest free loans to needy students whose fellowships have been delayed by funding agencies such as UGC, CSIR, etc. The Singapore Chapter and B Chem Eng Class of 1972 have started a scheme of Rs 1.00 lakh interest free loan for four years to two students who go abroad for further studies.

No institute can grow without the active participation and support of the non-teaching staff. The ICT has a rich tradition. The support staff organizes several programmes including Dasara Pooja, Sports competition, drama, Satyanarayana Pooja, and Haldi Kunku. Many retired staff attends these functions.

The institute needs to grow and obviously getting a satellite campus of at least 200 acres in the vicinity of Mumbai will be highly desirable. The ICT certainly needs to be promoted by the State and should be treated as a special institute on par with other elite institutes in India. There is no need for me to reiterate the past performance of ICT but would certainly like to give a glimpse of some the plans which we have made. Thus frontiers of research where we have now focused are:

- Biotechnology & biomedicine
- Nanotechnology and materials science
- Energy science and engineering
- Process systems engineering
- Green chemistry and engineering
- Environmental protection and Hazardous waste management
- Product Engineering
- Developing greener chemical processing platforms producing a much wider range of products; green technology; product engineering.
- Developing technologies for generating, storing and transporting unlimited and inexpensive energy sources; energy engineering
- Developing therapy strategies for incurable diseases; pharma and healthcare.
- Designing better materials whose properties can be predicted, tailored and tuned; materials engineering; nanotechnology

We need resources for several centres which could be established on a separate campus.

- Training and Placement Cell (in joint collaboration of UAA)
- Entrepreneurship resource centre
- Interactive student services portal
- Centre for Undergraduate Research In Engineering (CURIE)
- Centre for Process Intensification and Innovation
- Centre for Product Engineering
- Centre for Drug Discovery Engineering
- Centre for Infectious Disease Control and Prevention
- Technology Incubation Centre
- Technology Transfer Cell
- Creation of Visiting Professorships endowments
- Distinguished Adjunct Professors
- Group consultations : Adoption of sick industries.
- Increasing international collaborations (Joint projects with leading institutes
- (Joint degrees, UG exchange, PG exchange)
- M.M. Sharma Library (e-Library)
- Creation of institute professorships

We have been trying to meet many deadlines and collecting information from all concerned and it is likely the something might have been inadvertently missed. I will shoulder all the

shortcomings. Let the credit of making this report a grand compilation to the team- Prof R.P. (Dean, AP), Dr. G.S. Shankarling, and Mrs. Rekha Patil and the printer Media Research & Development.

THE GRAND CULTURE OF ENDOWMENTS

The ICT has a grand tradition of establishment of endowments with an objective of supporting faculty positions, foreign travel assistance, merit-cum-means scholarships, staff welfare, library, campus development, research fellowships and seed money for research by young faculty. There are 90 endowments in the Institute. All these endowments have been established through generous donations by alumni, industries, philanthropists and well wishers. Only part of the interest is used towards the purpose of the endowment and the remaining is ploughed back into the corpus allowing it to grow with time.

1.4.1. FACULTY ENDOWMENTS

- R.T. Mody Distinguished Professor of Chemical Technology and Vice Chancellor (1933)
- Sir Dorabji Tata Reader in Pharmaceutical Chemistry (1943)
- Singhanee Reader in Chemical Engineering (1936)
- Singhanee Lecturer in Chemical Engineering (1936)
- Singhanee Lecturer in Pharmacy (1943)
- Singhanee Lecturer in Paint Technology (1946)
- Singhanee Associate Lecturer in Chemical Engineering (1936)
- Singhanee Associate Lecturer in Food Technology (1945)
- Sir Homi Mehta Reader in Oil Technology (1943)
- Sir Homi Mehta Associate Lecturer in Food Technology (1943)
- Darbari Seth Professor of Inorganic Chemical Technology (1995)
- BPCL Professor of Chemical Engineering (2001)
- V.V. Mariwala Chair in Chemical Engineering (2004)
- J.G. Kane Chair of Oil Technology (2008)
- M.M.Sharma Distinguished Professor of Chemical Engineering (2009)
- Narotam Sekhsaria Distinguished Professor of Chemical Engineering (2009)
- R.A. Mashelkar Chair of Chemical Engineering (2009)
- K.V.Mariwala-J.B. Joshi Chair of Chemical Engineering (2009)
- Dr Kapoor Chair in Pharmaceutical Technology (2009)
- RCF Chair Professor of Chemical Engineering (2012)

1.4.2. VISITING PROFESSORS/FELLOWS/ LECTURERS/ORATIONS ENDOWMENTS

There are 46 endowments which have helped us immensely in attracting the best professionals to the Institute from all over the world who have interacted with UG and PG students, faculty and alumni. The honoraria range from Rs. 5000 to 1.25 lakhs for a period of one day to 15 days. Some eminent faculty from institutes such as MIT, Purdue, Cambridge, Monash, UC Berkeley, UCSB, Montreal have taught UG and PG courses in ICT under these endowments. These lectures will form part of audit courses for research students. Besides, public lectures are organized under each endowment. All departments have been benefitted and the list is as follows:

A. Institute Level

- Professor B.D. Tilak Distinguished Lectureship
- Professor B.D. Tilak Visiting Fellowships.
- Golden Jubilee Visiting Fellowships.
- Colour Publications-ICT Foundation Day Lecturership
- Dr. Balwant S. Joshi Distinguished Visiting Professorship in Chemical Engineering Chemical Technology / Applied Chemistry
- Ambuja Visiting Professor for Economics
- Ambuja Visiting Professor for Society, Science and Technology

- Shri. B.S. Rajpurohit Visiting Fellow and Oration Endowment

B. Department of Chemical Engineering

- Dr. G.P. Kane Visiting Professorship in Chemical Engineering.
- The Dow Professor M.M. Sharma Distinguished Visiting Professorship in Chemical Engineering.
- Shri V.V. Mariwala Visiting Professorship in Chemical Engineering
- Shri G.M. (alias Dada) Abhyankar Memorial Distinguished Fellowship in Chemical Engineering
- Professor R.A. Rajadhyaksha Memorial Lecture series.
- Shrimati Kusumben and Shri Mathradas Kothari Visiting Professorship in Chemical Engineering
- K.J. Somaiya Visiting Professor of Chemical Engineering (Green Chemistry and Technology)
- Ambuja Visiting Professor in Environmental Engineering (1997)
- Professor Arun S. Mujumdar Visiting Professor in Chemical Engineering (2009)

C. Department of Dyestuff Technology

- K.H. Kabbur Memorial Silver Jubilee Lectureship.
- Professor K. Venkatraman Lectureship.
- Pidilite Industries Ltd. Visiting fellow in Dyestuff Science & Technology.

D. Department of Fibres and Textile Processing Technology

- Professor G.M. Nabar Endowment Lectureship.
- L.N. Chemicals UICT Diamond Jubilee Visiting Fellow
- B.Sc. (Tech.) (Textiles) Class of 1966 Visiting Fellowship

E. Department of Food Engineering and Technology

- Professor A. Sreenivasan Felicitation Lectureship.
- Marico Industries Visiting Fellowship
- UICT - Lupin Visiting Fellowship for Bioprocess Technology

F. Department of Oils, Oleochemicals and Surfactants Technology

- Professor J.G. Kane Visiting Professorship in Chemical Technology
- Professor J.G. Kane Memorial Lectureship

G. Department of Pharmaceutical Sciences and Technology

- CIPLA Distinguished Visiting Fellowship in Pharmaceutical Sciences
- Themis Medicare - UICT Diamond Jubilee Distinguished Fellowship in Pharmaceutical Sciences
- Professor (Mrs.) Malati R. Baichwal Visiting Fellowship in Pharmaceutical Science and Technology
- AAIPS- Dr. R. S. Baichwal Pharmaceutical Seminar
- Professor S.K. Pradhan Endowment
- Prof. V.M. Kulkarni Endowment

H. Department of Polymer and Surface Engineering

- Shri K. S. S. Raghavan - Chemical Weekly Visiting Professorship in Polymer Science and Technology
- Indian Plastics Institute (IPI)-UICT Diamond Jubilee Visiting Fellowship in Polymer Processing
- Chemimpex Rastogi-UICT Diamond Jubilee Visiting Fellowship in Surface Coatings.
- Synpol-UICT Diamond Jubilee Distinguished Visiting Fellow in Science & Technology of Pigment
- Tipco-UICT Diamond Jubilee Distinguished Visiting Fellow in Thermosets
- Jayvee Organics & Polymers(P)Ltd. Visiting Fellowship in polymer Additives and Compounding
- Parmanand F. Parikh Endowment
- Shri. B.S. Rajpurohit Visiting Professorship in Polymer Science and Technology Endowment

I. Department of Chemistry

- Dai-Ichi Karkaria Ltd. Visiting Fellowship
- The Dharamsi Morarji Chemical Co. Visiting Fellowship in Chemistry
- The (Late) Shri. G.D.Gokhale Endowment Lectureship
- Spinco-Biotech - Ramanathan Lectureship

J. Department of Physics

- Dr. Mooljibhai Shivabhai Patel Trust Visiting Fellowship in Polymer Physics

1.4.3. SCHOLARSHIPS FOR UG STUDENTS

The ICT supports 340 students under merit-cum-means scholarships range is Rs. 10,000/- to Rs. 1,00,000/- per annum per person through several endowments, private trust and annual commitments by alumni. All economically deprived students are given assistance in the form of tuition fees, hostel fees, mess bills and travel assistance to present papers in national conferences. During 2009-10, two endowments were established for supporting UG students –Dr Kangle Endowment (Rs. 5.00 lakhs) and Swati Bhagwat Endwoment (Rs. 1.25 lakhs); whereas M/s Borogue have started 12 UG scholarship of US$ 500 per student, for students of Polymer Engineering (10) and Technology and Chemical Engineering (2). An endowment of Rs 10.00 lakh was created by Dr Dhiren and Dr Mrs KailasThakker. Dr B.S. Joshi donated US$ 50,000 to create a loan scholarship for the needy students.

1.4.4. Ph.D. FELLOWSHIPS ENDOWMENTS

- Prof. M.M.Sharma Endowment (2 Ph D Fellows)
- Dow-ICT Woman Chemical Engineers Ph D Fellowship
- Narotam Sekhsaria Foundation (2 Ph D Fellows)
- Pidilite Professor M.M. Sharma Distinguished Doctoral Fellowship in Chemical Engineering (4 fellowships at a time).
- Dr Dhiren and Dr Mrs Kailas Thakker Fellowship

1.4.5. LIBRARY ENDOWMENTS

We have been assiduously working on creating a 'library culture' and took pains to generate endowments to support journals subscriptions and acquisition of books to some extent. Perhaps, ours is one of the rare universities in India where such type of endowments exist.

- Indian Oil Corporation Endowment (Rs 5 lakhs)
- Dr Mooljibhai Shivabhai Patel Trust (Rs 5 lakhs)
- Colour Chem Ltd (Rs 5 lakhs)
- Professor M.M. Sharma Library Endowment (Rs 75 lakhs)
- UDCT Golden Jubilee Library Endowment (Rs 10 lakhs)
- Polyolefins Industries Ltd. (Rs 5 lakhs)
- BLA industries (Rs 5 lakhs)
- Hindustan Organics Chemicals Ltd. (Rs 5 lakhs)
- Tata Electric Companies (Rs 10 lakhs)
- Gharda Chemicals Ltd. (Rs 5 lakhs)
- Associated Cement Companies Ltd. (Rs 20 lakhs)
- Tata Chemicals Ltd. (Rs 5 lakhs)

Only 50% interest accrued on these endowments is utilized for the Library.

I greatly appreciate your fine gesture of donating Rs. 1.00 Crore to the Institute to promote the activities on a perennial basis. Please find enclosed a receipt and tax benefit statement.

1.4.6 ENDOWMENT FOR E-GOVERNANCE AND MAINTENANCE

Shri Sunil M. Vanarse, VansumIndustries Ltd. has created the "Shri Sunil Murlidhar and Smt Surekha Sunil Vanarse Endowment for e-Governance and Maintenance with a corpus of Rs. 1.00 Crore on 11th May, 2014.The interest accrued will be used for e - governance and maintenance which will include subscription to internet facilities, server updation, cloud browsing, web hosting, e – library and e – accounting.

VICE CHANCELLOR: PROFESSOR G. D. YADAV

PROFESSOR G. D. YADAV

B. Chem. Eng., Ph. D. (Tech.), F.T.W.A.S., F.N.A., F.N.A.Sc.,
F.R.S.C. (UK), Ch.E., F.I.Chem.E. (UK), F.M.A.Sc., F.I.I.Ch.E., F.I.C.S., C.Chem.
Vice Chancellor and R.T.Mody Distinguished Professor, Institute of Chemical Technology
J.C. Bose National Fellow (DST-GOI)
Adjunct Professor RMIT University, Australia
Adjunct Professor University of Saskatchewan, Canada

Professor Ganapati D. Yadav ranks among the preeminent engineers and academicians in India. He is internationally recognized by many prestigious awards, fellowships and honours for his seminal contributions to education, research, innovation and development of clean and green technologies. He has provided inspiring academic and professional leadership to the Institute of Chemical Technology (ICT), the Indian Institute of Chemical Engineers (IIChE) and Catalysis Society of India, and Maharashtra Academy of Sciences. He is one of the highly decorared and accomplished engineer-scientists in India, having won several awards and accolades.

His leadership has seen phenomenal growth of the ICT which is rated as the best in chemical sciences and engineering ranked among the top five in the world with several awards such as : CHEMTECH Foundation's Best R and D Institute, Number 1 rank in Chemical Engineering in India and No. 4 in the World in research publications. Maharashtra Government's Elite Institute Status and Centre of Excellence like IITs, IISc, IISERs, No. 1 TEQIP funded institute among 127 during Phase 1 and lead institute in Phase II. The Tata Chemicals AICTE-CII Best Industry Linked Institute award in Chemical Engineering was bestowed recently on ICT for 2012. All departments of the Institute are supported by the DST-FIST and UGC-SAP with 710 doctorates,

450 masters and 1100 UG students (www.ictmumbai.edu.in). It is recognised as a model for industry-institute collaboration. Several prestigious universities from the USA, UK, Australia, France, Canada and New Zealand, as well as leading industries from across the globe and from India have signed MOUs with the ICT to promote research and development of technologies. He has been responsible for getting munificent donations for the ICT for faculty endowments, student and non-teaching staff support and infrastructure and the institute now has a modern ambiance and facilities on par with the best in India and abroad.

He has received numerous honours and distinctions for his innovative contributions to green chemistry and engineering, catalysis science and engineering, chemical reaction engineering, biotechnology, nanotechnology and energy engineering. He has supervised 76 doctoral students and 80 masters students, and has authored over 300 original research papers in 67 cross-disciplinary international peer-reviewed journals. He also holds 71 patents and has authored 3 books. He has h-index of 42 and i10 index of 155 with over 6600 citations. He is a Fellow of the Indian National Science Academy (INSA) and the National Academy of Sciences, India (NASI), among others. He has been honoured by the Government of India's Department of Science and Technology with its prestigious Jagdish Chandra Bose National Fellowship and is the only active university faculty member in the state of Maharashtra to be elected as Fellow of The World Academy of Sciences (TWAS) in Trieste, Italy. He was bestowed with the D. M. Trivedi Lifetime Achievement Award of Indian Chemical Council as well as the Dr. B. P. Godrej Lifetime Achievement Award of the Indian Institute of Chemical Engineers (IIChE) (2013). The Indian Speciality Chemical Manufacturers Association (ISCMA) and PSN College of Engineering TN has bestowed the Best Researcher awards for 2012. The Indian Chemical Council has now conferred upon him Life Time Achievement Award and gold medal for 2014. Other notable international recognitions bestowed upon him include the Fellowships of The Royal Society of Chemistry (RSC), UK and The Institution of Chemical Engineers (IChemE), UK; the Canadian Catalysis Foundation's Cross-Canada Lectureship Award; the University of Amsterdam's John van Geuns Lectureship; the Park Reilly Distinguished Speakership of the University of Waterloo; the Johansen Crosby Visiting Professorship in Chemical Engineering at Michigan State University; the Distinguished Asian Visiting Scholar at Purdue University; Visiting Professorship at the Lunghwa University of Science and Technology, Taiwan; and Adjunct Professorship at the Royal Melbourne Institute of Technology and University of Saskatchewan, Canada. He is elected Chairman of APCAT-7, the Asia Pacific Conference on Catalysis, and is also on governing council of APCAT, the confederation of catalysis societies from Asia Pacific region. He is a member, International Advisory Board, The State Key Laboratory for Catalysis, Dalian Institute of Chemical Physics, The Chinese Academy of Sciences.

In India, Prof, Yadav has been awarded with prestigious honours such as: IIT-Roorkee's Khosla National Award; Dr H.L. Roy Memorial Lecture (2008) IIChE, RPG Life Sciences' Padma Vibhushan Professor MM Sharma Medal and Chemcon Distinguished Speaker Award of IIChE; Institution of Engineer's Eminent Engineer Award; Ashland Padma Vibhushan Professor CNR Rao Medal & Chemcon Distinguished Speaker Award; Best Teacher Award of the Government of Maharashtra; Dr. Anji Reddy Innovator of the Year Award; Dhirubhai Ambani Oration Award- IIChE-Reliance Industries Ltd (2014), Anna University's National Award for the Most Outstanding Academician; and VASVIK Foundation Award for Excellence in Research in Chemical Sciences and Technology.

The American Chemical Society (ACS) has published a Festschrift of Industrial and

Engineering Chemistry Research (Vol. 53, No. 49, December 10, 2014) with 65 research papers in his honour to highlight his immense and exceptional research contributions. The ACS has also elected him to the editorial board of its new journal, ACS Sustainable Chemistry and Engineering. He is Founder President Elect of ACS India International Chapter. He has served/ been serving on editorial boards of international journals of considerable repute such as Applied Catalysis A:Gen, Journal of Molecular Catalysis A:Chem, Catalysis Communications, RSC Green Chemistry, ACS Sustainable Chemistry and Engineering, International Journal of Chemical Reactor Engineering, Clean Technologies and Environmental Policy, Current Catalysis, Journal of Environmental Science and Engineering, Advanced Porous Materials.

Professor Yadav's contributions to development of the Chemical Engineering profession in India are incomparable. During his tenure as President of the IIChE in 2001, he reinvigorated the body by incorporating 51 national awards through endowments. He also serves as Director of the Asia-Pacific Confederation of Chemicals Engineering Institutes. He has also been a member or chaired several national and international committees of GOI ministries and autonomous bodies such as MHRD, DST, DBT, UGC, AICTE, CSIR, FICCI, CII, the PSA's on Green Chemistry, the Planning Commission's Pan India S&T Committee, and the Government of Maharashtra's Rajiv Gandhi S&T Commission Peers Group, Maharashtra State Innovation Council. He was also the member of the DST's Special Peer Review Committee for Evaluation of Reports on the Bhopal Gas Disaster, and has led two delegations of Indian scientists to South Korea and Germany. He is Chairman, Research Council, CSIR-CSMCRI, and member of RC of IICT Hyderabad and NIIST Trivandrum. He also serves as Chairman, Advisory Council of DST-National Centre for Catalysis Research, IIT-Madras. He is a member of Maharashtra Innovation Council and has chaired the Expert Committee to prepare a report on 'Analysis of vacancies in professional courses and remedial action plan in 2014'. He is also a member of UGC's Steering Committee on Universities with Potential for Excellence. He has developed a museum and hall of fame on 'Chemical Sciences and Engineering and its Impact on Modern Society' in the ICT with support of industry.

Professor Yadav is also a vociferous advocate of the chemical sciences and industry in the print and on radio and television. He has been championing the rejuvenation of the chemical industry through adoption of sustainable clean and pollution-free technologies. He has traversed the world to give over 450 lectures including prestigious award lectures, keynote addresses and plenary lectures.

RESEARCH CONTRIBUTIONS

Themes:

- Green Chemistry and Technology
- Fundamental and applied aspects of green chemistry and engineering, particularly in the design and development of benign and eco-efficient processes in the chemical and allied industries such as bulk chemicals, intermediates, pharmaceuticals, fine chemicals, perfumes and flavours, and inorganic chemicals
- Catalytic Science and Engineering

  New catalytic materials, phase transfer catalysis, ionic liquids, reactions in supercritical carbon dioxide, modelling and simulation, biocatalysis in non-aqueous media, synergism of chemical catalysis with microwaves and ultrasound, cascade engineered catalysis, renewable materials as feedstock for value added chemicals, biorefinery
- Chemical Engineering – Multi-phase Reaction Engineering
- Nanomaterials and nanocatalysis

  Solid acids, superacids& bases,sulphated

zirconia, UDCaT, MUICT and ICT series of novel catalysts, ion exchange resins, heteropoly acids, clays, zeolites, novel redox materials, functionalised carbon nanotubes

- Biotechnology
- Enzyme catalysis in non-aqueous media, chiral separations, biomass conversion, biorefinery, Synergism of Microwaves and Enzymes
- Energy Engineering

  Petroleum Engineering, Flow through porous media, Network modelling, Novel methods of enhanced oil recovery; Coal conversion, Hydrogen production and storage

We have been fascinated by phenomena occurring at the boundaries which has grown over the years with confluence of chemical and biological sciences and engineering, the formation of nanoparticles, pores and the interfaces residing within them. We have thus worked on network models and percolation processes in reservoir rocks, enhanced oil recovery and coal gasification, hydrogen generation to the finer aspects of multiphase reaction engineering and Green Chemistry. There is a very interesting connectivity among these areas which can be broadly viewed as Science & Engineering of Pores, Particles and Interfaces to develop clean and green processes, whether physical, chemical or biological or otherwise.

Catalysis is one of the most important and central principles of Green Chemistry and Engineering. The importance of pore structure and surface properties of catalysts could be fine-tuned to render them versatility under otherwise similar conditions. Synthesis of new catalysts is an area of great interest to all sectors of chemical and biochemical production. We have been working in basic and applied aspects of catalysis and in particular with regard to the development of clean, green and benign processes in a variety of industries. Our lab has made innovative and original contributions, both by theory and experiments, to Catalytic Science and Engineering, Green Chemistry and Technology, Biotechnology and Energy Engineering. We have propounded the practice of Green Chemistry and Engineering and developed pollution-free processes, which have been internationally patented. Our group has provided breakthroughs in design, synthesis and industrial applications of novel catalytic materials. Selectivity engineering principles have been brought out in multiphase reactions using inert nano particles, new solid superacidic catalysts (including patented UDCaT series of materials) and phase transfer catalysis. Our group was the first to synthesize a solid superacid called UDCaT-5 having stronger acidity than the hitherto known sulphated zirconia (J. Catalysis, 2004), with wide spread applications. Several industrial examples have been studied with this material. Our paper on sulphated zirconia is a citation classic with~ 400 citations including research papers and books (Micro. Meso. Mater., 1999). Synergism of heteropoly acids and their modified versions and clays as nano-catalysts was brought out in a pioneering paper in Chemical Communications (1995), which is oft-quoted. We have reported several novel mesoporous solid superacids called UDCaTs. Apart from solid superacids, we have been working on solid bases and redox materials. The applications have ranged from bulk chemicals, fine chemicals, pharmaceuticals, perfumes, flavours, agrochemicals, dyestuff and intermediates. Thus, over the years, students from diverse background have worked in our lab.

New opportunities for the conversion of glycerol into value-added chemicals have emerged in recent years as a result of glycerol's unique structure, properties, bioavailability, and renewability. Different reaction pathways for selective catalytic conversion of bioglycerol into commodity chemicals include oxidation, hydrogenation (commonly called hydrogenolysis), dehydration, pyrolysis and

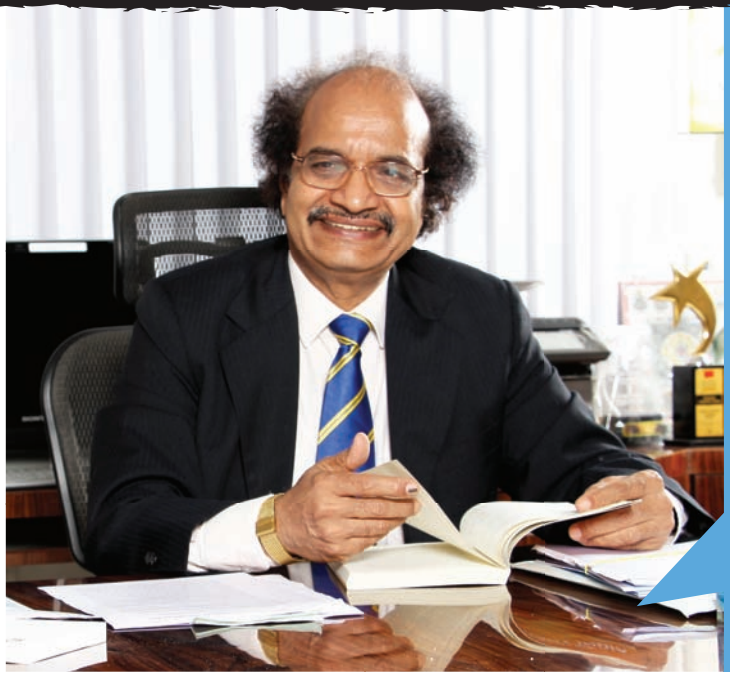
Professor G.D. Yadav receiving the CII-AICTE Tata Chemicals Best Industry Linked Institute in Chemical Engineering at the hands of Shri Kapil Sibal, Union Minister.

Professor G.D. Yadav being felicitated and receiving the Dr B.P. Godrej Life Time Achievement Award at the hands of Hon'ble Shri Pranab Mukherjee, President of India during CHEMCON-2013 at ICT Mumbai on 27th December. 2013

gasification, steam reforming, thermal reduction into syngas, transesterification, etherification, oligomerization, polymerization, acetalization and carbonylation. The development of novel solid acids, bases, hydrogenation and oxidation catalysts for glycerol conversion will be discussed with examples. A recent area of great interest includes synthesis of enantiopure drugs, separation of racemic mixture and biocatalytic synthesis of fine chemicals. Our work encompasses different approaches to synthesize important pharmaceutical intermediates to overcome the limitations of conventional organic synthesis methods. Immobilized lipases were employed to study some pharmaceutically important reactions, under enzyme catalysis and microwave irradiation including development of kinetic models.

The liquid-liquid phase transfer catalysed (PTC) reaction can be intensified by converting it into three-liquid phases. We addressed the modeling of a well-stirred reactor for the foregoing process in which organic droplets surrounded by a thin film of catalyst-rich phase are suspended in the aqueous phase. A population balance model is formulated L-L-L PTC reaction and solved by Monte Carlo simulation using interval of quiescence technique.Transport processes and intrinsic reaction kinetics are extracted from the experiments. This population balance model serves to assess and interpret the relative roles of various processes in L-L-L PTC reaction, such as diffusive transport, reaction and interaction between dispersed phase droplets. The model is expected to be an effective tool for reactor design and scale up.

Green Chemistry (RSC, UK) had listed one paper as one of the most influential papers in 2002 and 2004. One of our earlier contributions related to theoretical and experimental proof of the celebrated phenomenon of inversion in rates and selectivity in Friedel-Crafts reactions (Tetrahdron Letters, 1993, 1995) was the first report to settle to controversies. New concepts in phase transfer catalysis (PTC), tri-liquid PTC, the role of omega phase, and cascade engineered PTC (Langmuir, 2002) have been explored in detail. In fact, we were the first group in India to embrace PTC and make fundamental contributions to theory and practice. We have also contributed to basic understanding of microwave irradiation in catalysis including mathematical modeling (J.Mol.Cat. A, 2005); and thus, synergism with PTC, acid catalysis and enzyme catalysis have been covered. Enzyme catalysis has been studied in several systems useful in pharmaceutical industries. Many of our papers deal with intertwining of chemistry and chemical engineering and technology. Our group also published a pioneering theory with experimental proof on the absorption of chlorine in aqueous alkalis wherein the intermediate hypochlorous acid gas could be desorbed into the gas phase despite stoichiometric excesses of alkali with or without nano-particles.



ANNUAL REPORT 2013-14

PROFESSOR G. D. YADAV

B. Chem. Eng., Ph. D. (Tech.), F.T.W.A.S., F.N.A., F.N.A. Sc., Ch.E., F.I.Chem.E. (UK), F.M.A.Sc., F.I.I.Ch.E., F.I.C.S.

Vice Chancellor and R.T. Mody Distinguished Professor, J.C. Bose National Fellow (DST-GOI)

SUBJECTS TAUGHT:

- Fundamentals of Green Chemistry and Technology (M.Tech. Green Tech.),

RESEARCH INTERESTS:

- Green Chemistry and Technology,
- Catalytic Science and Engineering,
- Multi-phase Reaction Engineering,
- Nanomaterials and nanocatalysis,
- Biotechnology,
- Energy Engineering

CURRENT RESEARCH STUDENT:

- Ph.D. (Tech): 10 , Ph.D. (Sc): 12;
- M. Chem. Eng. : 4, M. Tech. (BPT): 4, M. Tech. (Green Tech.): 4

PROFESSIONAL RECOGNITIONS, AWARDS AND ACCOLADES (2013-14)

International Fellowships and Honours

- Fellow of Royal Society of Chemistry
- Fellow, TWAS-Academy of Sciences of the Developing World
- Adjunct Professor, RMIT University, Australia
- Adjunct Professor University of Saskatchewan,Canada.

International Fellowships and Honours

- Member, International Advisory Board (IAB), The State Key Laboratory for Catalysis, Dalian Institute of Chemical Physics, The Chinese Academy of Sciences, Dalian, China (http://sklc.dicp.ac.cn/homepagee.htm),
- Chair Elect (Founder), American Chemical Society (ACS) India International Chapter
- Honoured with a Festschrift (special issue) by Industrial and Engineering Chemistry Research, ACS (November 2014) for life time achievement
- Member, Governing Council, Asia Pacific Association of Catalysis Societies (14 countries) (http://www.apacs.dicp.ac.cn/apacs-committee.htm)
- Fellow, The Royal Society of Chemistry, UK
- Fellow, TWAS-Academy of Sciences of the Developing World, Trieste, Italy

- Fellow, Institution of Chemical Engineers, UK and Chartered Engineer

International Distinguished Faculty Positions and Chairs

- Distinguished Global Leader Seminar Speaker, Imperial College London (Leaders who have shaped the future of Chemical Engineering Profession, March 11, 2014
- Elected Chair, APCAT-7, Asia Pacific Catalysis Conference to be held in November, 2015 in India
- Adjunct Professor, University of Saskatchewan, Faculty of Engineering, Department of Chemical and Biological Engineering, Canada (June 2013- onwards)

Membership of Editorial Boards of Prestigious International Journals

- Associate Editor, European Journal of Biotechnology and Bioscience
- Member, Editorial Board, Green Chemistry (RSC, UK)
- Associate Editor, Current Catalysis, Bentham Science Publishers
- Guest Editor along with A.K. Dalai (U of Saskatchewan) and Nicolas Abtzoglou (U of Sherbrooke) Catalysis Today on Catalytic Processes for Clean Energy, Waste Minimization and Green Chemicals (Elsevier), Vol. 207 (May 30, 2013)
- Member, Editorial Board, ACS Journal of Sustainable Chemistry and Engineering, USA

International : Most Accessed and Cited Articles

- Most downloaded article: G.D. Yadav and A.A. Kadam, Selective engineering using Mg-Al calcined hydrotalcite and microwave irradiation in mono-transesterification of diethyl malonate with cyclohexanol, Chem. Eng. J. 230 (2013) 547-557
- Citation Classic over 631 citations (Google Scholar, Web of Science; books; monographs; patents, company brochures): G. D. Yadav and J. J. Nair, Sulfated zirconia and its modified versions as promising catalysts for industrial processes, Micro. Meso. Mater. 33 (1999) 1-48.

International Visits as Member of National Committees & Govt. Delegations

- L'Oreal Science Inside Out Symposium, L'Oreal Research and Innovation , Paris,5-6 June, 2014

National Awards

- D. M. Trivedi Lifetime Achievement Award for Contribution to Indian Chemical Industry (Education & Research) for the year 2012- Indian Chemical Council
- Dr B.P. Godrej Life Time Achievement Award by Indian Institute of Chemical Engineers
- Chairman, Experts Committee on Higher Technical Education, Govt of Maharashtra

Membership of Prestigious National Committees

- Member, Steering Committee, Universities with Potential for Excellence, UGC
- Member, Chemical Industry Committee, CII
- Member, Maharashtra Innovation Council
- Member, Advisory Committee, India Chem 2014- 8th International Conference on Chemicals, Petrochemicals, Technologies, Process Plant & Machinery & Automation Systems, Mumbai, 9-11 Oct. 2014
- Chairman, CSIR-CSMCRI Research Council
- Chairman, DST National Centre for Catalysis Research (NCCR), IIT-Madras

- Member, Research Council, CSIR-IICT Hyderabad
- Member, Research Council, CSIR-NIIST, Trivandrum
- Visitor's (President of India) Nominee, Faculty Selection Committee, IIT-Delhi –on
- Chancellor's nominee, Senate of Pune University
- Chancellor's nominee for Selection of Faculty, University of Mumbai
- Member, Scientific Advisory Committee (SAC) on Hydrocarbons, Ministry of Petroleum & Natural Gas, 2010-13.
- Member, Expert Committee of Drugs and Pharmaceuticals Research Programme, Department of Science & Technology, 2010-13.
- Member, Research Council, Indian Institute of Chemical Technology, Hyderabad (a CSIR Laboratory) (2010-13).
- Chairman, Research Council, Central Salt and Marine Chemicals Research Institute, Bhavnagar (a CSIR Laboratory) (2010-13).
- Chairman, International Project Advisory Committee – Chemical Sciences and Engineering, Department of Science & Technology, Govt. of India, 2009-12.
- Member, Scientific Advisory Committee, Nanotechnology, Biotechnology and Information Technology, Govt of Karnataka, 2009 onwards
- Council Member, Tata Institute of Fundamental Research, 2009-13.
- Member, Governing Council, Rajiv Gandhi Institute for Petroleum Technology, Govt of India, Raibareli (2008-2011).

Best Thesis Supervision National Awards

- IPCL Award for Best M. Tech Thesis in Chemical Engineering by Indian Society for Technical Education to Miss Anita Sharma (Student) and G.D. Yadav (Guide), 2013

Best Ph. D. Thesis Supervision Awards in Institute, 2013

- Akhilesh R. Yadav ' Synthesis, Characterization and Applications of Microporous and Mesoporous Materials & Nanocatalysts' Best Ph D (Sci) Thesis

PROFESSIONAL SERVICE AND MEMBERSHIP OF VARIOUS COMMITTEES

(Professional Bodies, National/International Committees of Central Government, State Governments, Academic and Industrial Organizations)

FOREIGN COUNTRIES

- Elected Chair, APCAT-7, 7th Asia Pacific Congress on Catalysis Societies, November, 2015
- Chemistry of Clean Energy Conversion, Storage, and Production, Nano Catalysis for Clean Energy and Environmentally Friendly Chemical Production (#81) organized by Ajay Dalai, Nicolas Abatzoglou, Burtron Davis, Azhar Uddin, Jansuz Kozinski, G.D. Yadav and Ahmad Tavasoli, PACIFICHEM 2015: The International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, Dec. 15-20, 2015
- Founder President Elect-ACS India International Chemical Sciences Chapter
- Coordinator from ICT, Indo-Canadian Centre: IC-IMPACTS with University of British Columbia, University of Alberta and University of Toronto and 6 Indian institutes

University Grants Commission (UGC)

- Member, Standing Committee, University with Potential for Excellence (UPE) Scheme
- Member, Major Projects Evaluation Committee

- Member, Selection Committee, Engineering, UGC Faculty Recharge Programme

Council for Scientific and Industrial Research (CSIR)

- Referee, SS Bhatnagar Prizes for Science and Technology
- Referee, SS Bhatnagar Prizes for Science and Technology
- Member, Selection Committee for Director's Post, CSIR-IICT, Hyderabad
- Chairman, Research Council, CSIR-CSMCRI, Bhavanagar
- Member, Research Council, CSIR-IICT, Hyderabad
- Research Council, CSIR-NIIST, Trivandrum
- Member, Research Council, Indian Institute of Chemical Technology, Hyderabad.
- Member, Research Council, CSMCRI, Bhavanagar
- Member, CSIR Technology Awards Committee
- Member, CSIR Technology Awards Committee
- Reviewer, S.S. Bhatnagar Prizes in Engineering and Technology
- Member, New Millennium Indian Technology Leadership Initiative (NMITLI) Projects Selection Committee
- Member, Scientist Assessment/Promotion Committees, National Assessment Board, CSIR for scientists from National Chemical Laboratory (NCL), Pune, Indian Institute of Petroleum (IIP) Dehradun, Indian Institute of Chemical Technology (IICT), Hyderabad, National Environmental Engineering Institute (NEERI), Nagpur, and CSMCRI, Bhavnagar, since 2004.

Office of the Principal Scientific Adviser, Govt. of India

Chairman, Green Chemistry Task Force

Ministry of Science and Technology, Department of Science and Technology, GOI

- Chairman, Project Evaluation Committee (PEC) India - UK Collaborative Industrial R&D Programme by Global Innovation & Technology Alliance (GITA) in India and Technology Strategy Board in the UK, –(Focus Sector: Cleantech with focus on energy systems)
- Member, DST-DFG Joint Advisory Committee
- Chairman, International Project Advisory Committee for Chemical Sciences and Engineering
- Member, FIST Committee for Colleges
- Member, Green Chemistry Task Force

Ministry of Chemicals and Fertilisers, GOI

- Member, India Chem 2014 Exhibition and Conference, Mumbai, Oct 9-11, 2014

Indian National Science Academy (INSA)

- Member, Sectional Committee, Engineering and Technology

Ministry of Petroleum and Natural Gas

- Member, Scientific Advisory Committee (SAC) on Hydrocarbons,

Central Pollution Control Board, Govt. of India

Indian Standards Bureau

- Member, Chemicals Committee

Indian Institute of Chemical Engineers

- Chairman, National Organizing Committee, CHEMCON-2015, Annual Session of Indian Institute of Chemical Engineers , IIT, Guwahati, Dec. 27-30
- Chairman, Dhirubhai Ambani Commemoration Day Celebration, Dec. 28
- Chairman, International Affairs Committee
- Chairman, National Organizing Committee, CHEMCON-2014, Annual Session of Indian Institute of Chemical Engineers,

Panjab University, Chandigarh, Dec. 27-30
- Chairman, Dhirubhai Ambani Commemoration Day Celebration, Dec. 28
- Chairman, International Affairs Committee
- Chairman, National Organizing Committee, CHEMCON-2013, Annual Session of Indian Institute of Chemical Engineers , ICT, Mumbai, Dec. 27-30
- Chairman, Dhirubhai Ambani Commemoration Day Celebration, Dec. 28.
- Chairman, International Affairs Committee

Catalysis Society of India
- Member, National Organizing Committee, Catsym-2015, CSMCRI, Bhavnagar, January 6-8.
- Member, National Organizing Committee, Catsym-2014, NEERI, Nagpur, Feb. 4-6
- President, Catalysis Society of India

Indian Chemical Council (ICC) / (formerly Indian Chemical Manufacturers Association, ICMA)
- Member, Awards Committee
- Member, D.M. Trivedi Life Time Achievement Award Committee

Govt. of Maharashtra
- Member, Maharashtra Innovation Council
- Chairman, Experts Committee to Analyse Vacancies in Professional Courses
- Member, Peer Group, Rajiv Gandhi Science and Technology Commission

Govt. of Karnataka
- Member, Advisory Council, Department of IT, BT and S&T

Confederation of Indian Industries (CII) and Other Industrial Organizations
- Member, Chemical Industry Committee, CII
- Member, FICCI Committee on Chemicals

Tata Institute for Fundamental Research
- Member, Governing Council

Haffikine Institute for Testing, Research and Training, Govt. of Maharashtra
- Member, Academic Council

Committees of Various Central & State Universities in India and Advisory Committees of Conferences
- Chancellor's Nominee, Faculty Selection Committee, University of Mumbai
- Chancellor's Nominee, Senate of University of Pune

Membership of Board of Directors Companies
- Director (Hon.), Clean Science and Technology, Pune

UDCT Alumni Association
- Member, Advisory Council, UDCT Alumni Association

Membership/ Fellowship of Professional and Other Bodies
- Fellow, TWAS- The World Academy of Sciences, Trieste
- Fellow, Royal Society of Chemistry, UK
- M Member, American Chemical Society
- Life Fellow, Indian National Science Academy (INSA)
- Life Fellow, The National Academy of Sciences India (NASI)
- Fellow and Chartered Engineer, Institution of Chemical Engineers, UK
- Life Member, Indian Science Congress Association
- Life Fellow, Maharashtra Academy of Sciences
- Life Fellow, Indian Institute of Chemical Engineers
- Life Fellow, Indian Chemical Society
- Life Member, Catalysis Society of India
- Life Member, Indian Society for Surface Science and Technology

- Life Member, Membrane Society of India
- Life Member, Chemical Research Society of India
- Life Member, UDCT Alumni Association
- Life Member, National Society of the Friends of Trees
- Life Patron, Marathi Vidyan Parishad

Referee/Peer Reviewer for International Journals

- Advances in Biochemistry and Biotechnology
- Applied Catalysis A – Gen.
- Catalysis Communications
- Biotechnology and Biotransformations
- Catalysis Letters
- Journal of Catalysis
- Catalysis Today
- Journal of Molecular Catalysis A –Chem.
- Chemical Engineering Journal
- Journal of Molecular Catalysis B –Enz.
- Chemical Engineering Research and Design
- Clean Technologies and Environmental Policy
- Green Chemistry
- Enzymatic and Microbial Technology
- Industrial and Engineering Chemistry Research
- Current Catalysis
- Molecule

Science Popularization through Public Media

Radio

- Engineering Admissions on AIR FM Channels July 15, 2014, 7.30-8.30 a.m.

Television

- Panel Discussion on College Teachers Strike, IBN-Lokmat, March 2013
- Panel Discussion, SAAM TV, April 23, 2014, 7.00-8.00 pm
- Panel Discussion on Sansodhanasathi Nidhee, DD Sahydri, March 26, 2014, 8.00-9.00 p.m.
- Discussion on Engineering Education, DD Sahyadri-Jai Maharashtra Programme of the State Govt. June 29, 2014, 8.00-9.00 pm

DEGREE AWARDED AS SINGLE GUIDE

Ph.D. DEGREES

Name	Title of Thesis
SurajKatole	Green and Clean Bioglycerol Based Chemicals and Their Derivatives
Sandeep V. Pawar	Selectivity Engineering in Pharmaceutical and API Synthesis using Enzymatic Reactions
Akhilesh R. Yadav	Synthesis, Characterization and Applications of Microporous and Mesoporous Materials &Nanocatalysts
Devendran Saravanan	Selectivity Engineering in Biotransformation of Industrial Relevance
Somnath D. Shinde	Chemo and Biocatalysis in Synthesis of Valuable Intermediates and Drugs
Suresh Doke	Synthesis and Applications of Nanomaterials
Gajanan B. Kunde	Synthesis of Nano-materials and Membrane for Separation and Catalysis

MASTERS DEGREES AWARDED

Name	Degree	Title of thesis
Anita Sharma	M. Chem. Eng.	Design and synthesis of nanomaterials for catalytic applications
Rohit Chaudhary	M. Chem. Eng.	Development of green and smart chemical processes
Pranav R. Joshi	M. Tech. (BPT)	Bio transformations of industrial relevance

Pramod N. Sawant	M. Tech. (BPT)	Supported enzyme for reaction and separation of racemic mixture
Sampanakumar D Kharbade	M. Tech. (Green Tech)	Selectivity in Hydration and Acetoxylation of Monoterpenes Using UDCaT Series of Catalysts
Ashish Shejale	M. Tech. (Green Tech)	

CURRENT RESEARCH FELLOWS UNDER SUPERVISION

Ph. D. (TECH.) AND Ph.D. (SCI) RESEARCH FELLOWS

(all supported under various research schemes, projects and programmes)

No	Name	Title of thesis
1.	Pooja Ashish Thorat	Novel Approaches in Biopharmaceutical Synthesis and Separations
2.	Godfree P. Fernandes	Green Chemistry & Sustainable Processes Based on Biomass
3.	Moreshwar P. Hude	Utilization of Renewable Resources for the Production of Biofuels, Bioenergy and Biopharmaceuticals
4.	Rahul Kumbhar	Functionalised And Tailored NanoparticleCatalysts As In Organic Transformations
5.	Mandar G. Kulkarni	Synthesis and Applications of Chiral Phase Transfer Catalysts in Multiphasic Green Reactions
6.	Bapu A. Gawade	Novel Organic Transformations by Using Catalysis
7.	Jeetendra Y. Salunkhe	Waste Minimisation through Development of Novel Catalytic Process
8.	Kalpesh H. Bhadra	Green Processes for Industrially Important Phenolics
9.	Satish Kabra	Valorisation of Biomass through Catalysis and Process Intensification
10.	Shivaji Bhanawase	Novel Base Catalysis in Organic Tranformations
11.	Gunjan P. Deshmukh	Green Synthesis of Agrochemicals
12.	Dhiraj Katole	Synthesis of safer chemicals using new approaches
13.	Akhil Nakhate	Synthesis of Biobased Novel Compounds through Catalysis
14.	Manish Tiwari	Process Intensification Using Micromodels& Novel Catalysts
15.	Saurabh Patankar	Novelties in Cascade Engineered Catalytic Reactions
16.	Jayaram Molleti	Design and Synthesis of Safer Chemicals by Benign Green Routes
17.	Abhilash Sukhadeve	Synthesis and Applications of Novel Multifunctional Catalysts in Organic Transformations
18.	Pooja Tambe	Carbon Dioxide Valorization
19.	Amarsinh L. Jadhav	Selectivity Engineering in Synthesis of Valuable Chemicals
20.	KalidasRasal	Insight into Catalysis in Utilisation of Carbon Dioxide into Chemicals and Solvents

21.	Anil B. Gawade	Forays into Novel Catalysis
22.	ManojKamble	Selectivity Engineering in Synthesis of Biotechnological Products and Pharmaceutical Intermediates
23.	Shivani S. Vedula	Novelties of catalytic membrane reactors and microreactors for development of green processes
24.	KalpeshBhavsar	White Biotechnology and Green Chemistry for Applications in Environmental and Fine Chemical Industries
25.	Pravin D. Patil	Enzyme Engineered Green Reactions
26.	DeepaliMagadum	Selectivity Engineering of Enzymes in Synthesis of Industrially Relevant Chemicals
27.	Rohitkumar Singh	Heterogeneous catalysis in synthesis of fine chemicals

MASTERS RESEARCH SCHOLARS

No	Name	Degree	Title of Thesis
1.	Abhijit D. Talpade	M. Chem. Eng	Hydrogenation of Nitrostyrene using polyurea based bimetallic nanocatalysts
2.	Raviranjan Singh	M. Chem. Eng	Etherification of glycerol with tert –butanol and MTBE(Methyl tert –butyl ether) using solid superacids such as FLSZ or UDCaT
3.	RadhikaMalkar	M. Tech. (Green Tech.)	Selectivity Engineering in Synthesis of Fine Chemicals
4.	Garry Dcosta	M. Tech. (Green Tech.)	Waste minimization strategies and green process development
5.	Sonal R. Ayakar	M. Tech. (BPT)	Novel supports for penicillin acylase and their use in production of 6-aminopenicillanic acid
6.	Vinod D. Shirke	M. Tech. (BPT)	Novelties of Biotransformations in Pharmaceutical and Fine Chemical Industries

POST - DOCTORAL FELLOWS

1.	DrJyoti B. Sontakke	Hindustan Insecticides Ltd	Alternatives to DDT
2.	Dr. Vikas Patil	Indo-US S and T Forum	PROTECT: Program for Research On Thin-Films and nanostructured Emerging Coating Technologies
3.	Dr. Ashwini B. Nirukhe	ONGC Energy Centre	ICT-OEC Technology of Hydrogen production
4.	Dr. Prakash Parhad	ONGC Energy Centre	ICT-OEC Technology of Hydrogen production

SPONSORED RESEARCH PROJECTS

GOVERNMENT AGENCIES:

Period	Funding Agency	Title	Amount, Rs. lakhs
2012-14	Indo-EU Collaboration: with University of Cantabria, Spain (Professor E. Ortiz) and University of Oulu, Finland (Professor RiittaKieski)	New INDIGO project: GREEN WATER TECH	24.00
2011-13	Indo-Finnish Collaboration (DST) with Prof RiittaKieski, University of Oulu	Sustainable catalytic chemical synthesis with carbon dioxide as feedstock: Researchers: Satish Kabra, PoojaTambe and KalidasRasal	30.00
2012-14	Indo-S S and T Forum (SUNY Buffalo, Tata Steel Group R&D (Jamshedpur, India), TAM Ceramics (Niagara Falls, NY), and Graphene Devices Limited (Williamsville, NY).)	PROTECT : Program for Research On Thin-Films and Nanostructured Emerging Coating Technologies Researcher: DrVikasPatil	25.00
2012-14	UKIERI	Thematic partnership between ICT and University of Bradford, UK	

INDUSTRIES

Period	Funding Agency	Title	Amount, Rs. lakhs
2012-14	ONGC Energy Centre	ICT-OEC Cu-Cl cycle for hydrogen production	870.00
2011-14	Ministry of Chemicals and Fertilisers: Hindustan Insecticides Ltd	Alternatives to DDT: Synthesis of New Molecules, Toxicological Studies and Scale -Up	167.00

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

- Professor RittaKieski, University of Oulu, Finland
- Professor Flora Ng and Professor Gary Rampel, University of Waterloo, Canada
- Professor Emanculda Ortiz, University of Cantbria, Spain
- Professor AnantParadkar, University of Bradford, UK
- Professor Ajay Dalai, University of Saskatchewan, Canada
- Professor Arvind Varma, Purdue University, USA
- Professor D. Ramkrishna, Purdue University,USA
- Professor Suresh Bhargava, RMIT University, Australia

PUBLICATIONS

No.	Authors and Title	Journal/ Vol No./ Year/Pages
1.	C. Gadipelly, A. Perez, G. D. Yadav*, I. Ortiz, R. Ibañez, V. K.Rathod, K. V. Marathe Pharmaceutical industry waste water: Review of the technologies for water treatment and reuse	Ind. Eng. Chem. Res. 53 (2014) 11571-11592
2.	S.V. Pawar and G.D. Yadav, Enantio-selective enzymatic hydrolysis of rac-mandelonitrile to R-mandelamide by nitrile hydratase immobilized on polyvinyl alcohol- chitosan-glutaraldehyde support	Ind. Eng. Chem. Res. 53 (2014) 7986-7991
3.	G.D. Yadav and A.R. Yadav, Atom economical Michael addition of indole with methyl vinyl ketone over novel solid acid catalyst sulfated zirconia on silica tubes	Micro. Meso. Mater. 195 (2014) 180-190.
4.	A. Dominguez-Ramos, K. Chavan, V. García, G. Jimeno, J.Albo, K. V. Marathe, G. D. Yadav, and A. Irabien, Arsenic Removal from Natural Waters by Adsorption or Ion exchange: An Environmental Sustainability Assessment	Ind. Eng. Chem. Res. (2014) on web; DOI: 10.1021/ie4044345.
5.	G.D. Yadav, S.O. Katole and A.K. Dalai, Synthesis of long alkyl chain ethers through etherification of ethylene glycol with 1-octene using heteropolyacid supported on K- 10 clay	Appl. Cat. A: Gen. 477 (2014) 18-25.
6.	Saravanan Devendran and G.D. Yadav, Lipase catalyzed kinetic resolution of (±)-1-(2-furyl) ethanol in non-aqueous media	Chirality 26 (2014) 286- 92
7.	Saravanan Devendran, G.D. Yadav Microwave assisted enzymatic kinetic resolution of (±)-1-phenyl-2-propyn-1-ol in non-aqueous media as green process	Biomed. Res. Inter. Vol. 2014, ID482678, 9pp http://dx.doi.org/10.1155/2014/482678.
8.	S.V. Pawar and G.D. Yadav PVA/Chitosan-glutaraldehyde cross-linked nitrile hydratase as reusable biocatalyst for conversion of nitriles to amides	J. Mol. Cat. B: Enz. 101 (2014) 115- 121
9.	G.D. Yadav and A.A. Yadav, Synthesis of ethyl levulinate as fuel additives using heterogeneous solid superacidic catalyst: Efficacy and kinetic modeling	Chem. Eng. J. 243(2014) 556-563.
10.	J.B. Sontakke and G.D. Yadav, Microwave Assisted Synthesis of Ethyl 2-(4-aminophenyl) Acetate Using Novozyme 435	Current Catalysis, 3 (2014) 27-34

11.	G.D. Yadav and R.V. Sharma, Synthesis, characterization and applications of highly active and robust sulfated Fe-TiO_2 catalyst (ICT-3) with superior redox and acidic properties	J. Catal. 311 (2014) 121–128
12.	G.D. Yadav and R.V. Sharma, Biomass derived chemicals: Environmentally benign process for oxidation of 5-hydroxymethylfurfural to 2,5-diformylfuran by using nano-fibrous Ag-OMS-2-catalyst	Appl. Cat. B: Environ. 147 (2014) 293– 301.
13.	G.D. Yadav and A.R. Yadav, Selective liquid phase oxidation of secondary alcohols into ketones by tert-butyl hydroperoxide on nano-fibrous Ag-OMS-2 catalyst	J. Mol. Cat. A: Chem. 380 (2013) 70–77.
14.	G.D. Yadav and A.R. Yadav, Selective green synthesis of 1, 5-benzodiazepine over modified heteropolyacid as nano-catalyst: Kinetics and mechanism	Ind. Eng. Chem. Res. 52 (2013) 17812−17820
15.	G.D. Yadav and J.B. Sontakke, Methods for separation and recycling of biodegradation products, Chapter 11, In: Biodegradation / Book 1, ISBN 980-953-307-968-9, Ed. Rolando Chamy, InTech Publishing 2013	Chapter 11 pp 276-311 http://dx.doi.org/10.5772/56241
16.	G.D. Yadav and P. S. Surve, Regioselective ring opening reaction of epichlorohydrin with acetic acid to 3-chloro-2-hydroxypropyl acetate over cesium modified heteropolyacid on clay support	Appl. Cat. A: Gen. 468 (2013) 112– 119
17.	G.D. Yadav, A.A. Yadav, Selectivity engineered Friedel-Crafts acylation of guaiacol with vinyl acetate to acetovanillone over cesium modified heteropolyacid supported on K-10 clay	Ind. Eng. Chem. Res. 52 (2013) 10627−10636
18.	G.D. Yadav, A.A. Kadam, Selective engineering using Mg–Al calcined hydrotalcite and microwave irradiation in mono-transesterification of diethyl malonate with cyclohexanol	Chem. Eng. J. 230 (2013) 547–557
19.	J.B. Sontakke, G.D. Yadav Optimization and kinetic modeling of lipase mediated enantioselective kinetic resolution of (±)-2-octanol	Natural Sci. 5 (9) (2013) 1025-1033
20.	G.D. Yadav, P.S. Surve, Solventless green synthesis of 4-O-aryloxy carbonates from aryl/alkyl-oxy propanediols and dimethyl carbonate over nano-crystalline alkali promoted alkaline earth metal oxides	Catal. Sci. Technol. 3 (2013)2668-2676
21.	G.D. Yadav, R.V. Sharma, S.O. Katole, Selective Dehydration of Glycerol to Acrolein: Development of Efficient and Robust Solid Acid Catalyst MUICaT-5	Ind. Eng. Chem. Res. 52 (2013) 10133−10144

22.	G.D. Yadav and P.S. Surve, Atom economical green synthesis of chloromethyl-1,3-dioxolanes from epichlorohydrin using supported heteropolyacids	Ind. Eng. Chem. Res. 52 (2013)6129−6137
23.	G. D. Yadav and B.A. Gawade, Novelties of combustion synthesized and functionalised solid superacid catalysts in selective isomerisation of styrene oxide to 2-phenyl acetaldehyde	Catal. Today 207 (2013)145-152.
23.	G.D. Yadav and G.P. Fernandes, Selective synthesis of natural benzaldehyde by hydrolysis of cinnamaldehyde using novel hydrotalcite catalyst	Catal. Today 207 (2013)162-169.
24.	G.D. Yadav and J.Y. Salunke, Selectivity engineering of solid base catalysed O-methylation of 2-naphthol with dimethyl carbonate to 2-methoxynaphthalene	Catal. Today 207 (2013)180-190.
25.	G.D. Yadav and R.K. Mewada, Novelties of azobenzene synthesis via selective hydrogenation of nitrobenzene over nano-fibrous Ag-OMS-2 – Mechanism and kinetics	Chem. Eng. J. 221 (2013) 500–511.
26.	G.D. Yadav and Y.S. Lawate, Hydrogenation of styrene oxide to 2-phenyl ethanol over polyurea microencapsulated mono- and bimetallic nanocatalysts: activity, selectivity, and kinetic modeling	Ind. Eng. Chem. Res. 52 (2013) 4027-4039.
27.	H. G. Manyar, B.Yang, H. Daly, H. Moor, S. McMonagle, Y. Tao, G. D. Yadav, A. Goguet, P. Hu, and C. Hardacre, Selective hydrogenation of α,β-unsaturated aldehydes, and ketones using novel manganese oxide and platinum supported on manganese oxide octahedral molecular sieves as catalysts	Chem Cat Chem 5 (2013) 506 – 512.
28.	M.R. Shah and G.D. Yadav, Prediction of sorption in polymers using quantum chemical calculations: Application to polymer membranes	J. Membrane Sci. 427(2013)108–117.
29.	M.R. Shah, R. Anantharaj, T. Banerjee and G.D. Yadav, Quaternary (liquid + liquid) equilibria for systems of imidazolium based ionic liquid + thiophene + pyridine + cyclohexane at 298.15 K: Experiments and quantum chemical predictions	J. Chem. Thermodyn. 62 (2013) 142–150.

PATENTS

1. **Hydrogen Production Method By Multi-Step Copper-Chlorine Thermochemical Cycle**
   US Patent No.: US 8968697; 2014
   Inventors: Yadav, G. D. ; Parhad Prakash Santoshrao; Nirukhe Ashwini Bhagavan; Parvatalu, Damaraju;; Bhardwaj Anil; Prabhu Bantwal Narayana; Thomas Nuzhath Joeman; Kale Dilip Madhusudan.

2. Envornmentally Benign Heterogeneous Catalyst For Fenton Process
   Indian Application No: 588/MUM/2014
   Inventors: Yadav G.D. ; Kunde Gajanan Bhimraoji
   Abstract: The present invention provides for oxidation heterogeneous catalysts comprising of alumina support doped with iron compound in its matrix processed in the form of pellets, powders and nodules for the treatment of organic contaminants present in waste water, a method for production, a method for recycling.

3. A Process For The Synthesis of Glycidol Directly From Glycerol
   Indian Application No: 2262/MUM/2014
   Inventors: Yadav G.D.; Chandan Payal Arvind
   Abstract: A process for producing glycerol carbonate and glycidol from glycerol. The said process comprising of reacting glycerol and dimethyl carbonate in a solvent by using a heterogeneous reusable solid base catalyst.

4. Titania Membrane Support And Combustion Method For Making The Same
   Indian Application No: 474/MUM/2013
   Inventors: Yadav G.D.; Surve Prasad Satish

5. PCT Application No: PCT/IN2013/000146
   Inventors: Yadav Ganapati Dadasaheb; Surve Prasad Satish

6. Bimetallic Heterogeneous Catalyst For Use In Eco-Friendly Solvents
   Indian Application No.: 2511/MUM/2014
   Inventors: Yadav G.D.; Patankar Saurabh Chandrakant.

7. One pot synthesis of Oxo-alcohols using heterogeneous catalyst
   Indian Application No.: 4107/MUM/2014
   Inventors: Yadav G.D.; Patankar Saurabh Chandrakant.

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA

Invited Lecture (IL), Keynote Address (KA), Plenary Lecture (P), Orations/Award Lecture (O), Chief Guest Addresses (CG) & Seminars (S)

1.	In Pursuit of Excellence In Education and Research: Trials, Tribulations and Triumphs	IL	Bharati Vidyapeeth University, Pune, June 30, 2014
2.	Engineering: A creative profession	S	Public lecture, D Y Patil College of Engineering, TKIET, Warananager, Kolhapur, June 14, 2014
3.	Science & Engineering of Pores, Particles & Interfaces in Pursuit of Clean and Green Processes	S	Seminar in honour of Dr P.K. Ghosh, Director, CSMCRI, Bhavnagar, May 29, 2014
4.	RUSA: Rashtriya Uchchatar Shiksha Abhiyan	S	GN Khalsa College, Mumbai, April 28, 2014

5.	Science and Engineering of Pores, Particles and Interfaces in Development Innovative Green Processes	PL	Advances in Chemical, Environmental and Materials Science and Engineering, Panjab University, Chandigarh, April 26, 2014
6.	Chemical Safety and Design of Safer Chemicals	CG	Seminar on Chemical Safety: Standards and Regulations on 25th April 2014, CII Mumbai
7.	Green Chemistry & Engineering and The Chemical Industry	CG	ICC Workshop on Green Chemistry and Engineering, BATU, Lonere, April 22, 2014
8.	Safer Plant Design	IL	RSC Workshop on Safety, ICT, Mumbai, Apr 7, 2014
9.	Science and Engineering of Pores, Particles and Interfaces in Development Green Chemical and Biological Processes	O	Professor M.N. Rao Memorial Lecture, IIT-Kharagpur, March 31, 2014
10.	Science and Engineering of Pores, Particles and Interfaces	S	Distinguished Chemical Engineering Seminar Series: The International Forum, Imperial College London, 12th March 2014
11.	Confluence of Chemical and Biological Sciences and Engineering for Sustainable Development	IL	TEQIP Workshop on Curriculum Development, IIT-Kanpur, Feb. 22, 2014
12.	Science & Engineering of Pores, Particles & Interfaces for Development of Clean and Green Processes	S	IIT-Kanpur, Department of Chemical Engineering, February 21, 2014
13.	Confluence of Chemical and Biological Sciences and Engineering for Sustainable Development	CG	National Science Day Lecture, Institute of Science, Mumbai, Feb. 28, 2014
14.	Sensory World		The World of Odour: Sensory Analysis and Consumer Perception, Odournet India Pvt Ltd., National Symposium, Goa: February 18, 2014
15.	The confluence of Chemical and Biological Sciences and Engineering for Sustainable Development.	CG	International conference on Green and Clean Technologies in Chemical Engineering and Sustainable Development Biotechnology, Siddaganga Institute of Technology, Tumkur, Feb. 14, 2014
16.	Water Recycle, Reuse and Purification	CG	Water Congress-2014, Patel College of Engineering and Technology, Anand, Feb. 7, 2014

17.	Science & Engineering of Pores, Particles & Interfaces for Development of Green Processes	PL	Catalysis Society of India Workshop, NEERI, Nagpur, February 4, 2014
18.	Development and Global Peace : Role of Education	IL	Celebration of Swami Vivekanad 150th Birth Anniversary Year, Jadavpur University Alumni Association, Mumbai, Ramakrishna Mission, Khar, Mumbai,Feb. 2, 2014
19.	Role of Smart and Novel Materials in Modern Society	CG	International Conference AAMSD-2014: Applications of Advanced Materials for Sustainable Development, Dr Ambedkar College and CSIR-NEERI Nagpur, January 17, 2014
20.	Advances In Green Processing	KA	International Conference on Green Processing Technologies for Poorly Soluble Drugs, ICT, Mumbai, January 9, 2014
21.	Smart Materials: Perspective and Prospects	CG	Guru Nanak College UGC workshop, January 3, 2014
22.			2013
23.	Innovation Culture in Rural Set up: How to start and Where to begin??	KA	YASHADA Pune Training Programme for Engineering Diploma Teachers, ICT, December 19,2014
24.	Significance of Chromatography in Quality Control and Value Addition	CG	SIES College Chromatography Laboratory Inaugural Programme, December 18, 2013
25.	The Beauty, Charm & Eloquence of Mathematics and Statistics In Engineering And Technology Development	CG	UGC workshop on Advances in Mathematics, I.C.T., December 10, 2013
26.	C1 Chemistry: Challenges for Development of Novel Catalysts	IL	International Workshop on CO2 Utilisation And Green Chemistry, I.C. T. November 27, 2013
27.	Green Chemistry & Engineering And The Chemical Industry	PL	Workshop on Green Technology in the Chemical Industry, CII Mumbai, November 27, 2013
28.	The application of Green Technologies For Sustainable water purification and reuse	PL	International Workshop On New Vistas In Water Treatment Technologies, I.C. T., Mumbai, November 26, 2013
29.	Confluence of Chemical and Biological Sciences and Engineering for Better Tomorrow	S	IIChE Hyderabad Regional Centre and Nuclear Fuel Complex, Hyderabad, November 15, 2013
30.	Selectivity Engineered Green Processes: Insight into Chemo- and Bio-Catalysis	IL	Asia Pacific Conference on Catalysis, APCAT-6, Taipei, Taiwan, October 14, 2013

31.	Bridging the Industry- Academia gap	KA	Educon-2013, International Seminar on Higher Education for Transformation, Istanbul, Sept 28, 2013
32.	The Excitement of Career in Science: The Beauty, Charm & Eloquence of Chemical Sciences	IL	INSPIRE Programme, Elphistone College, Mumbai, Sept 25, 2013
33.	Nurturing & Sustaining Culture of Innovation: From Pores, Particles, Interfaces to Processes	CG	Innovation Meet 2013, TEQIP Seminar, ICT, Mumbai, Sept 25, 2013
34.	Fake Vs Real World: How To Be Safe and Secure Using Sensor Technology	CG	Workshop on Aspects of Chemical Security: International and National Ramifications, Multidisciplinary School of Economic Intelligence (MDSEI), National Academy for Customs, Excise and Narcotics (NACEN) , Mumbai, Sept 23, 2013
35.	Science & Engineering of Pores, Particles & Interfaces for development of Clean & Green Processes	P	IV Russian-Indian Symposium on Catalysis & Environmental Engineering, St. Petersburg, Russia, Sept. 15, 2013
36.	ICT and Fraunhofer Model for Research and Innovation Park	CG	MHRD Sponsored Seminar; Fraunhofer Model, Sept 11, 2013
37.	Green Materials and Energy Sources for Green Computing and Sustainability	CG	International Conference on Green Computing and Technology, SIES Graduate School of Technology, Nerul, Navi Mumbai, Sept 5, 2013
38.	Valorisation of Biomass through Novel Catalytic Processes	IL	2013 UOP TCO Symposium: Building for Future, August 19, 2013
39.	Opportune Times for Green Chemical Industry: Sustainability and New Paradigms	CG	Green Technologies In Unit Operations, National Seminar, MS University Baroda & GPCB, August 16, 2013
40.	Science & Engineering of Pores, Particles & Interfaces for Development of Clean & Green Processes	S	Queen's University, Belfast: August 9, 2013
41.	Science & Engineering of Pores, Particles & Interfaces for development of Clean & Green Processes	S	University of Bradford, August 8, 2013
42.	Science & engineering of pores, particles and interfaces in development of green processes	IL	International Conference on Green and Sustainable Chemistry- 6, University of Nottingham, UK, August 6, 2013
43.	Green Chemistry and Engineering	IL	Indian Chemical Council, Mumbai, July 30, 2013
44.	Science, Philosophy and Society	S	Bombay Philosophical Society, Mumbai, July 26, 2013

45.	Challenges and Opportunities for Membrane Sciences and Engineering for Water Treatment	CG	PSG College of Technology, Coimbatore, July 26, 2013
46.	Science & Engineering of Pores, Particles & Interfaces for Development of Smart and Green Processes	O	Canadian Catalysis Foundation : Cross Canada Lecture Tour 2013 Laval Univ, Quebec City, July 12, 2013
47.	Science & Engineering of Pores, Particles & Interfaces for Development of Smart and Green Processes	O	Canadian Catalysis Foundation : Cross Canada Lecture Tour 2013 U of Waterloo: July 10, 2013
48.	Science & Engineering of Pores, Particles & Interfaces for Development of Smart and Green Processes	O	Canadian Catalysis Foundation : Cross Canada Lecture Tour 2013 U of Toronto : July 9, 2013
49.	Nurturing Excellence with International Collaborations	IL	Opportunities for Indo-US collaboration: Collaboration to Transformation, Northeastern University, Boston, July 8, 2013
50.	Nurturing Excellence with International Collaborations	IL	Opportunities for Indo-US collaboration: Collaboration to Transformation, BMM 2013 Providence, RI, July 6, 2013, Brihan Maharastra Marathi Mandal (BMM 2013), Rhode Island, USA, July 6, 2013.
51.	Meeting Challenges of Sustainability through Innovative Chemical and Biological Sciences and Engineering	O	6th M.P. Chary Memorial Lecture IIChE, Hyderabad Regional Centre; June 22, 2013
52.	Science & Engineering of Pores, Particles and Interfaces in Development of Green Processes	S	State University of New York, Buffalo, USA; June 12, 2013
53.	Science & Engineering of Pores, Particles and Interfaces in Development of Green Processes	S	Michigan State University, East Lansing, MI, June 11, 2013
54.	Manipulating Pores, Particles & Interfaces in Search of Better Processes	S	Highlights in Catalytic & Membrane Studies in the Environmental Field, Oulu University, June 4, 2013 University of Oulu, Finland, June 4, 2013
55.	Science & Engineering of Pores, Particles and Interfaces in Development of Green Processes	O	Canadian Catalysis Society, Cross-Canada Tour Lecture Award: University of Saskatchewan, Department of Chemical Engineering, Saskatchewan, May, 16, 2013
56.	Science & Engineering of Pores, Particles and Interfaces in Development of Green Processes	O	Canadian Catalysis Society, Cross-Canada Tour Lecture Award: University of Alberta, Department of Chemical & Materials Engineering, Edmonton, May, 15, 2013

57.	Science & Engineering of Pores, Particles and Interfaces in Development of Green Processes	O	Canadian Catalysis Society, Cross-Canada Tour Lecture Award: University of British Columbia, Department of Chemical & Biological Engineering, Vancouver, May, 13, 2013
58.	Dissolution Science And Engineering	CG	Pharmaceutical Dissolution Technology: A Review, Pre-Conference Workshop, DISSO 2013: First Annual Symposium and Conference, Society for Pharmaceutical Dissolution Science, ICT, May 2, 2013
59.	Innovation in 21st Century: Clinical Pharmacology in current and Future environment"	G	Sixth International Conference, South Asian Chapter of American College of Clinical Pharmacology & Department of Clinical Pharmacology, Seth G S Medical College and KEM Hospital, Parel, Mumbai, April 21, 2013
60.	Fueling the Indian Economic Engine by Retooling Indian Higher & Technical Education	PL	All India Higher Education Summit 2013 , AISECT University, Bhopal; April 20, 2013
61.	Challenges and Opportunities of Achieving and Sustaining Excellence through Autonomy	IL	Workshop on Autonomy, University of Mumbai, Kalina Campus, April 16, 2013
62.	Nurturing & Sustaining Excellence in Collaboration with Industry: ICT's Saga of Eight Decades of Successful Collaboration	IL	AICTE-MHRD-CII International Workshop on Industry-Academia Collaboration for Greater National Productivity, The Lalit, New Delhi, April 15, 2013
63.	Membrane Science and Engineering	CG	National Seminar on 'Advances in Membrane Processes and Materials (AMPM-13), Indian Membrane Society, M.S. University Baroda, April 6, 2013
64.	The Limitless Scope and Excitement of Chemical Engineering through Confluence with Biological, Material and Energy Sciences and Engineering	CG	International Conference on Advances in Chemical Engineering (ICACE-2013), NIT, Raipur, April 5, 2013
65.	Green Chemistry and Engineering In Polymer Synthesis, Applications And Recycle		Workshop on Polymer Physics and Processing, ICT, Mumbai, April 3, 2013

CONFERENCE PRESENTATIONS

1. Aditya Prajapati, Rahul P. Kumbhar, Ganapati D. Yadav, Solvent-less synthesis of 14-phenyl-14H-dibenzo[a,j]xanthene using supported heteropolyacid, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.

2. Kalidas Rasal, Ganapati D. Yadav, Riitta Keiski, Rauli Koskinen, Efficient synthesis of cyclic carbonate from carbon dioxide using lithia promoted magnesia developed by combustion synthesis method, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
3. Godfree P Fernandes, Ganpati D. Yadav, Glycerolysis of urea: Novel catalytic material using environmental friendly synthetic route for glycerol carbonate from glycerol and urea, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
4. Gunjan P Deshmukh, G.D. Yadav, Facile synthesis of DICAMBA methyl ester over heterogeneous base catalyst, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
5. Ashish D. Shejale, Ganapati D. Yadav, ,Rearrangement of longifolene to isolongifolene and 7-isopropyl-1,1-dimethyl tetralin using novel solid acids, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
6. Abhilash Sukhadeve; Ganapati D. Yadav, Chemoselective synthesis of 3-alkyl indoles through ring opening of epoxides catalyzed by novel sulfated tin oxide, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
7. Akhil V. Nakhate, Suresh M. Doke, Ganapati D. Yadav, Template assisted synthesis of nanocrystalline sulfated titania catalysts for the regioselective ring opening reaction of epichlorohydrin with aniline, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
8. Anil B.Gawade, Ganapati D. Yadav ,Catalytic self condensation of 5-hydroxymethyl-2- furfural (HMF) into 5, 5′ (oxy-bis (methylene)) bis-2-furfural (OBMF) over nanocrystalline cesium modified dodecatungstophosphoric acid supported on K-10, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
9. Anita . G. Sharma, Ganapati.D.Yadav, Selective hydrogenation of succinic acid to produce γ-butyrolactone using monometallic and bimetallic nanocatalysts, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
10. Bapu A. Gawade, Ganapati D. Yadav, Solid-Liquid Phase Transfer Catalysis: Selectivity engineering in synthesis of Diallyl diallyl ether from allyl alcohol and allyl bromide, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
11. Jayaram Molleti, Ganapati D. Yadav, Selectivity engineering in hydroalkoxylation of phenol by ethylene carbonate using calcined hydrotalcite, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
12. Jeetendra Y. Salunke, Ganpati D. Yadav, Ajay K. Dalai, A novel Mg-Zr mixed oxide on HMS as an efficient catalyst for the Claisen-Schmidt condensation of 2-acetonaphthone with benzaldehyde, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.

13. Mandar G Kulkarni, Ganapati D. Yadav, Novelties of microwave irradiated solid-liquid phase transfer catalyzed synthesis of 2-(2, 4- dichlorophenoxy) ethanol from potassium 2, 4-dichlorophenolate and ethylene chlorohydrins, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
14. Manishkumar S. Tiwari, Ganapati D. Yadav, Friedel-Crafts Benzoylation of Veratrole with Benzoic anhydride using Solid Acid Catalyst 20% Cs2.5H0.5PW12O40/K-10, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
15. Pooja Tambe, Ganapati D. Yadav, Riitta keiski, Selective O-methylation of trihydroxy benzene with reusable and novel calcinated hydrotalcite, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
16. Sandip V. Pawar, Ganapati D. Yadav, Biocatalytic approach for synthesis of 3-ethyl-1, 3-oxazolidin-2-one using immobilized lipase, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
17. Saravanan Devendran, Ganapati D. Yadav, Vigna radiata (Mung) catalyzed asymmetric reduction of prochiral aromatic ketones, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
18. Shivaji L.Bhanawase, Ganapati D. Yadav, Novel heterogeneous method for an efficient synthesis of guaifenes in over calcined hydrotalcite, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
19. Somnath D. Shinde, Ganapati D. Yadav, Optimization of microwave irradiated lipase catalyzed synthesis of geraniol cinnamate using Taguchi orthogonal array design, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
20. Suraj O. Katole, Ganapati D. Yadav, Synthesis of bioadditives through esterification of glycerol with acetic acid over reusable 20%Cs-DTP-K10 solid acid catalyst, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
21. Suresh M. Doke, G.D. Yadav, C. Anand Babu, Micellar enhanced microfiltration of Cr (VI) from its aqueous solutions using nanocrystalline titania membrane, CHEMCON-2013, 66th Annual Chemical Engineering Conference and Exhibition, I.C.T. Mumbai, December 27-30, 2013.
22. Satish Kabra, G.D. Yadav, International Conference on Advances in Chemical Engineering, NIT, Rourkela, December 9-12, 2013.
23. G.D. Yadav, Suresh M. Doke, C. Anand Babu, Novel method for synthesis of titania membranes and its application for the decolorization of waste water, APCAT-6, Taipei, Taiwan,
24. G.D. Yadav, Suraj O. Katole, Synthesis of 2-methyl-2-naphthyl-1,3-dioxalene by acetalization of ethylene glycol with methyl 2-napthyl ketone over clay supported heteropolyacid, APCAT-6, Taipei, Taiwan,
25. AP González, C. Gadipelly, R.Ibañez, V. K. Rathod, K. V. Marathe, G. D. Yadav, I.Ortiz, Review of the technologies for recovery of apis/drugs, water treatment and reuse in pharmaceutical industry. Poster presentation , XXXIV Reunión Bienal de la Real Sociedad Española de Química (34th Biannual meeting of The Royal Spanish Society of Chemistry)

26. Integrated process for the simultaneous removal of arsenic and fluoride from groundwaters. Poster presentation, 9th World Congress of Chemical Engineering, Seou, S. Korea, 18-23 August 2013.
27. K. Chavan; A. Dominguez-Ramos; G.D. Yadav, K. V. Marathe, A. Irabien , Adsorption process for arsenic removal from natural waters: A sustainability assessment". Oral presentation, 9th World Congress of Chemical Engineering, Seou, S. Korea, 18-23 August 2013.
28. Paula Saavalainen, Karan Chavan, Minna Pirilä, Piia Häyrynen, Antonio Dominguez-Ramos, Kumudini V. Marathe, Ganapati D. Yadav, Angel Irabien, Eva Pongrácz and Riitta L. Keiski, Sustainability assessment of arsenic removal from natural waters by adsorption, Water Research, University of Oulu, Finland, August 15, 2013
29. Chandrakanth Gadipelly, Minna Pirilä, Virendra K. Rathod, Kumudini V. Marathe, Anna Valtanen, Mika Huuhtanen, Ganapati D. Yadav, Riitta L.. Keiski, Photo-catalytic Degradation of Amoxicillin in Aqueous Streams, Water Research, University of Oulu, Finland, August 15, 2013
30. Sachin V. Jadhav, Piia Hayrynen, Riitta L. Keiski, Virendra K. Rathod, Ganapati D. Yadav, Membrane treatment of synthetic wastewaters from mining industries, Water Research, University of Oulu, Finland, August 15, 2013.

EVENT ORGANIZED

1. Chairman, National Organising Committee, CHEMCON-2013, Indian Institute of Chemical Engineers, ICT Mumbai, Dec. 27-30, 2013.

INDUSTRIAL COUNSULTANCY

2012-14	ONGC Energy Centre , New Delhi	Production of hydrogen
2013-14	McKinsey & Company	Consultation on restructuring of ONGC R and D institutes
2014-15	Vinati Organics Ltd., Lote	Process intensification and conversion of waste into value added products
2014-15	Kemtech Solutions Pvt Ltd, Ankleshwar	Process optimization and equipment design for the manufacture of manganese sulphate monohydrate

TEN SELECTED PUBLICATIONS

1. G.D. Yadav and J.J. Nair, Sulfated zirconia and its modified versions as promising catalysts for industrial processes, Micro. Meso. Mater. 33 (1-3): 1-48 (1999). (cited over 650 times)
2. G. D. Yadav and N. Kirthivasan, Single-pot synthesis of methyl tert-butyl ether from tert-butyl alcohol and methanol - dodecatungstophosphoric acid supported on clay as an efficient catalyst, Chem. Comm. (2): 203-204 (1995)
3. G. D. Yadav and J. J. Nair, Novelties of eclectically engineered sulfated zirconia and carbon molecular sieve catalysts in cyclisation of citronellal to isopulegol, Chem. Comm. 1998, 2369–2370.

4. G.D. Yadav and S.V.Lande, Liquid -liquid -liquid phase transfer catalysis: a novel and green concept for selective reduction of substituted nitroaromatics, Adv. Synth. Catal. 347 (9), 1235-1241 (2005).
5. G.D. Yadav and A.A. Pujari, Friedel-Crafts acylation using sulfated zirconia catalyst - Acylation of benzene with 4- chlorobenzoyl chloride over sulfated zirconia as catalyst, Green Chem. 1, 69-74 (1999)
6. G. D. Yadav and J. J. Nair, Isomerisation of citronellal to isopulegol using eclectically engineered sufated zirconia -carbon molecular sieve composite catalysts, UDCaT-2, Langmuir, 16, 4072-4079 (2000)
7. G. D. Yadav and A. D. Murkute, A novel efficient mesoporous solid acid catalyst udcat- 4: dehydration of isopropanol and alkylation of mesitylene, Langmuir, 20, 11607-11619 (2004).
8. G. D. Yadav , A. A. Pujari and A.V Joshi, Alkylation of p-cresol with methyl-tert-butyl ether (MTBE) over a novel solid acid catalyst UDCaT-1, Green Chem. 1, 269-274(1999).
9. G. D. Yadav and A. D. Murkute, Preparation of novel catalyst UDCaT-5 : Enhancement in activity of acid treated zirocnia- effect of treatment with chlorosulfonic acid vis-à-vis sulfuric acid, J. Catal. 224, 218-223 (2004).
10. G.D. Yadav, T.S. Thorat and P.S. Kumbhar, Inversion of the relative reactivities and selectivities of benzyl-chloride and benzyl alcohol in Friedel-Crafts alkylation with toluene using different solid acid catalysts - an adsorption related phenomenon, Tetrahedron Lett. 34 (3): 529-532 (1993).

RESEARCH PRODUCTIVITY STATISTICS (JUNE 2014)

Peer reviewed Papers : 295	h index : 41
Co-authors : 331	i10 index: 150
Patents (Indian & PCT) : 68	Cumulative impact factor : 816.638
Books/Monographs : 3	Citations in papers (since 1997) : 6341
Book Chapters : 15	Citation Classic Paper (over 630 citations) : 1
Conference Papers : 265	No. of papers with citations over 100 : 8
Invited Seminars/Orations: 444	No. of papers with citations over 50 : 34
Ph Ds Awarded as Sole Guide : 76	Citations in Books/Monographs : 28
M. Techs granted as Sole Guide : 80	Citations in Patents : 117
Post-Doc F supervised : 27	Citations in Manufacturers' Brochures : 3
Industrial Consultations : 59	Average citations per paper : 21.8
Sponsored Projects : 63	Average citations per year (since 1997) : 142.65
Current Ph D students : 24	No. of papers with impact factor greater than 3 : 223
Current Masters Students : 11	Number of peer reviewed international journals where work is published : 51
Current Post-Docs : 4	Number of Indian Journals : 4
No. of international journals as reviewer : 37	Fellowships/Awards: FNA, FTWAS, FRSC, FNASc, FIChemE, FICS, FMASc, FIIChE : Several
Member of editorial boards : 8	No. of awards and recognitions : Several

RESEARCH GROUP

PROFESSOR G.D.YADAV RESEARCH GROUP

Left to Right: (First Row) Kalpesh Bhavsar, Ajinkya Waghmare, Suresh Doke, Shivaji Bhanawase, Jyoti Sontakke, Ashwini Nirukhe, Professor G. D. Yadav, Shivani Vedula, Pooja Tambe, Akhilesh Yadav, Bapu Gawade, Suraj Katole **(Second Row)** Kalidas Rasal, Godfree Fernandes, Akhil Nakhate, Moreshwar Hude, Sonal Ayakar, Pravin Patil, Prakash Parhad, Deepali Magadum, Jeetendra Salunkhe, Abhilash Sukhdeve, Jayaram Molletti, Vikas Patil **(Third Row)** Dhiraj Katole, Gajanan Kunde, Saurabh Patankar, Rahul Kumbhar, Manish Tiwari, Mandar Kulkarni, Vinod Shirke

Professor G.D. Yadav being felicitated and receiving the Dr B.P. Godrej Life Time Achievement Award at the hands of Hon'ble Shri Pranab Mukherjee, President of India during CHEMCON-2013 at ICT Mumbai on 27th December. 2013

Professor G.D. Yadav being felicitated at the hands of Shri Nikhil Meswani, Executive Director, Reliance Industries Ltd. with D.M. Trivedi Life Time Achievement Award of the Indian Chemical Council for 2013

Professor G.D. Yadav addressing the PSN College of Engineering, TN after receving the Best Researcher Award for 2012

Group photo at PSN College of Engineering, TN : Professor H. Devaraj, Vice Chairman, UGC was the Chief Guest

PROCEEDINGS OF THE THIRD CONVOCATION

Professor Dr. Ganapati D. Yadav

Bharat Ratna Professor C.N. R. Rao, The Chief Guest, Padma VibhushanDr R.A. Mashelkar, the Chancellor, Padma Vibhushan Professor M.M. Sharma, Padma Bhushan Professor J.B. Joshi, Dean (Academic Programmes) Prof R. P. Vavia; Registrar Prof S.R. Shukla;MrsIndumati Rao, Mrs Joshi, Members of Board of Management, Academic Council, Former Directors, Current and past Presidents of the UDCT Alumni Association (UAA), fellow colleagues, students, alumni, support staff, visiting faculty, invited guests, members of print and electronic media, ladies and gentlemen.

With immense pleasure, gratitude and boundlessaffection, I welcome you all for the third Convocation of the ICT. We had gathered here about a year ago on 15th March 2013, on these open grounds to demonstrate our openness to receive and assimilate new ideas and thoughts like the Rigvedic:

आ नो भद्राः क्रतवो यन्तु विश्वतः

Let noble thoughts (new knowledge) come to us from all directions.

दशदिशातून आम्हास (नव्या ज्ञानाचे) सुविचार प्राप्त होवोत

While walking through today, you must have seen the new displays in the main hall about the philosophy of an innovative organization. That is your ICT, the erstwhile UDCT for many of you. Today a unique day where three Fellows of the Royal Society, and also PadmaVibhushans, are sharing the dais. One among them is Bharat Ratna. We are indeed fortunate that Professor C.N. Rao has accepted our D.Sc. (honoris causa) after being bestowed the country's highest honour. And to add to the joy, we are honoring our own Professor M.M. Sharmawith that degree. We derive pleasure in their achievements as an individualsand particularly their love and affection for the ICT. Ladies and gentlemen, what ICT stands for in the comity of eliteinstitutes of higher learning, how different she is and what we should do individually and collectively. Listen carefully. The Rich.The Poor. The Marginal.The Privileged.The Underprivileged. The Urban.The Rural.They studied here. They made it Big. Congratulations Dear students you are graduating today and will lead a new path. Let that path be bright and as inspirational to others. Make that path a new path. Do not trace somebody else's footsteps. You need to create your own. If opportunity does not know at your door, create a door. Do not ask how to do. Do It. Underestimate Not, Who you could be! Look at

the countless ICTians, should Think Big. Dream Big. Do not dismiss your dreams. To be without dreams is to be without hope;to be without hope is to be without purpose. Learn from one of the most successful businessmen of the world who is here to address you. Learn from his humility and simplicity. Learn how he has created wealth for the nation for the benefit of all Indians. The C.M. Shri Prithviraj Chavan and Shri Rajesh Tope had witnessed the vibrancy and uniqueness of ICT then and realized that ICT is different from rest of the state owned institutes and universities, and also it stands apart from the national branded institutes; they did not say it openly but realized that it needs to be nurtured and treated differently. They ensured that it ought to be supported innovatively. So comes April 20, 2012 and Hon'ble Shri Tope makes an announcement in the State Assembly that the Government grants elite status and centre of Excellence to ICT on par with IITs, IISc, and IISERs with service conditions on par with them. This is the greatest milestone so far in the checkered history for a University Department established on October 1, 1933 to earn Deemed University status on 12th September, 2008 by the MHRD and UGC followed by the Elite Status. Since we met last year for the Second Convocation, several marvelous things have happened which can make one proud. Eighty one years of glorious past and incredible achievements! Several new dimensions have been added and the ICT is now recognized for its excellent education, training and research in chemical engineering, chemical technology, applied chemistry, pharmacy, biotechnology and bio-processing. It has been cited as a role model for industry-institute-government relationship. It is an incredible institute, a fertile breeding ground for some of India's most gifted minds. Many of our alumni have distinguished themselves in all walks of life, be it industry, academia, government or public service and brought laurels to the Alma mater. Some of the rare international honours, Padma awards, civic felicitations and fellowships of prestigious academies from all over the globe have been bestowed upon them. Over 500 first generation entrepreneurs, several of them hailing from poor families or without any family business, are our alumni. Many are role models in academia, industry or bureaucracy.

On a land of 16 acres, there are 700 oddfull time Ph D students, 450 Masters and 1300 UG students, which is a sort of record for a monolithic institute with only 80faculty members in place and we published 403 research papers last year. We care for our students, with an impressive number of 340UG scholarships ranging from Rs 10,000 to Rs 1,00,,000 per student. No person is allowed to leave education for want of money. That is our culture. Our research standing and citation record is also most impressive. The number of peer-reviewed quality research publications and citations emanating from the ICT is also the highest in the country. There are over 50,000 citations for publications in high impact factor journals during last 10 years.The Scopus data on number of research papers for last 5 years with corresponding scientists/faculty reveal a very interesting trend shows that ICT is ahead of all institutes in India in terms of h index per faculty and citations per faculty member.

During last three years, there has been a sea change in terms of creation of infra-structure. No virtual world can be created without materials produced by niche and eco-friendly technologies. Tomorrow's society will face innumerable challenges with reference to material and energyand we must accept challenges. Of these 14 grand engineering challenges of the 21st Century, a dozen are directly or indirectly connected to chemical and allied industries. Chemical Sciences and Engineering has changed the world. Thus, the relevance of our courses and enhancing their scope is evident. There is a confluence of chemical sciences with biological sciences and thus all chemicals can be looked at as molecules. No biotechnological process can be materialized without the use of chemicals. The technologies related to producing advanced materials, clean energy generation and storage, medicines, high-end drugs, neutraceuticals, food products, fertilizers, agrochemicals, polymers, surface coating materials, laser dyes, colorants, pigments, adhesives, textiles, fibres, oleochemicals, surfactants, lubricants, water treatment and

purification chemicals, air pollution abatement, bio-processing, downstream processing and a myriad of related issues involve high degree of science and engineering. Addressing these challenges requires a multifaceted effort that traverses the fields of chemistry, engineering, biotechnology, information technology and nanotechnology, engineering mathematics, environmental engineering.

One of the fascinating aspect o ICT's recognition as the elite institute is the award of 3 Bill and Melinda Gates Foundation awards. This is again unique. Indeed, the ICT has earned maximum number of collaborative projects with DAE establishments and the DAE acknowledges ICT's contribution to solving real problems. The ICT's innovative work in the area of biofuels and downstream processing, leading to commercialization, has been highly appreciated by the Department of Biotechnology (DBT), to establish the DBT-ICT Centre for Energy Biosciences, with induction of several faculties in bio area and Ph.D. fellowships.

There is no need for me to reiterate the past performance of ICT but would certainly like to give a glimpse of some the plans which we have made. Thus frontiers of research where we have now focused are: Biotechnology & biomedicine, Nanotechnology and materials science, Energy science and engineering, Process systems engineering, Green chemistry and engineering, Environmental protection and Hazardous waste management, and Product Engineering. The ICT should be allowed to grow physically and through the digital world. We need to have additional campus in the vicinity of Mumbai, of about 100-200 acres so that our engineering and technology base is augmented, with faculty strength of 400 and a student strength of 4000 in next two decades. Several Centres of Excellence will have to be created such as Entrepreneurship resource centre, Centre for Undergraduate Research In Engineering (CURIE), Centre for Process Intensification and Innovation, Centre for Product Engineering, Centre for Drug Discovery Engineering, Centre for Infectious Disease Control and Prevention, Technology Incubation Centre. We do not have go elsewhere for inspiration; the trinity on the dais is our source of inspiration. We are indeed blessed by their presence. I must thank Professor Rao for getting permanently associated with us. Sir, we thank you most profusely. Your blessings and advice will take us far ahead.

Innovation will be at administrative, academic, research, financial and outreach activities. ICT shall perennially strive to be a vibrant institute with continuously evolving curricula to brighten the future of the chemical, biological, materials and energy industries of the nation, and rank amongst the very best in the world through active participation and scholarship of our faculty, students and alumni. ICT shall be creators of sprouting knowledge and design cutting-edge technologies that will have the greatest impact on society and benefit mankind at large and be a truly Innovative University with its own brand and aspirations. We will create new knowledge to build the future of the chemical, biological, materials & energy industries in service of society at largeSo ladies and gentlemen, let us plan for a satellite campus and build an INNOVATION UNIVERSITY. Let us fulfil the dream of our forefathers and stake holders.

We need resources for such a massive expansion on par with other national institutes. A Foundation of Rs1000 crores should be created. We should not just ask for donation. They are needed but not essential to excel. Every drop counts. It is not the magnitude but attitude and though of giving that makes an ocean. We would like to a Model Innovation University where ideas flow in with people and even without people through ambiance. Many cherished dreams will then be realized. Conversion of concepts in to commercial conglomeration will be possible.

Like I said on earlier occasion, 'Denaryane detach jawe, ghenaryaneghetachjawe…' Please donate in abundance –firstly your love and affection, advice and of course, those who can funds to make ICT a world class institute.

Thank you so much for your patient hearing and encouragement.

PROCEEDINGS OF THE THIRD CONVOCATION

Hon'ble Chancellor,
Padma Vibhushan, Dr. R. A. Mashelkar

All Guru, Guide, friend & Philosopher Professor CNR Rao, Mrs. Indumati Rao, our guest of honour and again our great guru, guide and friend and philosopher Professor Sharma, Professor J. B. Joshi, Distinguished Vice-chancellor, the members and the family of the ICT both, the dais and infront of me the proud graduates of 2013 and also there equally proud parents, ladies and gentlemen...

Let me extend a very warm welcome to you all on this occasion of this very very special Third Convocation- a Unique Convocation. This will turn out to be one the most memorable convocation in the history of this institution. Before this programe, when we were walking with Professor Sharma, he said it's almost theoretical this occasion... it is such a dream- a dream that has come true... we all will meet today to two great icons- two living legends- two great gurus. Infact professor Sharma is my guru and he calls professor CNR Rao his Guru. So in turn what we are talking about it not just Guruvarya but Mahaguruvarya. ICT in future, I'm sure will give Honoris Cuasa to others too but I am sure that this doctorate will be the first ever and will remain 'the best' honorary doctorate ever; in the history of any institution not just ICT... I dare to say that. So Mr.Vice Chancellor you have created a challenge, a problem for your future Vice Chancellors, your successors because they will find it hard to find such 'two giants' for the award and the honorary doctorate. It is good to leave such a challenge behind.

Let me say a few words which are very personal with respect to both these giants as I mentioned... I remember, 1966 almost 50 years ago, I did my chemical engineering from here and as usual of course everybody applied abroad and I had four fellowships both from USA and Canada and it was very conventional to go abroad and do these PhDs and I remember 30 year old or young Professor Sharma coming from Cambridge, teaching us Chemical engineering Thermodynamics... He would come to the class with his hands in his pocket. He was absolutely extra ordinary and I'll tell you as soon as I saw him, I said to me, 'This is my guru and I will not go abroad... where will I find such a guru better

than him even abroad... And it was my privilege to work with him, under him for my PhD. He did a lot for me. Starting from my PhD... He taught me the ethics of science. I remember our first paper was 'Sharma & Mashelkar.' The second paper was 'Mashelkar & Sharma' and the Third paper was 'Mashelkar' alone. Now this was very unusual because when I asked him, "sir, you should put your name on this." He said, ''No, it's all your idea...'' and you know, that paper turned out to be on double columns a classic letter- one of the most cited papers but he didn't put his name... you know that ethic is absolutely incredible and subsequently over the years, he has been my guide, guru, friend and philosopher. His deep commitment to this institution is absolutely unique. This is not widely known but I can tell you that if he wanted, he could have been the Director general of CSR, he could have been the Secretary of the Department of science and technology, he could be Chairman of the University Grants Commission but he did nothing for that. He decided to remain a Professor for this institute. He is such an incredible individual. A unique individual... they don't make them anymore like this...

And there of course is his guru, super guru, mahaguru as we call him Professor CNR Rao. You know, I get lucky twice- I met Professor Sharma & then Professor CNR Rao. I remember my joining National Chemical Laboratory at a young age of 33 on a princely salary of Rs. 2,600 at a very very difficult time. I just left England and came back and I remember the advice of Professor Sharma and his guidance. And I will do it again. Now it was almost forty years ago that I met Professor CNR Rao. He was the Chairman of our research council and I remember that at an early age I'll let you know a secret by the way- the difference between our age is such that I can call him my elder brother. But I looked at him like my father. I had lost my father very early. And he has been that for me all my life by that way. I remember as a young man he spotted me. I was in my early forties and he made me a member of the Science Advisory Committee to the Prime minister and I loved it so much; not by just being a member of that committee but its for the way he conducted those meetings. He dared to put most complex issues in the most simple way. He sets standards for me which were absolutely incredible. To me, he is not just an individual, he is an institution, he is a phenomenon, he is a living legend in terms of science. He lives science, he loves science, he lives for science. As Professor Yadav rightly said, when you look at the phenomenal life and phenomenal work, you can't just imagine that a single individual has been able to achieve this in a single life time. It looks impossible. And we all are proud... I still remember when I got the news, me and my wife Vaishali we cried with joy when we heard that he is going to receive **Bharat Ratna**. You know, after Professor C. V. Raman, after fifty years he is the 2nd scientist ever to receive this particular honour. Sir, we are very grateful to you that you accepted this honorary doctorate from a university which has just taken a first few steps in a long journey. You have received 63 honorary doctorates from all around the world, from the great universities some are the greatest in the world. We are very very grateful to you, sir for accepting this honour from us.

And as I said, today's convocation is a very special because we are honouring another great alumni, another great leader of not this Institute of Chemical Technology, but one in the field of the Chemical Engineering our very own Professor J. B. Joshi. J. B., as we call him very friendly. You heard that the president is honouring him with '**Padmabhushan**.' I know J. B. for a very long long time not only just because of pioneering contributions which are now accepted globally in multiphase reactors but many of us will not realize the value of the kind of commitment and leadership that he provided to ICT. When ICT did its journey from a mere department of chemical technology of the university; to institute

of chemical technology, became an autonomous institution and then became a university in that journey. This very important phase when we got that particular autonomy and we started working towards the University. That was the most difficult, most challenging time of our life and the kind of exemplary leadership that J.B. provided at that time was incredible. He will set his ego aside and meet the lowest in the administration till the work was done basically. And I can tell you straight away that if J. B. was not there we will not be where we are today. So J. B., our grateful thanks to you and we are so delighted with this national honour that you have.

I would like to close but normally the chancellor is supposed to give some exhortation, some advise to the young people who are graduating. First of all, I would like to congratulate you all for what you have achieved. You are going out now and it is you who are going to create the new India... India of our dreams. People use to call this country a third world country. Now people are looking at us as potentially the third most powerful country in the world. And you are going to realize that potential. It is your responsibility to reach that potential. Now all that I would suggest to do is that just look at life and work of those great people who are sitting here and there couple of lessons I want to draw for you which may serve you well in your life as you move forward. You know, today's youth like instant coffee, want instant success. I am sorry that is not done. Professor CNR Rao even at the age of eighty, he works like an eighteen year old. He has the energy of an eighteen year old. He is in the lab early in the morning and through all his life what he has done is working 24 x 7 a week, day after day, week after week, month after month, year after year till today and he will continue to do so. I think that is the big lesson for you. There is no substitute for hard work. There is no instant success like instant coffee i.e. one. The second is, the standard he has set for himself. They are not local, not national, they are global, being better than the best in the world. And I remember his advice to me. You know, wherever I got an honour, I used to feel very happy. I used to go to him and tell him about it. And he would say, 'not bad'. One day I got very frustrated. I said, ''Sir what I have to do if I have to impress you.'' and I remember his answer and that is something that I want to convey to the young students. He said, (he calls me Ramesh very fondly) "Ramesh, you are climbing on the ladder of excellence and that ladder has no limit. He taught me that there is no limit to human imagination, no limit in human achievement, accepting the limits that you put on yourself," and here is a live example who had no limits to what he could achieve. His life and work should be the inspiration just as Professor Sharma and Professor J. B. Joshi. I think you have unique unique day, you are a very very lucky batch by that way you are a very very lucky batch this graduating class Mr. Vice-chancellor of 2013 is the luckiest ever, I would say, to have even witnessed it because as Professor Sharma said, it looks almost theoretical, it almost looks like a dream. So live that dream as you sought to move forward and this dream should not just be for you for the institute our institute- Institute of chemical technology- we should continue to climb on this ladder of the excellence till we make sure that we are not just one of the bests but very best and having achieved that, again we keep on climbing... so that we maintain our position. I think that this is a journey that we have to take as a University. We are just a 3 year old University. I won't be there when we will be celebrating our centenary. But I think, this dream will come true by then.

Thank you, very much.

PROCEEDINGS OF THE THIRD CONVOCATION

The Chief Guest,
Bharatratna, Professor C.N.R. Rao

Mr. Chancellor Dr. Mashelkar, Professor M M Sharma, Vice Chancellor Dr Yadav, other distinguished colleagues on the dais, visiting faculty, graduating class, ladies and gentlemen...

I am very glad to be here this afternoon on this wonderful occasion. I Am also grateful to receive this honorary doctorate from ICT. You may ask; what is so great about it. You see, I have received lots of honorary doctorates. But this is the first honorary doctorate I got from an institution where Chemistry is in the title. That is the speciality. I am a chemist. I have been doing the research in the chemistry for the last 62 years, out of which for 55 years, I have been a professor. Hundreds of people have worked with me. Chemistry is the part of my entire life. That's why there is a great pleasure to receive this honorary doctorate.

Let me tell you about chemistry. Chemistry was a very old and dull subject. In fact it is still a very dull subject because it starts at the school and it is taught in the university as well. Unfortunately, the real chemistry is not that. Real chemistry today since last few years is so different that the subject itself has become interdisciplinary. Chemistry is no longer a discipline with narrow boundaries. Chemistry now interacts so much with biology and also with advanced materials. I too work with these materials and that's why it is very difficult to tell whether you are a chemist or a material scientist, a scientist or an engineer, a physicist or somebody else. So much research is going; in so called Chemistry today that it is much more interdisciplinary and it is difficult to describe it as just chemistry. We call it chemistry but the meaning of the subject has changed. This has happened to many subjects also. Science is becoming more and more interdisciplinary.

People ask what is the way to make a big news in science. Well, you have to work on a problem where you have to make use of many disciplines together. That is when you make big news. In fact, it is extremely difficult to be famous in any subject unless you are aware of what is happening around you. And this is wonderful about chemistry. I am very proud to be a chemist and I am very glad that I am now in ICT which does something in Chemistry. Well, let me also tell you that chemical Engineering itself is also very amazing. Two of my greatest heroes, one with whom I worked, and one whom I admired as my guru in all my life. Linus Pauling whom I consider as my Guru: Nobel prize winner twice, probably one of the greatest chemist of 20th century. His bachelor's degree was in Chemical Engineering; not in Chemistry. Then later he became a chemist. And another amazing example with whom I later was associated- another Nobel Laureate in Chemistry- Robert Langer. He has a bachelor's degree in Chemical Engineering from MIT and later he became a chemist and did whatever he did. So, chemical Engineering has provided the base for the research in the number of areas. For last few years, I have been associated with some great chemical engineers. Amazing thing is Chemical Engineers have made a great contribution for advances in Chemistry. Material science- soft matter for example- biotechnology, nano biotechnology in fact nano science itself, chemical engineers are doing all enormous amount of work.

You know about Robert Langer because I saw his photograph in one of the rooms here. I don't think that I know any professor in any subject who has the record of Robert Langer when it comes to the amount of research, the number of patents, the number of industries he has started and the amount of money he has made. He is a very rich man. At the same time he publishes his papers. It is amazing. He is a man who has become rich through his research, has opened lots of industries, has lots of patents and at the same time, he also produces lots of PhDs and lots of research papers. What is amazing is somebody like Robert Langer, a chemical engineer, has given a direct benefit to human life... , human well being. I hope, you all know that his contribution has given a cure to brain cancer. Direct targeted attack to brain cancer cells is Robert Langer's work. He has done a lot of work in making artificial spines again using nano technology. More importantly, he has made artificial skin using nano technology. This skin can be implanted on a burnt patient and after a few weeks, the patient can be completely normal. This artificial skin can be absorbed by the body system. This wonderful work- all done by a chemical engineer- mind you. This is the theme of subject today. Those who have the ambition of becoming great, ambitions of contributing to mankind, ambitions to contribute to your discipline, please keep this in mind - don't ever become conventional, conformist in science. Always have an open mind, always think of new avenues- think of those avenues, where there is no crowd. In fact, whatever I have worked today is because when I was very young like you- some 25 years old- I picked up the area of research where there were very few people working. If you want to become famous, don't pick up the subject where there are many people working on that subject. You have to choose a bit lonely area, make your own direction and you create the new direction and the others will follow you. That is the beauty of big ambitions and I want you to do that. Don't ever forget what I said.

What is amazing about India is those who determined to succeed, succeed in India.

Unfortunately, that determination doesn't come to many people. People take it easy. As Mashelkar sir said, people want quick results, quick money... then it is not going to be easy. However, if you don't mind time, take your time and you want the real success in that time, then you can get it. I don't know anyone in India that he or she has worked very hard for whatever he wanted or she wanted and did not succeed. Success does come in India with all its problems. And what is amazing is, for the people who are successful now; the success has come to them with a great difficulty. I can talk about my own case. We had no money, no recruitment, did not have money even to send papers by air mail etc. But today, this is not the case. Today we have lots of facilities. In fact, what is interesting about India today is this transformation of India as far as facilities are concerned. We had the poverty same as just Prof M M Sharma talked about. There was the real poverty. Except a thread and wax we had nothing in the lab. Slowly we built instruments, graduated to lower middleclass, then to a middleclass... but now today if you come to my lab in Bangalore, it is as good as the best in the world. In fact, I can certainly say that my lab is better than Cambridge University. But we graduated to that level and it took a lot of efforts. Problem with the people is they don't have patience to wait and build things. But if you have it, success is assured. Reason I am telling you this is, there are many young people who are extremely well trained, take an easy path for success. In fact, the number of students I have taught in IIT's... very brilliant students... you can't imagine their brilliance but eventually they all left engineering and started selling soaps. They all are very rich but I don't think they have contributed much to the engineering. If even just a few of them would have decided not to sell soaps and contribute to the industry, we would have seen a different India. All we need is just a 10 to 20% of India's best students contribute to the future of India, India will change. Their contribution can be through industry or through academia or any other way... but India will certainly change.

I somehow have a great hope that in coming 20 years India will become one of the top countries... economically, scientifically and technologically... but I am already 80 so... by that time I don't have hope that I will be around... But I have this hope because India will still be a very young country in coming 20 years, the average age will still be the youngest in the entire world. It will be a great future.

I wish a great future to the graduating students. If you have a great future, India will have a great future. If you become famous, ICT will become famous, if you have a great future, the world will have a great future. That's why I wish a great success to each one of you.

Thank you so much.

PROCEEDINGS OF THE THIRD CONVOCATION

The Guest of honour,
Padmavibhushan Professor M. M. Sharma

Bharat Ratna Professor CNR Rao almost like a nuclear reactor, functions all the time, Chancellor Dr. Raghunath Mashelkar, Vice chancellor Professor Ganpati Yadav, Padmabhushan Professor Jyeshtharaj Joshi, members of different accademic bodies, budding chemical engineers, chemical technologists & pharmacists and their parents who are present over here. I am indeed most delighted to be here at the ICT, my karmabhumi for all my life, & receive a coveted honour for which, I am very grateful to the ICT. I am really delighted as I am in the mix of a Bharat Ratna Professor Rao and an accomplished scientist, most accomplished scientist of the India. Dr. Mashelkar mentioned me as his role model and to my erstwhile collaborators Raghunath Mashelkar & Jyesthraj Joshi who have received the national awards from the President of India and ofcourse I am delighted that the Vice-chancellor Ganpati Yadav is holding the realm of this great institution. It has been a long journey for me. My mind goes back sixty years when I entered as a young boy from a small town of Jodhpur to study a relatively unknown subject of chemical engineering. It's a great pleasure for me that three of my classmates are present in the audience. What a unique occasion! I studied here. I didn't appear for any interview. In those days we could bag job offers coming to us even before we were graduating. I was keen about doing research but no one was left in Chemical engineering. I knocked at the door of late professor N. R. Kamat who was in polymers. He was gracious enough to accept me and I did my masters over here. My yearning for further knowledge in absence of anybody available here to guide me for PhD and being extraordinarily lucky to get full fellowship along with travel to go to Cambridge, I earned my PhD there in a fairly record time. And when it was not fashionable, sold an idea to one of the most renowned companies of the world- Shell International- exclusively in my name. That was one of the reasons that prompted me later in my life that my collaborators should publish their own and a major part of the ideas is theirs. I am once again very lucky not withstanding my opposition that just over the age of 27 years, I was appointed in heroic way by the great University of Bombay, now Mumbai and it was a kind of big news that boy of 27 has been appointed as full professor. I want to tell you something that will astound many of the young graduating students; no PhD in chemical engineering had come out. There was a grant upto only Rs. 17,000 per year. There were 60 students in the lab. We were only four faculty members. How to then do research with no money and be in competition that too with five formidable IITs with plenty of brands. In the case of Kanpur, literally unlimited foreign exchange... we didn't have even five dollars of foreign exchange and many people really surprised- the things were so bad at that time. In fact even more amusing- there was no grant to send research papers by air mail and we had to spend money from our own pocket to send these papers

and it is amusing a little bit- we had to send a letter separately and in a separate envelope registered airmail book post. Three copies of the paper had to be sent. Electronic mail didn't exist. Ofcourse even typing had to be done from outside for which we had to pay and in 1964 I started with the princely salary of thousand rupees per month and I had to chip out money for typing as well as for sending papers by airmail. Few years later we were able to create grant for sending papers but imagine the institute which started the research from the very beginning in 1934, that there was no provision to send research papers by air mail. Now, the way, the PhD started coming out- 1967 saw my first PhD- Ashok Nanda whose work was published in Chemical engineering and science and a break through came in a 'Sunday Afternoon' and we have just about a weaker some for this research was done. He later on headed a company in USA controlling a business almost a million dollars per annum.

Now the Director is called Vise Chancellor because of the Deemed University. It has been a extraordinary journey for this institute UDCT- the old timer still call UDCT- and UICT now ICT and as you are told by Dr. Mashelkar they extraordinary job done by J. B. Joshi and ploughing through the bizarre jungle of mantralaya to get this status and for the University Grants Commission when they had almost come to the conclusion that no Deemed university status will be given to any one- and only the status was conferred to ICT but with the clear recommendation that unlike other deemed universities, the UGC will continue to give all grants in the same way as they were doing before recognition as deemed university. Most deemed universities don't get grants from the UGC.

Dr. Mashelkar is providing a marvellous leadership, always setting higher and the higher goals which I think Vice-chancellor is finding not easy to catchup!

From the days of adduct poverty but the richness of ideas, 17,000 Rs. per year which today will not be a chana even, but they are talking of many projects with 3 million rupees or 4 million rupees now. They are talking in crores these days but we couldn't talk about in thousands even, you know!

ICT alumni association still being called as UDCT Alumni Association, President and some former Presidents are present in the audience- they have provided the human service to their mother institution in so many ways, in so many difficult areas; that I would like to pay my tribute to UDCT Alumni Association as well as. I still remember Mr. Kishore Mariwala taking on the whole responsibility and there are some more present in the audience.

ICT had the crowning glory with the status of the deemed university and that's why we are having convocation today. Otherwise you would have been in Fort campus or Kalina Campus. ICT is going places and I wish great success in their endeavours. It is amazing to see the transformation of this place and I like to very openly compliment earlier Professor J B Joshi and from last 5 years to Prof G D Yadav for his work... this place is looking chic apart from doing very good work. Just see; this was the place where no PhD in chemical engineering was coming out, then the number went to 7 to 10 PhDs per year and now, 17 plus 36 PhDs are coming out this year. It is an extraordinary record by any standard for any place in the world. Now this has not happened innocently. It is a relentless pursuit to that. The number of the PhDs per million population. It is related to the economic success of the country & these people are gone to the research institutes, academic and industries in large number. But I do want to remind all who are present here that this institute was created by specific desire and financial assistance of philanthropists, industrialists that's how number of endowment created right in the beginning in 1933-34. There was hardly any parallel of that kind in India then. And that linkage has remain extremely good and very encouraging so much so, ICT sported as the shining example in India for university- industry relationship and no wonder they were rated as number one as the vice-chancellor has pointed out. This extraordinary combination almost unbelievable combination of excellent teaching, research as measured by publications in learned journals, delivery to industry is a model hardly to be found in any of the institutes in India, in the area of technology and chemical engineering. I pay handsome compliments to the present faculty members, the leadership provided by G D Yadav, and overall leadership provided by Dr. Mashelkar for these splendid achievements. I once again express my most gratitude to the ICT for conferring me an honorary doctorate. I tell you, having got some other honorary doctorates from the other institutes, this will be the most cherished doctorate for me because it has come from my alma matter. I lived here from 1954 to 58 then from 1968 till 1997. So, I breathe air here, I lived here. My son studied here, my daughter studied here. My head white got converted in ICT, UDCT what a great feel for me this occasion that I am being recognized by my own alma matter. I assure you it will be cherished for the rest of my life.

Thank you.

Professor M. M. Sharma

B. Chem. Eng., M.Sc. (Tech) (Bombay), Ph. D. (Cambridge), D.Sc.(h.c.) (I.I.T., Bombay; Delhi; Kharagpur; B.H.U.; Roorkee) (Calcutta) (Kanpur) (Bundelkhand) (Lucknow) (h.c.), LL.D. (Mumbai) (h.c.), FREng, FRS, FNA, FASc, FNASc, FTWAS, C Chem, FRIC (U.K.), C. Eng., FIChE (U.K.), FIIChE, FICS, FBRS

Email:
profmmsharma@gmail.com

EMERITUS PROFESSOR OF EMINENCE

Emeritus Professor of Eminence, Institute of Chemical Technology, Mumbai (Deemed University) (2003)
Kothari Research Professor, Jawaharlal Nehru Centre for Advanced Scientific Research (2006)
Member, Scientific Advisory Council to the Prime Minister (2006-2009; 2009)
Chairman, Board of Governors, IIT, Madras (June, 2011-May, 2014)
Member, Advisory Board, IIT, Bombay (2003)
[Former Professor of Chemical Engineering (1964-97) and Director (1989-97), Institute of Chemical Technology (Autonomous), Now Institute of Chemical Technology (ICT)-A Deemed University, Matunga, Mumbai- 400 019]

AWARDS / HONOURS

PADMA BHUSHAN (1987); PADMA VIBHUSHAN (2001) by President of India
S. S. Bhatnagar Prize in Engineering Sciences (1973)
Fellow, Indian Academy of Sciences (1974)
Fellow, Indian National Science Academy (INSA) (1976), (VP: 1987-88; President: 1989-90); Vishwakarma Medal (1985); Meghnad Saha Medal (1994); Sir J. C. Bose Memorial Lecture (1994); Medal for Promotion and Service to Science (2008)
Fellow, The Royal Society, London (1990); Leverhulme Medal (1996)
Fellow, Third World Academy of Sciences (1990); TWAS medal Lecture in Engineering Sciences and Technologies (1997)
International Fellow, The Royal Academy of Engineering (2005)
Foreign Associate, U.S. National Academy of Engineering (2006)
Honorary Fellow, National Academy of Sciences (1988); Professor N. R. Dhar Memorial Lecture Award (1999)
Director, Central Board of Directors, Reserve Bank of India (July 2006-Sep 2011)
Moulton Medal of Institution of Chemical Engineers, UK (1971, 1977)
SIES Sri Chandrasekarendra Saraswati National Eminence Award, Science & Technology (2008)
FICCI Award in Science and Technology, Engineering and Technology (1981)

Best Teacher Award, Government of Maharashtra (1984); Om Prakash Bhasin Award, Engineering (1985)

Danckwerts Memorial Lecture, Chemical Engineering Science/ Institute of Chemical Engineers, U. K. (1987)

P.C. Ray Lecture (1998); Hon. Member (1997); Honoured as an Individual Technologist 1990, Life Time Achievement Award (2011), Indian Chemical Manufacturers Association (now Indian Chemical Council),

Shreve Distinguished Visiting Professor, Purdue University, USA (1989)

Jawaharlal Nehru Lecture, (1989); P.C. Ray Memorial Award (1995); Platinum Jubilee lecture, Chemistry (1995); Shatabdi Puraskar, Engineering and Technology (1999); Millennium Award (2003): Indian Science Congress Association

H.K. Firodia Award for Excellence in Science and Technology (1999)

Shri Hari Om Ashram Prerit Dr. Vikram Sarabhai Senior Scientist Award, 2010, Physical Research Laboratory, Ahmadabad

G.M. Modi Science Award, Modi Foundation (1991)

Life Time Contribution Award in Engineering; Silver Jubilee lecture (2012), India National Academy of Engineering (2001)

Life Time Achievements Award, Dr. B.P. Godrej-I.I.Ch.E. (2002); Dhirubhai Ambani Oration; I.I.Ch.E. (2004): Diamond Jubilee Award (2007)

Life Time Achievement Gold Medal, Chemical Research Society of India (2003)

Life Time Achievement Award, Indian Chemical Society (2004); Mid Day (2005)

Honorary Member, Perfumery and Flavours Association of India (1995) and Indian Speciality Chemicals Manufacturers Association (1994); Honorary Fellow, Indian Chemical Society (1997); Honorary Fellow, Indian Plastics Institute (2003); Honorary Fellow, Indian Association for Cultivation of Sciences, Kolkatta (2005); Honorary Fellow, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore (2004)

University of Calcutta, P. C. Ray Medal (2010)

UDCT Golden Jubilee Distinguished Fellow (1984), UDCT Diamond (1994); UDCT Alumni Association Distinguished Alumnus Award (1990); Institute of Chemical Technology (Deemed Uni.) Platinum Award (2009); Super Star (2012)

Lakshmipat Singhania National Leadership Award, I.I.M., Lucknow, Science & Technology (2011)

Academy Professorship of CSIR Academy (ACSIR) 2013,

Editor, Chemical Engineering Science, UK (1975-1986); Associate Editor, Chemical Engineering Research and Design, UK (1974-1986); Member, International Advisory Board, Canadian J. of Chemical Engineering (1989-1993); Member, International Advisory Board, Reactive and Functional Polymers (1995- 2006), Editorial Board, Separation and Purification Technology (1997-1999); Editorial Board, Green Chemistry (1999-2000), Member, Editorial Board, Clean Technologies and Environmental Policy (2002-2004)

Published 250 research papers in Chemical Engineering Science; Industrial and Engineering Chemistry Research; Chemical Engineering Research and Design; Canadian Journal of Chemical Engineering; Reactive and Functional Polymers, etc.

Supervised 71 Doctoral Thesis and 35 M. Chem. Eng. / M. Sc. (Tech.) Thesis; Active Consultant to Industry since 1964

BOOK PUBLISHED:

"Heterogeneous Reactions: Analysis, Examples and Reactor Design", Volumes I and II, Wiley-Interscience, USA, 1984 (with L. K. Doraiswamy)

Fine Chemicals: Technology and Engineering, Elsevier, The Netherlands, Dec. 2001 (with J. A. Moulijn, A. Cybuluski and R. A. Sheldon)

Also contributed several chapters in renowned books

PREFACE

PROFESSOR SUNIL S. BHAGWAT

FMASc., F.M.O.T.A.I., M .I.I.Ch.E. B.Chem. Engg., M. Chem. Engg ., Ph.D. (Tech)
Head, Department of Chemical Engineering,
Coordinator, Center of Excellence in Process Intensification (TEQIP)
Coordinator, Post Graduate Diploma in Chemical Technology Management

This year also saw a very good placement for the graduates of the Department. By the time of writing this report, we have placed 90% of students in Industry through campus interviews.

It has been very productive year for the Department of Chemical Engineering. I am pleased to state that the tradition of a large number of quality publications in international journals was continued this year. The chemical engineering faculty members published 137 papers in International refereed journals, presented 4 papers in National and International conferences and 109 invited lectures were delivered in industry, symposia, and workshops.

The department won a special award of the AICTE-CII best institute for Industry Institute Interaction Best Industry-Linked Chemical & Allied Engineering Institute in Chemical Engineering. Several awards were won by the Departments faculty members and students. Prof. J.B. Joshi was awarded Padma Bhushan award of the Govt. of india. Prof. Lali won the Vasvik Award in Biological Sciences & Samshodhan Vikas Kendra Technology by Vividhlaxi Audyogik, Mumbai, 2013. Professor Bhagwat's research group won 1st prize at 8th Bry Air Awards for excellence in HVAC & R, 2013. Professor V.G. Gaikar won Professor S K Sharma Medal of DOST and non the also Chemcon Distinguished Speaker Award, 2013. Dr. Gogate won the Hindustan Lever Biennial Award for the Most Outstanding Chemical Engineer of the Year Under The Age of 45 Years of Indian Institute of Chemical Engineers, 2013. Dr. Neetu Jha won the DAE-ICT Young Research Scientist award and Dr. Deepak Pinjari was awarded the Young Associate, Maharashtra

DEPARTMENT OF CHEMICAL ENGINEERING

The department won a special award of the AICTE-CII as the Best Industry-Linked Chemical & Allied Engineering Institute. Several awards were won by the Departments faculty members and students.

Academy of Sciences and M.P. Chary Memorial Award by IIChE.

In all 34 Ph.D. theses were submitted along with 41 Masters theses. The number of Ph.D. Candidates in the Department has increased to impressive 198 and the number of M. Chem. Engg. Students was reached to 63, all with full scholarship. Support for these students come from University Grant Commission as the Department is recognized as the Centre of Advanced Studies in Chemical Engineering, Department of Atomic Energy, Department of Biotechnology, CSIR, Department of Science and Technology, and several industry sponsored projects. In all 6 research projects from DAE are being supervised by the faculty of Chemical Engineering Department.

This year also saw a very good placement for the Graduates of the Department. By the time of writing this report, we have placed 90% of students in Industry through campus interviews with minimum salary of 3.8 lakh, a maximum of 12 lakh and average of 6 lakhs. All these placements are in core manufacturing sectors of chemical industry. Amongst post-graduates also 40% of the candidates have been placed in industry and 30% students have enrolled for Ph.D program.

The number of Ph.D. Candidates in the Department has increased to impressive 198 and the number of M. Chem. Engg. Students was reached to 63, all with full scholarship. Support for these students come from University Grant Commission as the Department is recognized as the Centre of Advanced Studies in Chemical Engineering, Department of Atomic Energy, Department of Biotechnology, CSIR, Department of Science and Technology, and several industry sponsored projects.

PROFESSOR SUNIL S.BHAGWAT

B. Chem. Eng (Mumbai, 1984),M. Chem. Eng. (Mumbai,1986),Ph.D.(Tech)(Mumbai,1989)
Head, Professor of Chemical Engineering

GENERAL RESEARCH INTEREST AND EXPERTISE:

- Interfacial Science & Engineering,
- Microemulsions, Energy & Exergy
- Engineering, Absorption Cycles,
- Computer Process simulation

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Member, Indian Institute of Chemical Engineers.
- Honorary Secretary and Member, Executive Council (National), Indian Society for Surface Science and Technology, Western India Chapter.
- Member, Editorial Board, Journal of Surface Science and Technology Special Awards/Honors.
- Member Editorial Advisory Board, Ind. Eng. Chem. Res.
- Fellow of Maharashtra Academy of Science.

PUBLICATIONS (PEER REVIEWED) SO FAR : 60

CONFERENCE PROCEEDINGS/PAPERS : 60

SEMINARS/LECTURES/ ORATIONS DELIVERED : 30

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 30

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 64

H-INDEX : 9
CITATIONS : 350

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

The concept of Exergy as the basis of energy utilization provides an important tool in Energy Engineering. The amounts of available low grade heat sources such as solar energy, geothermal energy, waste heat, bio-mass energy etc are enormous. Performance of an absorption cycle is critically dependent on the thermodynamic properties of working fluid. The basic absorption refrigeration cycles and power cycles are modified so that low grade waste heat can be utilized. Conversion of low grade heat to mechanical work is being studied so as to improve the heat rate of a standard Rankine cycle power plant.. Energy and exergy analysis of different absorption cycles has been done for Li-Br, Ammonia-Water, and Ionic Liquids as a working fluid by simulation. Different types of working fluids including Ammonia-Lithium Nitrate and Ammonia-Sodium Thiocyanate, were also studied for their performance. Experimental investigation is planned for a single stage VAM (Vapor absorption machine) at various operating conditions. The exergy analysis and experimental Coefficient of performance is to be compared with commercially used working fluids The research involves investigation of alternative working fluid absorbent pair for absorption cycles and determine efficient multicomponent system which shall increase the coefficient of performance (COP) of the absorption cycles. There are various combinations of working fluids which can be studied as potential alternative pair for absorption cycles.

Solar thermal water pump is a novel reaction based water pump which directly utilizes thermal energy from sun for pumping action.

The thermodynamic cycle involved in the pumping action compromises a multi component thermodynamic mixture. Simulations and Experimental studies have to be done for the characterization of the pump and its performance evaluation. The main feature of the cycle is the reaction involved in it which gives flexibility and compact to the system while on the other hand it makes the system complex to predict.

The role of Interfacial Science on metal surface phenomenon was studied by different methods & solvents. The study involves a system that has fluid-solid reaction. The rate of fluid solid reaction was investigated by varying different rate controlling parameters. Use of ultrasound showed enhancement in rate in comparison with conventional method. Surface and phase modification proved useful in rate enhancement. Acid combinations and solid doping techniques are presently being investigated.

A new compact instrument was developed for the purpose of measuring foamability of surfactant solutions. Dynamic behavior of surfactant for its foamability, foam stability and liquid drainage were studied. The research includes to examine synergistic interaction between amine oxide and inorganic additives with various foam boosters based formulations for nuclear decontamination application.

Microemulsions based on triglycerides were formulated and their phase behavior studied. Characterization helps elucidate the effect of different components and parameters on the microstructure of micromulsions and helps to understand the their structural inter relationship. The possibility of triglyceride based microemulsion as hair care conditioner are provided the stimulas for the work.

The dynamic behavior of water-in-oil microemulsions (w/o), stabilized by sodium bis (2-ethyl-hexyl) sulphosuccinate (AOT), was studied by means of stopped flow method using spectroscopic detection. Interdroplet exchange rate constant, kex, associated with the exchange of materials upon collisions between droplets in w/o microemulsions system has been determined. Interdroplet exchange rate (kex) as a function of effect of oil type, water to surfactant molar concentration ratio, temperature, electrolyte, organic additive, organic viscosity modifier and cosurfactant was investigated.

Silver nanoparticles were synthesized using kex parameters as studied above. Images of these nanoparticles were obtained from TEM, analyzed by using image-j software and sauter mean diameter was calculated. Relationship between nanoparticles size and distribution with the interdroplet exchange process is established. It was found that with the increase in interdroplet exchange rate the nanoparticle size increases.

Optimization of yield, purification and characterization of Sophorolipids (Bio-surfactants) were attempted by using various natural renewable resources. Lipidic co-substrates including fatty alcohol and different media with varying compositions are being investigated. Production were optimized for pH, glucose concentration, temperature and effect of metal ions. Physicochemical studies including surface tension, wettability and Oil displacement were done. Purification of Bio-molecule "D-hydantoinase" was carried out using reverse micellar media. Purification was attempted by solubilizing impurities in reverse micelles leaving behind targeted biomolecule in the aqueous phase.

Conventional and ecofriendly surfactants were compared for their properties with a special interest in leather treatment processes. Dynamic light scattering studies were carried out to study diffusion of surfactants on leather surfaces. Oil wettability was investigated on hydrophobic surfaces both in air and under the water.

Among the enzymes employed

in the pharmaceutical industry, serratiopeptidase occupy a pivotal position due to its numerous applications in healthcare field. Serratiopepetidase is a drug of choice for the chronic inflammatory diseases such as arthritis, fibrocystic breast disease, carpel tunnel syndrome, sinusitis, bronchitis and atherosclerosis. The proposed research work mainly emphasis on development of efficient and low-cost production and purification process.

In most practical applications mixed surfactant rather than single surfactant is used. Proposed work will be based upon studies of such mixtures, synergism and antagonism properties, surface active parameters like critical micelle concentration, conductivity, effect of additives, effect of salts using surface tension measurements. when the two surfactants are mixed the composition of added surfactant monomers will remain constant at the surface but distribution of composition inside the micelle will be different, its effect on head group area,micellization enthalpy,packing parameter,interaction energy can also be calculated.

Agricultural wastes mainly comprise of materials of lignocellulosic nature. An extensive range of valuable and usable products can be recovered from what it. Activated carbons (AC) are efficient biosorbents made by utilizing lignocellulosic waste. Carbonized lignocellulosic materials are activated by various physical/chemical processes. Due to their well developed pore structure, they have excellent adsorption capacity. They are used for removing organic, metallic and colored impurities. Biomethanation is another process which utilizes different agricultural wastes of lignocellulosic nature by anaerobic digestion to produce a mixture of different gases of high calorific value, mainly consisting of Methane and Carbon dioxide which can be used as fuel.

Sugar based Surfactants are mainly characterized by having hydrophilic groups in their polar moiety. This structural feature, together with the many possibilities for linkage between the hydrophilic sugar head group and the hydrophobic alkyl chain, provides unique physicochemical properties to these surfactants, some of them substantially different from the common non ionic ethoxylated surfactants. Al though interest in these amphiphiles was traditionally academic, they have recently become the object of increasing attention for many researchers, thus opening new areas of research in surface and colloidal science from both fundamental and technological perspectives. Among the characteristic properties of these surfactants, a frequently remarked fact is that they can be produced from renewable resource and exhibit excellent ecological behavior.

Among the various sources of energy crude oil play important role in providing energy supply to the world. The field of Surface Chemistry is intricately connected to most processes of petroleum technology-from drilling of crude oil to petroleum refining and petrochemical processing. All of these processes involve an inter-facial phenomenon and surface chemical interactions. In petroleum technology surface chemistry deals with the surface properties of crude oil/air, crude oil/brine(or water) and crude oil/solid surfaces. Thus surface tension, inter-facial tension (IFT), contact angle, wetting and surface charge(zeta potential)are the parameters that one measures for surface chemical studies. study involves the fundamental aspects of surface chemistry and how they relate to the petroleum industry.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors	Journal	Volume	Pages	Impact Factor
1.	Kiran Desai,B.K Vaidya,Rekha S. Singhal, Sunil S Bhagwat,	Process Biochemistry	40	1617-1626	2.9
2.	Rajendra S Powale, Anish P Andheria, Shadaab S Maghrabi & Sunil S Bhagwat	Journal of Dispersion Science & Technology	26	597-603	0.6
3.	Y.C Hasabnis, M. Bhaskaran & S.S Bhagwat	Int Journal of Exergy	4	253-270	1.08
4.	Bhushan P.Sonchal & Sunil S Bhagwat	Journal of Dispersion Science & Technology	32	1404-1407	0.6
5.	Manish M. Shinde & Sunil S Bhagwat	Journal of Dispersion Science & Technology	33	117-122	0.6
6.	Nilesh Mali, Rohit Mudadi, Sunil S Bhagwat	Int Journal of Exergy	12	298-322	1.08
7.	B.S Samant & Sunil S Bhagwat	Journal of Dispersion Science & Technology	33	1030-1037	0.6
8.	Sharad Gotmukle & Sunil S Bhagwat	Journal of Surfactants & Detergents	57	3644-3650	1.6
9.	Swapnil Sulakhe&Sunil Bhagwat	Journal of Surfactants & Detergents	16	487-494	1.6
10.	Vrushali Dengle,Parul Chandorkar, Sunil S Bhagwat, Asmita Prabhune	Journal of Surfactants & Detergents		DOI: 10.1007/ s11743-013-1495-8	1.6

SUBJECTS TAUGHT:

Chemical Engineering Thermodynamics I
Chemical Engineering Thermodynamics II

RESEARCH INTERESTS:

Interfacial Science & Engineering, Energy & Exergy Engineering

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

RA - 04
Ph.D. (Tech.) - 07
Ph.D.(Sc) - 07
M.Tech. - 01
M. Chem. Eng - 04
Undergraduate Summer - 02

RESEARCH PUBLICATIONS:

International - 05
(Peer-reviewed) - 05
Conference proceeding - 08

SPONSORED PROJECTS :

Government - 2
Private - 3

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Life Member of Indian Institute of Chemical Engineers
- Hon Secretary & Member Executive Council (National), Indian Society for surface science & Technology, Western India Chapter.
- Life Member, Oil Technologist's Association of India
- Fellow of Maharashtra Academy of Science

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY:

- Editorial Board-J. surface Sci. Technology ,
- Editorial & Advisory Board-Industrial Engineering &.Chemical Research, American Chemical Society

SPECIAL AWARDS/ HONORS / ACCOLADES :

- 8th Bry Air Awards for excellence in HVAC & R,2013

PROFESSOR G. D. YADAV

FNA, FTWAS, FASC
B. E. (Chem.) (Mumbai): 1974,
M. Chem. Engg. (Mumbai): 1976,
PhD (Tech.) in Chem. Engg. (Mumbai): 1980, PDF (Loughborough Univ, UK):1981, PDF (Univ of Waterloo, Canada):1986
Vice Chancellor, R.T. Mody Distinguished Professor and J.C. Bose National Fellow

(Kindly refer to the Vice Chancellor's section of the Annual Report)

PROFESSOR VILAS G. GAIKAR

FNAE, FMASc, MIIChE, FMOTAI, MISSST, MAMIC
B. Chem. Engg (University of Bombay 1982), M. Chem. Engg (University of Bombay 1984),
Ph.D.(Tech.) (University of Bombay 1986)
Bharat Petroleum Professor of Chemical Engineering
Coordinator, ICT-DAE Centre for Chemical Engineering Education and Research
Institute Coordinator, Technical Education Improvement Quality Program (TEQIP-II)
Coordinator, Innovation Networking of Institutes in Maharashtra(TEQIP-II)
Member, Planning and Monitoring Board, ICT

GENERAL RESEARCH INTEREST AND EXPERTISE :

- Biodiesel and Thermochemical conversions of Biomass, Process Intensification by Microwave/ Ultrasound/Photochemical reactions,, Soft Condensed Matter, Reactive Adsorptive Separations and Molecular Design of Functionalized Polymers, Interfacial Science and Engineering, Clean Technology and Organic Synthesis in Aqueous Solutions, Synthesis of nanoparticles catalysts for water splitting and CO2 reduction.

NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING :

- Fellow, Indian National Academy of Engineering (FNAE)
- Fellow, Maharashtra Academy of Sciences (FMASc)

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES

- Fellow, Indian National Academy of Engineers
- Fellow, Maharashtra Academy of Sciences
- Director, Aarti Drugs Ltd
- Director, Bharat Oman Refineries Ltd.
- Member and ICT, Coordinator, ICT-DAE Centre in Chemical Engineering Education and Research, ICT
- Member, Task-Force (Bioenergy Science), Department of Biotechnology,(DBT), GoI,
- Member, Task Force on Empowerment and Equity Opportunities for Excellence in Science (E2OES), SERB, DST, GoI,
- Member, Empowered Board, RDCIS- SAIL Project for waste water management in Steel Industry

- Member, Advisory Committee, UGC-CAS program in Chemical Engineering, BITS, Pilani
- Member, Advisory Committee, UGC-CAS program in Chemical Engineering, BHU, Varanasi,
- Member, Editorial Board, Indian Journal of Chemical Technology, NISCAIR, New Delhi
- Member, Editorial Board, Biomedical research Journal (NanoTechnology)
- Member, Planning and Monitoring Board, (ICT)
- Coordinator, UGC National Resource Centre in Chemical Engineering, ICT(2009-2014)
- Institute Coordinator, Technical Education Quality Improvement Program, Phase-II
- Member, Indian Institute of Chemical Engineers
- Member, Indian Society for Surface Science and Technology
- Member, Oil Technologists Association of India
- Life Member, Asian and Mid-east Institute of Chemists
- Member, Selection committee for Sr Scientists, National Chemical Laboratory (2013)
- Member, Selection committee, BITS-Pilani
- Member, Ad-Hoc Board of Studies (Chemical engineering), University of Mumbai
- Board of Studies, Narsee Monji Institute of Management Studies University, Mumbai
- Board of Studies, Guru Gobind Singh Indraprastha University, New Delhi

PUBLICATIONS (PEER REVIEWED) SO FAR : 148

PATENTS : 11

CONFERENCE PROCEEDINGS/PAPERS : 70

SEMINARS/LECTURES/ ORATIONS DELIVERED : 80

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 32

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 72

POST DOCTORAL FELLOWS SUPERVISED : 01

AWARDS/HONORS : NATIONAL : 03

MAJOR AWARDS AND HONOURS

- Fellow, Indian National Academy of Engineers (2008),
- Fellow, Maharashtra Academy of Sciences (2004),
- IIChE-D.O.S.T. Dr. S.K. Sharma Medal and CHEMCON Distinguished Speaker Award (2013)
- Herdillia Award of Indian Institute of Chemical Engineers for Excellence in Basic Research in Chemical Engineering (2004),
- Best Teacher Award, University of Mumbai (2002)
- UGC Career Award (1994),
- INSA Young Scientist, Indian National Science Academy (1992)
- Young Associate, Indian Academy of Sciences (1992-95)
- Pt. Madan Mohan Malviya Lecture, BHU(2012, 2013)

H-INDEX: 26

CITATIONS : 2183

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Professor Vilas G. Gaikar, a fellow of Indian National Academy of Engineering, has made outstanding research contribution to Chemical Engineering Science that has been applied by many industries in India and abroad. His work on Dissociation extraction and dissociation extractive crystallization has been practiced in chemical industry where the other conventional methods of separation have been either economically impractical or are difficult to employ. His process of reactive crystallization for m-/p-cresols was the first of its kind with extreme selectivity for separation of this most difficult-to-separate mixture.

Innovative approaches by synergizing theoretical developments with practical applications are hall marks of the work done by Professor Gaikar in academic research and as a consultant to several industrial concerns in the last two decades. He had been a consultant to another leading alcohol-based industry for development of many new extraction and

purification processes for natural products as medicinal compounds or neutraceuticals. Many of these processes have been patented by the company and practiced for commercial production of the products. As a Chair Professor on a position created by Bharat Petroleum Corporation Ltd. in the Institute of Chemical Technology(ICT), he has developed newer and novel technologies for the company, most recently for upgradation of vacuum residue and waste water management . He had developed a large number of oleochemicals from castor oil that were manufactured and marketed by another industrial concern.

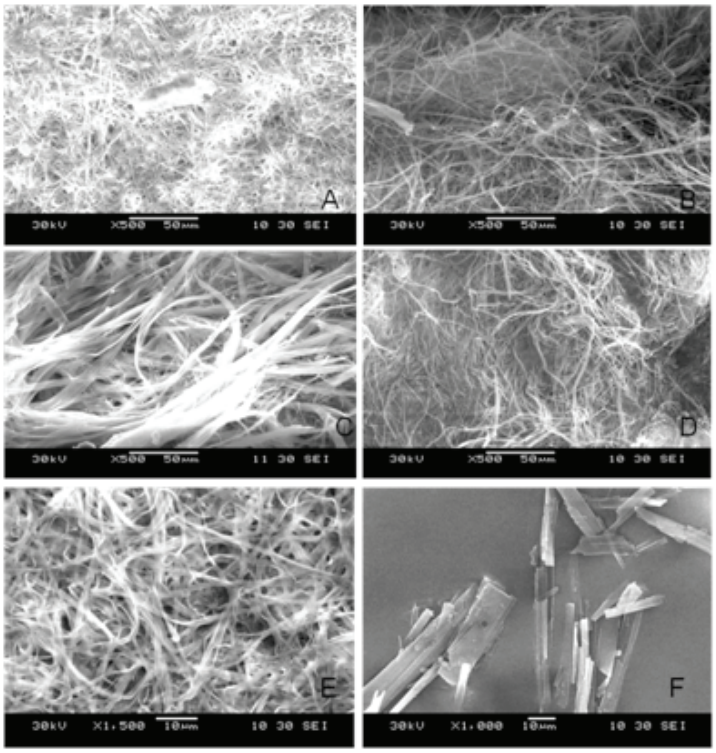
Professor Gaikar extended his work on reactive separations to complex distillation columns including reactive distillation, salt effect in distillation and complex heterogeneous azeotropic distillation column designs. In particular, he had analyzed and successfully showed economical operation for a multicomponent azeotropic distillation column involving acetic acid-water mixtures in India's leading petrochemical company.

In the last few years, his group has developed several reactive sorbents for heavy metal extraction with extreme selectivity towards desired metal ions, affinity adsorbents for a number of closely related organic compounds, functionalized sorbents for capture of carbon-dioxide and nanoparticle synthesis having potential applications in pharmaceutical and specialty chemical industries. Currently, his group is working on several specialty chemicals' synthetic reactions for development of continuous processes to improve selectivity to desired product and to minimize waste with energy integration.

In the area of Biofuels, biolubricants, biodiesel, thermochemical conversion of biomass, his group has attained several newer milestones and some of this work has been used at industrial and large scale applications. The thermal conversion of lignocellulosic biomass is being developed to establish biorefinery concept. Another offshoot of this work is establishing, 'Steam Pyrolysis' as a waste treatment technique for dealing with concentrated organic waste.

His contribution to the field of hydrotropy and complex mixtures with surfactants has been pioneering, especially considering that his contribution has come entirely from the work done in ICT, India. His work, for the first time, established sodium ibuprofen as an efficient hydrotrope and drug solubilizer which is now being used in several drug formulations. He has also developed several formulations of hydrotropes with surfactants for potential applications in drug and pesticide industries. His group has successfully developed aqueous solutions of hydrotropes based extraction process for natural products as an alternative to organic solvents that is also easily scalable to industrial operations. Recently his group has successfully conducted delignification using aqueous solutions of hydrotrope as a substitute for chemical conversion techniques. The aqueous solutions are also useful in conducting organic synthesis as safer media and provide ease of recovery of products. His work on biochemical applications, using organic solutions of reverse micelles, is also recognized as first of its type, mostly for enzyme and protein recovery by cell permeabilization and purification.

Apart from his industrial and corporate relations, Professor Gaikar was rated as the Best Teacher by University of Mumbai in 2002 and several times by the students of the Institute. He is known for his innovative and out-of-box ideas for promoting engineering and technical education in the country, and inspiring young engineers to innovate. His originality in conceptualizing the Industry-Academia interaction in the form ´Young Innovator Choice Competition´ in ICT has brought young chemical engineers/ technologists from all corners of the country and several industries seeking innovative answers for their problem, on the same platform. This year, he conceptualized the idea of 'Innovation Networking' of



SEM images of xerogels obtained using NHD-AES in different organic solvents

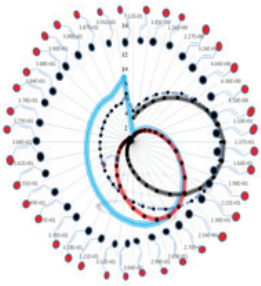
engineering institutes in the State of Maharashtra and is spearheading the efforts of ICT in spreading the spirit of Innovation among young engineers

Contributions in the last year:

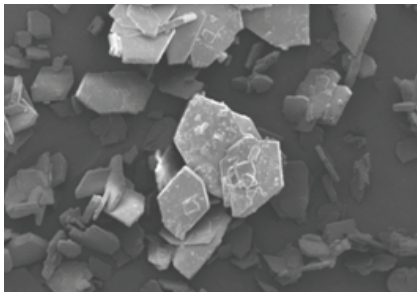
The publications of Professor Gaikar in the last two years show a very successful application of basic chemical and physical sciences over a broad range of areas. His approach of molecular level calculations has led to design of highly selective ligands for separation of closely related compounds from natural product extracts used as medicinal drugs or neutraceuticals, separation of heavy metals ions from aqueous solutions and carbon dioxide capture for further use. His group has shown an ability of designing ligands that can reverse the selectivity as desired for natural products in his recent papers on forskolin purification. He has developed recently a mathematical model for random scission of a natural polyester (seed lac esters) during hydrolysis that is expected to have applications in other areas too. It is a pioneering contribution by judicious combination of theory and practice.

A new class of hydrotropes has been developed by him that show photoswitchable solubilization capacity. These hydrotropes have potential applications in drug and other formulations and processes such as crystallization for crystal habit modification.

Process intensification by microwave has been very judiciously used for important catalytic reactions using solid catalysts. The emphasis is in combining theoretical simulation of continuous processing and optimization of energy usage in organic manufacturing operations. Most importantly all his work, done entirely in India itself, demonstrate ability of Indian scientists to contribute original work to chemistry and chemical engineering.



Rheological characterization of mixtures of photosensitive hydrotropes with CTAB



Crystal Habit modification in Photoswitchable hydrotrope

TEN BEST / REPRESENTATIVE PUBLICATIONS :

Sr. No.	Authors	Title	Journal	Vol	Issue	Pages	Year	Citations
1	Balasubramanian, D; Srinivas, V; Gaikar, VG; Sharma, MM;	Aggregation behavior of hydrotropic compounds in aqueous solution	The Journal of Physical Chemistry	93	9	3865-3870	1989	211
2	Khadilkar, Bhushan M; Gaikar, Vilas G; Chitnavis, Ashish A;	Aqueous hydrotrope solution as a safer medium for microwave enhanced Hantzsch dihydropyridine ester synthesis	Tetrahedron letters	36	44	8083-8086	1995	108
3	Bhat, M; Gaikar, VG;	Characterization of interaction between butyl benzene sulfonates and cetyl trimethyl ammonium bromide in mixed aggregate systems	Langmuir	15	14	4740-4751	1999	78
4	Anasthas, HM; Gaikar, VG;	Adsorption of acetic acid on ion-exchange resins in non-aqueous conditions	Reactive and Functional Polymers	47	1	23-35	2001	73
5	Ramesh Babu, P; Gaikar, VG;	Membrane characteristics as determinant in fouling of UF membranes	Separation and purification technology	24	1	23-34	2001	59
6	Raman, Girija; Gaikar, Vilas G;	Microwave-assisted extraction of piperine from Piper nigrum	Industrial & engineering chemistry research	41	10	2521-2528	2002	57
7	Raman, Girija; Gaikar, Vilas G;	Extraction of piperine from Piper nigrum (black pepper) by hydrotropic solubilization	Industrial & engineering chemistry research	41	12	2966-2976	2002	35

8	Bansal-Mutalik, Ritu; Gaikar, Vilas G;	Cell permeabilization for extraction of penicillin acylase from< i> Escherichia coli</i> by reverse micellar solutions	Enzyme and microbial technology	32	1	14-26	2003	32
9	Pal, OR; Gaikar, VG; Joshi, JV; Goyal, PS; Aswal, VK;	Small-angle neutron scattering studies of mixed cetyl trimethy-lammonium bromide-butyl benzene sulfonate solutions	Langmuir	18	18	6764-6768	2002	25
10	Tavare, Narayan S; Gaikar, Vilas G;	Precipitation of salicyclic acid: hydrotropy and reaction	Industrial & Engineering Chemistry Research	30	4	722-728	1991	22

SUBJECTS TAUGHT:

Advanced Separation Processes, Process Engineering

RESEARCH INTERESTS :

Biodiesel and Thermochemical conversions of Biomass, Process Intensification by Microwave and microchannel reactors, Soft Condensed Matter, Reactive Adsorptive Separations and Molecular Design of Functionalized Polymers, Interfacial Science and Engineering, Clean Technology and Organic Synthesis in Aqueous Solutions, Synthesis of nanoparticles for water splitting and CO_2 reduction.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

P.D.F. - 01
Ph.D. (Tech.) - 10
M.Tech. - 02
Undergraduate Summer Fellows - 05
RA - 01 Ph.D.(Sc) - 07
M. Chem. Eng - 01
Teacher summer Fellows - 02

RESEARCH PUBLICATIONS :

International - 12
(Peer-reviewed) : ALL
Conference proceeding - 1

PATENTS :

Indian – 02

SPONSORED PROJECTS:

Government - 02
Private - 04

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Fellow, Indian National Academy of Engineers
- Fellow, Maharashtra Academy of Sciences
- Director, Aarti Drugs Ltd
- Institute Coordinator, Technical Education Quality Improvement Program, Phase-II
- Coordinator, Innovation Networking of Engineering Institutes in Maharashtra, (TEQIP-II)
- Member and ICT Coordinator, ICT-DAE Centre in Chemical Engineering Education and Research, ICT
- Member, Task-Force (BioEnergy Sciences), Department of Biotechnology, (DBT), GoI
- Member, Task Force on Empowerment and Equity Opportunities for Excellence in Science (E_2OES), SERB, DST, GoI,
- Member, Empowered Board, RDCIS- SAIL Project for waste water management in Steel Industry

- Member, Advisory Committee, UGC-CAS program in Chemical Engineering, BITS, Pilani
- Member, Advisory Committee, UGC-CAS program in Chemical Engineering, BHU, Varanasi,
- Member, Editorial Board, Indian Journal of Chemical Technology, NISCAIR, New Delhi
- Member, Editorial Board, Biomedical research Journal(NanoTechnology)
- Member, Planning and Monitoring Board, (ICT)
- Coordinator, UGC National Resource Centre in Chemical Engineering, ICT(2009)
- Life Member, Asian and Mid-East Institute of Chemists
- Member, Selection committee for Sr Scientists, National Chemical Laboratory(2013)
- Member, Ad-Hoc Board of Studies (Chemical engineering), University of Mumbai
- Member, Board of Studies, Narsee Munji Institute of Management Studies University, Mumbai
- Member, Board of Studies, Guru Gobind Singh Indraprastha University, New Delhi
- Member, Advisory Committee, Department of Chemical Engineering, MIT's Maharashtra Academy of Engineering, Aalandi, Pune.
- Member, Indian Institute of Chemical Engineers
- Member, Indian Society for Surface Science and Technology
- Member, Oil Technologists Association of India

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY:

- Indian Journal of Chemical Technology (IJCT),
- Biomedical Research Journal

SPECIAL AWARDS/ HONOURS / ACCOLADES:

- Development Organization for Sustainable Transformation's (DOST) Professor S. K. Sharma Medal and CHEMCON Distinguished Speaker Award, 2013

PROFESSOR ARVIND M. LALI

B. Chem, M. Chem, Ph.D Tech (Chem. Eng.)
Professor of Chemical Engineering
Head, DBT-ICT Centre for Energy Biosciences

GENERAL RESEARCH INTEREST AND EXPERTISE :

Bioenergy, biofuels & biomass to other chemicals, purification of proteins, nucleic acids and other biomolecules, natural and synthetic APIs high value organic/inorganic chemicals, continous chromatography, Modeling and adsorptive separations, biocatalysis and biotransformations, bioreactors design, mixing and dynamics of solid-liquid fluidized bed, dynamics of gas-solid circulating fluidzing bed, process integration and intensification, process development characterization and scaleup.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Member, core group of scientists in the area of bioenergy with Ministry of New and Renewable Energy, Government of India.
- Member, Department of Biotechnology, Ministry of S&T of India Task Force in Biofuels, Algal Biotechnology and Bioproducts and Bioprocesses
- Member, Maharashtra Academy of Sciences
- Member, Apex Committees,

Food and Nutritional Safety, DBT, India.

- Member, Task Force Committees on Biofuels, Bioprocesses and Bio-products, DBT, India.
- Member of the Scientific Advisory Committee (SAC) on Industrial Biotechnology.
- Member, Research Council Committee, IMTECH, Chandigarh.

PUBLICATIONS (PEER REVIEWED) SO FAR :
International- 46 (so far),
2 (in press)

PATENTS :
International – 47 (so far) pending; 8 granted
National – 20 pending;
3 granted

CONFERENCE PROCEEDINGS/PAPERS:
17 (so far)

SEMINARS/LECTURES/ ORATIONS DELIVERED : 3

PH.D.S AWARDED AS SINGLE/ CO-GUIDE : 1

AWARDS/HONORS
National - 2

H-INDEX : 8

CITATIONS : 266

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Deconstruction of biomass to sugars: Breakdown of lignocellulosic biomass to its basic components namely sugars and phenolics, has been topic of intense research all over the world. My work in my laboratory at ICT currently focuses on generating sugars cheaply from a variety of biomass like agricultural residues, forest waste, and one or the other energy crops like elephant grass.

Biotransformation of sugars to diverse metabolites: Sugars like glucose and xylose are the building blocks for most chemicals in future. However, technologies for conversion of sugars to a variety of chemicals are not yet matured to be commercially viable. My current work focuses on developing scalable technologies for production of a variety of basic chemicals from sugars that have been derived from non-food renewables like lignocellulosic biomass.

Renewable energy and Biofuels: Global warming and carbon dioxide emissions have been topic of hot discussion and research over last 3-5 years. One of the major thrust to reduce carbon emissions has been to replace energy production and fuels from fossil sources. Renewable energy and fuels have become current leading areas for research funding. I have been now involved in conducting research in the following related areas: (a) liquid biofuels like alcohols from agricultural wastes; (b) bio-CNG production from biomass; (c) algal biotechnology for biofuel and energy production.

TEN BEST / REPRESENTATIVE PUBLICATIONS :

Sr. No.	Authors	Title	Journal	Vol	Issue	Pages	Year
1	Hitesh Pawar and Arvind Lali	Microwave assisted organocatalytic synthesis of 5-hydroxymethyl furfural in a monophasic green solvent system	Royal Society of Chemistry Advances	51	(4)	26714-26720	2014
2	Lau, P.W., Utikar, R., Pareek, V., Johnson, S., Kale, S., Lali, A,	Modelling and numerical simulation of liquid-solid circulating fluidized bed system for protein purification	Chemical Engineering Research and Design	91	(9)	pp. 1660-1673	2013

3	Jayant Pralhad Rathod, Gunjan Prakash, Reena Pandit, Arvind M. Lali,	Agrobacterium-mediated transformation of promising oil-bearing marine algae Parachlorella kessleri	Photosynthesis Research	118	(1-2)	141-146	2013
4	Jin Il Kim1, Hyun-Seob Song, Sunil R. Sunkara, **Arvind Lal**i and Doraiswami Ramkrishna	Exacting predictions by cybernetic model confirmed experimentally: Steady state multiplicity in the chemostat	Biotechnology Progress	28	(5)	1160-1166	2012
5	Nidhi Adlakha, Sneha Sawant, Annamma Anil, **Arvind Lali** and Syed Shams Yazdani	Specific fusion of β-1,4-endoglucanase and β-1,4- glucosidase enhances the cellulolytic activity and helps in channelling of the intermediates, Applied and Environmental Microbiology	Enzymology and Protein Engineering	78		7447-7454	2012
6	Amith D. Naik, Monika Raina, Arvind M. Lali	AbSep-An amino-acid based pseudobioaffinity adsorbent for the purification of immunoglobulin, Article in Press doi:10.1016 j.chroma	Journal of Chromato-graphy A	01.083			2011
7	Sushant D. Wadekar, Sachin Patil, Sandeep Kale, **Arvind Lali**, D. N. Bhowmick and Amit P. Pratap	Structural elucidation and Surfactant properties of rhamnolipids synthesized by Pseudomonas aeruginosa (ATCC 10145) on sweet water as carbon source and stabilization effect on foam produced by Sodium Lauryl Sulfate	Tenside Surfactants Detergents Tenside Surfactants Detergents	48	(4)	286-291	2011
8	Remya Devi, Shreeram Joshi, Rakesh Verma, A. M. Lali, L.M. Gantayet	Effect of gamma radiation on organic ion exchangers Radiation Physics and Chemistry		79	(1)	41-45	2010

9	Pandit Reena. Ajit., Anil Annamma Odaneth., Lali Arvind Mallinath and Indap Madhavi,	Evaluation of anti-angiogenic activity through tubulin interaction of chloroform fraction of the feather star Lamprometra palmata Palmate	Indian Journal of Marine Science	38	(1)	28-32	2009
10	Anil Gaikwad, Sandeep Kale and Arvind Lali	Modeling of Counter current Adsorption in Liquid Solid Circulating Fluidized Bed Adsorption Chromatography	Chemical Engineering Science	64	(4)	1062-1071	2008

SUBJECTS TAUGHT:

- Downstream processing in biotechnology advances in adsorptive & chromatographic separations, instrumentation and process control, adsorptive separations and statistical methods

RESEARCH INTERESTS:

- Bioenergy, biofuels & biomass to other chemicals, purification of proteins, nucleic acids and other biomolecules, natural and synthetic APIs high value organic/inorganic chemicals, continous chromatography, Modeling and adsorptive separations, biocatalysis and biotransformations, bioreactors design, mixing and dynamics of solid-liquid fluidized bed, dynamics of gas-solid circulating fluidzing bed, process integration and intensification, process development characterization and scaleup.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) - 16
Ph.D.(Sc) - 23
M.Tech. - 4
M. Chem. Eng - 2
Undergraduate
Summer Fellows - 2
Integrated PhD - 1

RESEARCH PUBLICATIONS :

International - 46 (so far)
Conference proceeding - 17 (so far)
Books - 2 (so far)

PATENTS :

International - 3 (granted)
Indian – 11 (filled)

SPONSORED PROJECTS :

Government - 10
Private - 6

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Member, core group of scientists in the area of bioenergy with Ministry of New & Renewable Energy, Government of India.
- Member, Department of Biotechnology, Ministry of S&T of India Task Forces in Biofuels; Algal Biotechnology; and Bioproducts and Bioprocesses
- Member, Maharashtra Academy of Sciences
- Member, Apex Committee, Food and Nutritional Safety, DBT, India
- Member, Task Force Committees on Biofuels, and Bioprocesses and Bioproducts, DBT, India
- Member of the Scientific Advisory Committee (SAC) on Industrial Biotechnology (Department of Biotechnology-Government of India)
- Member, Research Council Committee, IMTECH, Chandigarh
- Member, Scientific Advisory Committee, IIT, Indore
- Adjunct Professor, School of Mechanical and Chemical Engineering, The University of Western Australia, Australia

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY :

Member Editorial Journal of Preparative Biochemistry and Biotechnology

SPECIAL AWARDS/ HONOURS/ ACCOLADES :

Vasvik Award in Biological Sciences & Technology by Vividhlaxi Audyogik Samshodhan Vikas Kendra, Mumbai, 2013

PROFESSOR ANIRUDDHA BHALCHANDRA PANDIT

Ph.D. (Tech.), Department of Chemical Technology, University of Bombay (1980-1984),
B. Tech. (Chemical Engineering), Institute of Technology, Banaras *Hindu University (1975-1980)*
UGC, Research Scinetist C (Professor C)

GENERAL RESEARCH INTEREST AND EXPERTISE :
Physical and Chemical Processing applications of Cavitation phenomena, Sonochemistry, Ballast Water Treatment, Mixing in Mechanically agitated contactors: Experimental and CFD Investigations, Modeling of Stoves, Use of non-conventional energy sources, Biotechnology: Protein modification, Cell disruption, Synthesis of Nanomaterials.

NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING :
F.N.A., F.A.Sc., F.N.A.Sc., F.N.A.E., F.M.A.Sc.

PUBLICATIONS (PEER REVIEWED) SO FAR : 274

PATENTS : 15

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 33

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 56

H-INDEX : 56

CITATIONS : 10840

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

SOME RESEARCH HIGHLIGHTS:

Hydrodynamic cavitation assisted disinfection of potable water: in this work cavitation is used to achieve disinfection in potable water obtained from ground water reservoirs.

Some other studies in hydrodynamic cavitation for the treatment of textile, pharmaceutical effluents are also going on. Also work related to the synthesis of nano particles using hydrodynamic as well as acoustic cavitation is being carried out.

Using Cavitation for Biogas Production Enhancement:
The objective is to study the effects of acoustic cavitation and alkaline (NaOH) pre-treatment on the anaerobic digestibility of sugarcane bagasse. These treatments result in destruction of micro-structure of bagasse and increased solubilization of the nutrients in aqueous phase which improves anaerobic digestibility. The effects of both on the rate of anaerobic digestion as well as the net anaerobic digestibility have been studied.

Depolymerisation of Post-consumer Poly(Ethylene Terepthalate) into value added products using cavitation phenomenon:
This project aims to enhancement of depolymerisation reaction of the Poly(Ethylene Terepthalate) waste using ultrasonic as well as hydrodynamic cavitation and converting Post-Consumer PET back into monomers and other derivatives by chemical recycling such as hydrolysis, methanolysis, glycolysis, etc.

Studies in sono-crystallization kinetics:
In this project we are trying to explore the effect of ultrasonic irradiation on different crystallization phenomena viz.. Nucleation, growth, breakage & agglomeration, quantitavely. For this, population balance equations coupled with mass balance equations will be solved using simulation software gPROMS.

Exergy Analysis of Resource consumption in India:
In research work done so far, different modes/means of transport, electricity generation, lighting (in residential, commercial and industrial

sector), high temperature and low temperature heating (in Industry and residential sector) has been evaluated on the basis of resource conversion efficiency. With an objective of providing the same level of service in the society which will have higher conversion efficiency of the resources and will have least contribution to any associated environmental degradation.

Figure 1: Anti solvent crystallization setup

Figure 3: Bio gas generation from food waste

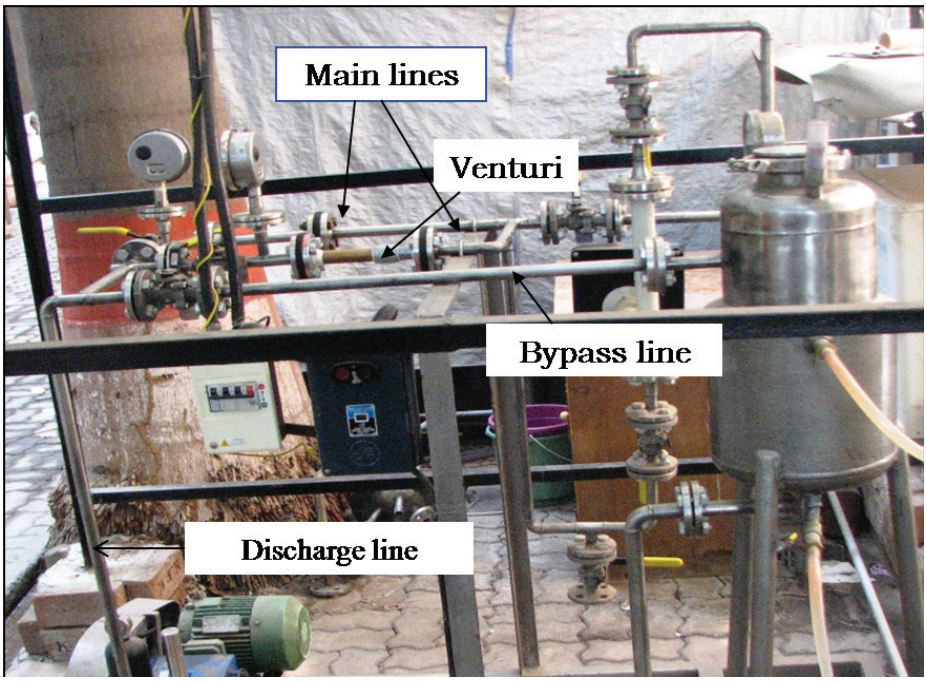


Figure 2: Hydrodynamic cavitation setup

SUBJECTS TAUGHT :

- Environmental Engineering and pollution control
- Chemical Project Economics
- Design of Multiphase Reactors

RESEARCH INTERESTS:

Cavitation, Sonochemistry, Design of multiphase reactors (Mechanically Agitated contactors, Bubble columns), Wastewater treatment, Biotechnology (Cell disruption, Enzyme synthesis and applications), Visbreaking, nano particle synthesis using hydrodynamic and acoustic cavitation, solar energy, design and simulation of Smokeless chulha.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

RA - 1
Ph.D. (Tech.) - 12
Ph.D.(Sc) - 2
M.Tech. - 1
Undergraduate Summer Fellows (if any) - 5
M. Chem. Eng - 4

RESEARCH PUBLICATIONS:

International - 27

SPONSORED PROJECTS :

Government - 4
Private- 2

SPECIAL AWARDS/ HONORS / ACCOLADES

- Best Reviewer Award, Elsevier UK.
- Best Teacher Award, Institute of Chemical Technology
- Wipro Earthian Award 2013 by Wipro Foundation, Bangalore
- Award Lecture Dr. M. G. Subbarau lecture NIT Suratkal Professor Gopal Tripathi Memorial Lecture, IIT BHU

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors	Journal	Volume	Pages	Year	Impact Factor
1	Gogate, Parag R; Pandit, Aniruddha B;	Advances in Environmental Research	8 (3)	Part I: 501-551	2004	2.08
				Part II: 553-597		
2	Joshi, JB; Pandit, AB; Sharma, MM;	Chemical Engineering Science	37 (6)	813-844	1982	2.61
3	Shirgaonkar, Irfan Z; Pandit, Aniruddha B;	Ultrasonics sonochemistry	5 (2)	53-61	1998	3.82
4	Gogate, Parag R; Shirgaonkar, Irfan Z; Sivakumar, M; Senthil kumar, P; Vichare, Nilesh P; Pandit, Aniruddha B;	AIChE journal	47 (11)	2526-2538	2001	2.49
5	Pandit, AB; Joshi, JB;	Chemical Engineering Science	38 (8)	1189-1215	1983	2.61
6	Pandit, Aniruddha B; Gogate, Parag R; Mujumdar, Sukti;	Ultrasonics Sonochemistry	8 (3)	227-231	2001	3.82
7	KK Jyoti, AB Pandit	Water Research	38 (9)	2249-2258	2004	5.32
8	Mahamuni, Naresh N; Pandit, Aniruddha B;	Ultrasonics sonochemistry	13 (2)	165-174	2006	3.82
9	Sivakumar, Manickam; Pandit, Aniruddha B;	Ultrasonics Sonochemistry	9 (3)	123-131	2002	3.82
10	Senthil Kumar, P; Siva Kumar, M; Pandit, AB;	Ultrasonics Sonochemistry	55(9)	1633-1639	2000	3.82

PROFESSOR (DR.) ANAND VINAYAK PATWARDHAN

B. Chem. Eng. (UDCT, Mumbai, 1983),
M. Chem. Eng. (UDCT, Mumbai, 1985),
Ph.D. (Tech.) in Chem. Eng. (UDCT, Mumbai, 1988)
Professor of Chemical Engineering

GENERAL RESEARCH INTEREST AND EXPERTISE :

- Membrane separation
- Green Technology
- Bioprocess Technology
- Studies in mass transfer equipment

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:
Life member of Indian Institute of Chemical Engineers

PUBLICATIONS (PEER REVIEWED) SO FAR: 50

PATENTS : 1

CONFERENCE PROCEEDINGS/PAPERS: 42

SEMINARS/LECTURES/ ORATIONS DELIVERED : 20

PH.D.S AWARDED AS SINGLE/ CO-GUIDE :
9 completed; 7 on-going

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 39

H-INDEX : 13
CITATIONS : 612

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

Membrane separation (separation and recovery of organic chemicals and metals from organic and aqueous streams; pollution control; development of ceramic membranes)

- Separation of various metal ions from aqueous streams using supported liquid membrane
- Separation using hollow fibre membrane as well as flat sheet membrane
- Separation of metal ions like U, Nd, Pb, Co, Zn, Sr, Cs, and their mass transport parameters
- Separation of organic acids from aqueous stream using the flat sheet supported liquid membranes
- Scale-up from laboratory scale to industrial scale equipment
- Removal of sulphur compounds from various petroleum fractions
- Mathematical modelling of membrane separation phenomena
- Development of ceramic membranes for industrial applications

Green Technology (ionic liquids for solvent extraction and reactions; value-added chemicals from non-edible oils; greener organic chemical process development)

- Enantioselective synthesis, kinetic resolutions of racemic mixtures, chiral molecular recognition, group transfer reactions using chiral auxiliaries / catalyst, synthetic organic chemistry for pharmaceutical aspects
- Multiphase catalysis relies on the transfer of organic substrates into the catalyst phase or on catalysis at the phase boundary. Most organic substrates do not have sufficient solubility in the catalyst phase to give practical reaction rates in catalytic applications. The catalytic / solvent role of ionic liquids in such cases is being explored for some industrially relevant reactions.
- Epoxidation of edible and non edible oils for industrially useful chemicals
- Separation of C7 and C8 liquid mixtures with ionic liquids as extracting solvents

Bioprocess Technology (synthesis of chemicals and microbial colorants / pigments)

- Development of viable and efficient bioconversion

process for the production of the L-ascorbic acid from inexpensive starting materials, such as, glucose

- Development of analytical method for simultaneous quantitative estimation of L-ascorbic acid and 2-keto-L-gulonic acid
- Effect of precursor addition on the production of L-ascorbic acid during fermentation
- Effect of intracellular enzyme inhibitor on the yield of L-ascorbic acid
- Production of natural colours or pigments by screening various microbes producing natural pigments / colours, and the development of a fermentation process for the same as the use of fermentation processes possess a number of advantages when compared to vegetable sources, including the possibility of continuous cultivation, and the rapid multiplication of microorganisms.

Studies in mass transfer equipment

- Liquid-liquid extraction is being extensively used in chemical, nuclear, biochemical and petroleum processes. Owing to their wide range of applicability, different types of extractors have been studied over the years in order to improve their performance and for scale-up. Studies on pulsed column have been increased widely during last few decades regarding the mass transfer and hydrodynamic aspects. However, much work still remains to be done in order to come up with better and more efficient design. In the current study, it is proposed to study the pulsed extraction columns in greater details. The present work deals with single phase and two phase axial dispersion study in pulsed sieve plate column using a combination of computational fluid dynamics (CFD) simulations and experimental measurements. Also, the hydrodynamics like hold up study of column has been validated with the help of commercial software like FLUENT 6.3.26 and ANSYS FLUENT 13.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	Yogesh D. Jagdale, Ashwin W. Patwardhan, Kruti A. Shah, Shabdiki Chaurasia, Anand V. Patwardhan, S. A. Ansari, P. K. Mohapatra	Desalination (2013)	325, 104-112	104-112	2.751
2	Prasad V. Vernekar, Yogesh D. Jagdale, Ashwin W. Patwardhan, Anand V. Patwardhan, S. A. Ansari, P. K. Mohapatra, V. K. Manchanda	Chemical Engineering Research and Design (2013)	91	141-157	2.055
3	Vibhuti A. Dukhande, Tej S. Choksi, Sanket U. Sabnis, Ashwin W. Patwardhan, Anand V. Patwardhan	Fluid Phase Equilibria (2013)	342	75-81	2.338
4	Srikanta Dinda, Vaibhav V. Goud, Anand V. Patwardhan, Narayan Chandra Pradhan	Asia-Pacific Journal of Chemical Engineering 2011	6	870-878	0.797
5	Srikanta Dinda; Vaibhav V. Goud; Anand V. Patwardhan; Narayan Chandra Pradhan	Separation and Purification Technology 2010	75	1-7	3.525

6	Pankaj V. Mathure; Shouvik Ganguly; Anand V. Patwardhan; Ranajit Kumar Saha	Industrial and Engineering Chemistry Research 2007	46	8471-8479	2.206
7	Vaibhav V. Goud; Anand V. Patwardhan; Narayan Chandra Pradhan	Industrial and Engineering Chemistry Research 2007	46	3078-3085	2.206
8	Vaibhav V. Goud; Anand V. Patwardhan; Srikanta Dinda, Narayan Chandra Pradhan	Chemical Engineering Science 2007	62	4065-4076	2.653
9	Srikanta Dinda; Anand V. Patwardhan; Narayan C Pradhan	Industrial and Engineering Chemistry Research 2006	45	6632-6639	2.206
10	Anand V. Patwardhan; Man Mohan Sharma	Industrial and Engineering Chemistry Research 1989	28	5-9	2.206

SUBJECTS TAUGHT :

- Semester I: Advanced Momentum Transfer (M. Chem. Eng. Semester I)
- Semester II: Green Technology (M. Chem. Eng. Semester I); Advanced Separation Processes (B. Chem. Eng. Semester VIII)

RESEARCH INTERESTS :

- Membrane separation (separation and recovery of organic chemicals and metals from organic and aqueous streams; pollution control; development of ceramic membranes for pollution control and recovery of valuable chemicals)
- Green Technology (ionic liquids for solvent extraction and reactions; value-added chemicals from non-edible oils; greener organic chemical process development)
- Bioprocess Technology (synthesis of chemicals and microbial colorants/ pigments)
- Studies in mass transfer equipment

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) – 05
Ph.D.(Sc) - 03
Undergraduate Summer Fellows (if any) – 02
M. Chem. Eng - 03

RESEARCH PUBLICATIONS:

International - 5
(Peer-reviewed) - 5
Conference proceedings - 14

SPONSORED PROJECTS :

Government- 03 (PI in 2; Co-Pi in 1)

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Member of the experts' panel formed by the DSIR (New Delhi) for accreditation of Research and Development units of various industries

PROFESSOR Y. R. GOKARN

B. Chem. Eng., MS, Chem. Eng., MS, Biochemistry, Ph.D Biochemistry
Narotam Sekhsaria Distinguished Professor of Chemical Engineering

SUBJECTS TAUGHT:

Biochemical Engineering

RESEARCH INTERESTS:

- Protein formulation science and process development
- Thermostable formulations
- Mechanisms of protein aggregation
- Thermodynamics of protein stability & interactions
- Protein-co-solute interactions

PROFESSOR BHASKAR NARAYAN THORAT

B. Chem. Eng., M. Chem. Eng., Ph. D (Tech) D.H.S.T. (BITS)
Professor of Chemical Engineering

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

Turmeric, traditionally known as Haldi, an important medicinal plant and spice, is produced by 15 lakh farmers on 5,00,000 acre of land. Traditional turmeric processing is laborious, consumes 30 days and costs Rs. 30,000/acre. The processing also leads to non-availability of the land for the next crop for considerable time period. HaldiTech is a novel technology developed during Ph.D. work that can process 10,000 kg of turmeric (produce of 1 acre) in 24 hrs with targeted Rs. 15,000 as against traditional process that takes 30 days and costs Rs. 30,000. HaldiTech targets Rs. 1500 crore annual market of turmeric processing through agri-waste based novel drying technology.

Jaggery is a traditional Indian sweetener but has been replaced by sugar in Indian household because of its hygroscopic nature. The importance of jaggery as a sweetening agent has increased recently because of its medicinal properties. Thus there is need to make jaggery available in free flowing powder form. This study analyses strategies for granulation of jaggery and difficulties encountered in upscaling of the process.

Fish is considered to be one of the cheapest sources of animal proteins. However, fresh fish contain up to 80% water and is one of the most perishable foods. Fresh Fish are readily susceptible to microbial contamination mainly because of their high moisture content and soft nature of the tissues. Fish post-harvest

losses are significant, especially in developing countries. Drying is one of the oldest methods for preserving fish. Traditional methods of drying include direct sun drying on the ground or on mats, raised bamboo platform or racks. Although open sun drying is a cheap method of preservation, the fish are likely to be contaminated by sand and dust and are thus expected to show a higher microbial content. The primary objective of this study is to address the issues in open sun drying by analyzing the microbial quality of the sun dried fish.

Slack coal, generated during the process of mining, transportation, handling and on exposure to the weather, can be utilized effectively by forming briquettes, which otherwise goes waste or sold at low price. Briquetting of slack coal involves binder, which is driving factor for economic consideration. In Present study, efforts are being made to develop cost effective binder or sustainable binding technique.

PUBLICATIONS (PEER REVIEWED) SO FAR : 62

PATENTS : 04

CONFERENCE PROCEEDINGS/PAPERS : 78

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 15

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 52

H-INDEX : 11

CITATIONS : 438

SUBJECTS TAUGHT :

- Chemical Reaction Engineering, Instrumentation and Process Control, Heat Transfer Operations,
- Perspective of society, Science and Technology

RESEARCH INTERESTS:

- Drying Technology and Particle Handling, Process Development, Multiphase reactors, Industrial
- Crystallization and Filtration.

RESEARCH STUDENTS CURRENTLY WORKING :

RA - 13
Ph.D. (Tech.) – 05
Ph.D.(Sc) - 02
M.Tech. - 01
M.Chem.Engg. - 02

RESEARCH PUBLICATIONS:

International- 11
Peer-reviewed- 11

PATENTS:

International - 01
Indian – 03

SPONSORED PROJECTS :

Government- 01
Private- 01

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Member, State Environment Appraisal Committee, MoEF, Maharashtra Govt.
- Organizer 7th International Workshop on Crystallization, Filtration, Drying, Milling and Granulation 2013, Mumbai.
- Member, Scientific Advisory Board, Maharashtra Pollution Control Board, Government of Maharashtra
- Editorial Advisory Board, Drying Technology, Taylor & Francis, USA
- Advisory Committee member of Asia Pacific Drying Conference
- Advisory Committee member of Nordic Drying Conference
- Advisory Board, International Drying Conference, 2014, Lyon, France

SPECIAL AWARDS/ HONOURS:

- Vocational Excellence Award by Rotary Club of Mumbai for valuable contribution to Science and Society for making Solar Conduction Dryer for the Agricultural Sector.
- Dell Social Innovation Award, 2013
- Bill and Melinda Gate Foundation Agri Award, 2013

PROFESSOR J. B. JOSHI

B. Chem. Engg., M. Chem. Engg., Ph.D. (Tech)
DAE-Homi Bhabha Distinguished Chair Professor
J. C. Bose Fellow (DST)

RESEARCH INTERESTS:

- Fluid Mechanics, Computational Fluid Dynamics,
- Design of Multiphase Reactors, Absorption of NOx Gases,
- Renewable Energy Resources

RESEARCH STUDENTS:

Ph.D.
Completed : 68
Ongoing : 37
Masters
Completed : 59

RESEARCH PUBLICATIONS:

412

PATENTS: 1

PROFESSIONAL ACTIVITIES:

- Member, Editorial Board, Chemical Engineering Research and Design
- Member, Advisory Board, Canadian Journal of Chemical Engineering
- Member, Advisory Board, Reviews in Chemical Engineering
- Chairman, Research Council, CSIR-Indian Institute of Chemical Technology, Hyderabad
- Chairman, Peer review Committee, Indira Gandhi Centre for Atomic Research
- Chairman, Engineering and Technology Division, FIST Department of Science and Technology, Govt. of India

DR. ASHWIN W. PATWARDHAN

Ph. D.
Associate Professor

RESEARCH INTEREST AND EXPERTISE :

Computational Fluid Dynamics, Transport Phenomena, Membrane Separations,

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING (IF ANY):

Fellow, Maharashtra Academy of Sciences, 2012

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

Member IIChE

PUBLICATIONS (PEER REVIEWED) SO FAR : 76

CONFERENCE PROCEEDINGS/PAPERS: 22

SEMINARS/LECTURES/ ORATIONS DELIVERED : 34

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE :12

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 42

AWARDS/HONORS:
National - 5

H-INDEX : 16

CITATIONS : 784

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Research work involves understanding and quantification of momentum and mass transfer processes in different process equipment and membrane separation processes by a combination of experimental and mathematical modeling from first principles including computational fluid dynamics (CFD).

In the recent past, the work involved finding a relationship between geometry of jets, operating conditions, the underlying hydrodynamics and the design parameters such as mixing, dispersion, reaction, etc. Developed design and scale-up procedures for mixing and solid suspension in large tanks. It has been found that mixing can be achieved at substantially lower power consumption as compared to conventional impeller mixers. Jet mixers of various configurations have been developed (and are being tested) for in-line mixing. This has far reaching implications right from design and operation of petrochemical plants to nuclear processing facilities and reactors.

The work on, use of ejectors for bringing about Gas – Liquid mixing and reaction has shown that these systems can produce substantially higher mass transfer rates as compared to conventional equipment like stirred tanks and bubble columns. Ejector geometries have been optimized for specific applications. This work has potential to be applied to designing reactors for fast Chemical Reactions to vacuum production using steam jet ejectors.

Fundamental understanding has been developed for liquid – liquid mixing using Pump-Mix Mixer Settlers. A combination of experiments, population balance and Computational Fluid Dynamics modeling has enabled development of new designs; operation and scale-up procedures.

Phenomena of Gas entrainment at the gas – liquid interfaces has been characterized in terms of the underlying local hydrodynamic characteristics. Local turbulence characteristics have been measured with the state of the art equipment for a variety of situations and it has been shown that the underlying hydrodynamics is the same irrespective of the type of equipment or the flow that leads to entrainment. This work is of relevance in all sectors of chemical industry.

Recent work is on supported liquid membranes where combination of experiments and rigorous mathematical modeling has enabled development of processes for separation of metal ions and various other solutes.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Title	Journal, Volume, Pages	Impact Factor
1	Nere N.K., Patwardhan A.W., Joshi J.B.*	Liquid Phase Mixing in Stirred Vessels: Turbulent Flow Regime	Ind. Eng. Chem. Res. 42, 2661 – 2698 (2003)	2.237
2	Ahuja G., Patwardhan A. W.*	CFD and Experimental Studies of Solid Hold-up Distribution and Circulation Patterns in Gas-solid Fluidized Beds	Chem. Eng. J., 143, 147 – 160 (2008)	3.461
3	Melo J.S.*, Koli S. S., Patwardhan A. W., D'Souza S. F.	Effect of Oxygen Transfer Limitations in Phenol Biodegradation	Process Biochemistry, 40, 625 – 628 (2005)	2.648
4	Patwardhan A. W.	Rotating Biological Contactors: A Review	Ind. Eng. Chem. Res. 42, 2035 – 2051 (2003)	2.237

5	Kandakure M., Gaikar V. G., Patwardhan A. W.*	Hydrodynamic Aspects of Ejectors	Chem. Eng. Sci. 60, 6391 – 6402 (2005)	2.431
6	Ghadge R. S., Patwardhan A. W., Sawant S. B., Joshi J. B.*	Effect of flow pattern on Cellulase deactivation in stirred tank bioreactors	Chem. Eng. Sci. 60, 1067 – 1083 (2005)	2.431
7	Yadav R. L., Patwardhan A. W.*	Design aspects of Pulsed Sieve Plate Columns	Chem. Eng. J. 138, 389 – 415 (2008)	3.461
8	Balamurugan S., Mayank D. Lad, Gaikar V. G., Patwardhan A. W.*	Hydrodynamics and mass transfer characteristics of gas-liquid ejectors	Chem. Eng. J. 131, 83 – 103 (2007)	3.461
9	Yadav R. L., Patwardhan A. W.*	Design aspects of ejectors: Optimization of suction chamber geometry	Chem. Eng. Sci. 63, 3886-3897 (2008)	2.431
10	Patwardhan A. W.*, Pandit A. B., Joshi J.B.	The Role of Convection and Turbulent Dispersion in Blending	Chem. Eng. Sci. 58, 2951 – 2962 (2003).	2.431

SUBJECTS TAUGHT :
Momentum and Mass Transfer, Thermodynamics of Phase Equilibria, Material and Energy Balance Calculations, Process Modeling and Simulation

RESEARCH INTERESTS :
Computational Fluid Dynamics, Transport Phenomena, Membrane Separation Processes,

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Ph.D. (Tech.) – 6
M. Chem. Eng - 4
Undergraduate Summer Fellows - 4

RESEARCH PUBLICATIONS:
International - 6
Conference proceeding - 3

SPONSORED PROJECTS :
Government - 3
Private - 1

AWARDS/HONOURS / ACCOLADES :
Herdillia Award for Excellence in Basic Research by IIChE, December 2013

DR. VIRENDRA K. RATHOD

PhD (Tech), Institute of Chemical Technology, Mumbai
M.Tech, LIT, Nagpur
B.Tech, LIT, Nagpur
Associate Professor

RESEARCH INTEREST AND EXPERTISE :
Enzymatic Catalyzed Reactions, Separation Processes, Process Intensification, Waste Treatment, Enzyme Modification and Treatment, Bio-separation, Nuclear reprocessing, Extraction of natural ingredients, Biodiesel Manufacture

PUBLICATIONS (PEER REVIEWED) SO FAR : 58

PATENTS : 01

PH.D.S AWARDED AS SINGLE : 05

MASTERS AWARDED AS SINGLE : 54

AWARDS/HONORS :
National - 01
International - 57

H-INDEX : 11

CITATIONS : 336

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Studies in extraction and purification of bioactive molecule from natural source

The leaves of Ocimum sanctum contain ursolic acid, which has recently attracted much attention due to its biological activities. Ursolic acid have shown diverse pharmacological activities, anti-inflammatory, antitumor, hypoglycemic, antiulcer, fungicidal. The present work will involve use of novel extraction processes such as ultrasound assisted extraction (UAE), microwave assisted extraction (MAE) and adsorptive purification of the natural product. In (UAE) . Effect of various extraction process parameters such as extraction solvent, extraction time, temp, frequency on extraction yield will be studied. Most significant parameters would be find out and andstastical optimization of most significant process parameters to get maximum yield.This study also aims towards understanding the kinetics and to develop the model for this extraction process under different parameters to predict extraction rate constant, initial extraction rate and equilibrium concentration. Final purification would be carried out by adsorption chromatography.

Hydrodynamics and Mass Transfer Studies in Pulsed Sieve-plate Extraction Column and Mixer-settler

The complex behavior of the hydrodynamics and mass transfer performance, leads to difficulties in the design and performance of pulsed sieve plate extraction column. Dynamics and mass transfer in a liquid-liquid extraction column are essentially determined by the behavior of the dispersed phase. It seems obvious that the changes in the characteristics such as hold-up, drop size, axial dispersion, flooding in the column have to be considered in order to describe conveniently the hydrodynamics of the column. Many empirical models for predicting the hydrodynamics in a liquid-liquid extraction column has been proposed and reviewed by various investigators.

The research work aims at the experimental study of the effect of operating and design variables for elucidation of hydrodynamics of the pulse sieve plate extraction column using various types of plate and different column configuration and the description of a mathematical model and the different algorithms which would be developed for the simulation of extraction column. The Phase Reversal studies have been carried out in a Pulsed Sieve Plate extraction column 0.152 m in diameter.

Remotely operated Combined Air-lift Mixer-settler Unit will be studied in detail for its easiness of operation. Mixer-Settler provide good mixing and reasonably good phase separation performance but rather large hold-ups. Each mixer-settler unit provides a single stage of extraction. Mixer-settlers are used when a process requires longer residence times and when the solutions are easily separated by gravity. This research deals with the comparison of performance of the pulsed sieve plate extraction column with the mixer-settler and their effect on the column efficiency.

Studies in Water Treatment Technologies

Membrane technique is being used and well commercialized for the removal of fluoride from the ground water. Presently, membrane units are in operation in villages at domestic level, which generates fluoride free water and concentrated fluoride stream. Hence, it is proposed to carry out the comprehensive study on the removal of fluoride from concentrated retentate stream overcoming the drawback of membrane technology. Design of a complete process for purification of drinking water including calcium, magnesium and nitrate will be carried out as well. The various parameters i.e. concentration of lime, concentration of reactants, pH

and contamination and effect of other ions present in feed which influences this separation are in progress. Based on optimized parameters of membrane filtration and precipitation techniques, a process will be designed which will also be tested by experimentation. The experimental data obtained after above mentioned experimentation will be analyzed on Ion Selective Meter and Particle Size Analyzer to develop a complete process for water treatment.

Studies in production and purification of a proteolytic enzyme

Among the treatments of cardiovascular diseases, fibrinolytic agent is promising and highly effective therapy. In this proposed work, main emphasize is given to the production and purification of fibrinolytic enzyme from the bacterial culture. One factor at a time method was employed in the production of enzyme in submerged fermentation. In Bioreactor scale, effect of different operating parameters will be evaluated on the production of enzyme. Different purification technique will be used to achieve higher purity product in minimum time period and with less number of steps. Finally, molecular characterization of enzyme will be carried out to determine its molecular weight and other properties.

Hydrodynamics of Extraction Systems

Optimization of the hydrodynamic characteristics such as drop size, dispersed phase hold-up, flooding and axial dispersion in pulsed sieve plate column for water-kerosene system has been done with 0.76m diameter and 1m long pulsed sieve plate column. The optimized geometrical parameters are perforation diameter of 0.003m, plate spacing of 0.05m and fractional free area of 0.2. The optimized operating parameters are throughput of 0.013m/s at phase ratio (A/O) of 1:1 and pulsed velocity of 0.025m/s. At the optimized geometrical and operating parameters, Sauter mean Diameter (d32) attained was 0.0013m, dispersed phase hold-up obtained was 0.18 with throughput (Vcf + Vdf) of 0.013m/s. Continuous phase axial dispersion coefficient (E) was 6.56 $\times$10-4 m2/s. The design of pulsed sieve plate column in terms of diameter and height has been done. The equilibrium data is generated for 0.3M HNO3-TBP-dodecane system and the mass transfer study have been conducted for the removal of dissolved TBP from aqueous 0.3M HNO3 stream. NTU required was 1.52 and the HTU of 0.63 for optimized flow rate and other geometrical and operating conditions was calculated from the experimental results. For removal of dissolved TBP from 202ppm to 5ppm, the NTU required was 3.7 and HTU was constant i.e.0.63m at constant set of geometrical as well as operating conditions. Thus the desired height of the column would be 2.3m. From experimental throughput data, the column diameter required for 100 kg/hr of 0.3M HNO3 feed was 0.085m.

Studies in liquid-liquid systems

Tri n-butyl phosphate (TBP) is the most frequently used solvent in liquid – liquid extraction for nuclear fuel reprocessing. But contact between TBP and aqueous solutions of nitric acid and/or heavy metal nitrates salts at elevated temperature can lead to violent reactions. Thus, there is a need for making development in solvent extraction process for removal of TBP from aqueous waste, so that it can be easily disposed off without creating any explosion havoc. The proposed research work involves studying the solubility of TBP in different concentrations of nitric acid under different conditions. The generation of equilibrium data for different concentrations of TBP and nitric acid will be helpful in calculating the number of theoretical stages in designing of the extraction column. This will be useful for maximum removal of TBP from the aqueous waste. Extraction of dissolved TBP in acidic

aqueous solution was done by Normal Paraffin Hydrocarbon (NPH) solvent using air ejector mixer-settler. Analysis of very low level TBP in both organic and aqueous phase was done. TBP dissolved in organic media like dodecane and NPH was analyzed on Gas Chromatograph (GC) while that dissolved in aqueous media was analyzed on High Performance Liquid Chromatograph (HPLC). Physical properties like viscosity, density and interfacial tension of TBP-NPH-Nitric acid system were also studied.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Vol.	Pages	Impact Factor
1	Ultrasound assisted enzymatic pre-treatment of high fat content dairy wastewater, Adulkar T.V., Rathod V.K.	Ultrasonics Sonochemistry	21	1083-1089	3.798
2	Ultrasound stimulated production of a fibrinolytic enzyme, Avhad D.N., Rathod V.K.	Ultrasonics Sonochemistry	21	182-188	3.798
3	Mass transfer studies in pulsed sieve plate extraction column for the removal of tributyl phosphate from aqueous nitric acid, Lade V.G., Pakhare A.D., Rathod V.K.	Industrial and Engineering Chemistry Research	53	4812-4820	2.206
4	Ultrasound assisted production of daunorubicin: Process intensification approach, Raskar H.D., Avhad D.N., Rathod V.K.	Chemical Engineering and Processing: Process Intensification	77		2.197
5	Process intensification approach for preparation of curcumin nanoparticles via solvent-nonsolvent nanoprecipitation using spinning disc reactor, Khan W.H., Rathod V.K.	Chemical Engineering and Processing: Process Intensification	80		2.197
6	Synthesis of isobutyl propionate using immobilized lipase in a solvent free system: Optimization and kinetic studies, Kuperkar V.V., Lade V.G., Prakash A., Rathod V.K.	Journal of Molecular Catalysis B: Enzymatic	99	143-149	2.823
7	Extraction of piperine from Piper longum using ultrasound, Rathod S.S., Rathod V.K.	Industrial Crops and Products	58	259-164	2.829
8	Mapping of an ultrasonic bath for ultrasound assisted extraction of mangiferin from Mangifera indica leaves, Kulkarni V.M., Rathod V.K.	Ultrasonics Sonochemistry	21	606-611	3.798
9	Xylanase and laccase aided bio-bleaching of wheat straw pulp, Dedhia B.S., Vetal M.D., Rathod V.K., Levente C.	Canadian Journal of Chemical Engineering	92	131-138	1.003
10	Ultrasound assisted three phase partitioning of a fibrinolytic enzyme, Avhad D.N., Niphadkar S.S., Rathod V.K.	Ultrasonics Sonochemistry	21	628-633	3.798

SUBJECTS TAUGHT :
Heat Transfer, Advanced Heat transfer, Transport phenomena & separation process, advanced processes in perfume & flavour technology, Advance Multiphase engineering, Chemical Reaction Engineering

RESEARCH INTERESTS:
Enzymatic Catalyzed Reactions, Separation Processes, Process Intensification, Waste Treatment, Enzyme Modification and Treatment, Bio-separation, Nuclear reprocessing, Extraction of natural ingredients, Biodiesel Manufacture

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Undergraduate Summer Fellows - 04
RA - 4
Ph.D. (Tech.) - 16
Ph.D.(Sc) - 8
M.Tech. - 10
M. Chem. Eng - 2

RESEARCH PUBLICATIONS:
National - 1
International - 16

PATENTS : Indian - 01

SPONSORED PROJECTS :
Government - 03
Private- 01

MRS. KUMUDINI V. MARATHE

B.E., M.Tech (Metallurgical engineering)
Associate Professor

RESEARCH INTEREST AND EXPERTISE :
Membrane Separation, Water Treatment, Membrane Bioreactor, Arsenic & Fluoride Separation, Heavy Metal Separation, Process Intensification, Development of metal composites, Corrosion, Material failure analysis, Nano composites

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

PUBLICATIONS (PEER REVIEWED) SO FAR : 21

CONFERENCE PROCEEDINGS/PAPERS: 13

SEMINARS/LECTURES/ ORATIONS DELIVERED : 09

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 1

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 25

H-INDEX : 5

CITATIONS : 94

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :
Research scope mainly comprise of membrane based separation water treatment technologies. Extensive work in the field of micellar enhanced ultrafiltration has been carried out where separations of heavy metal ions such as cobalt, nickel, copper, chromium etc were considered from aqueous streams. Various aspects of the field such as hydrodynamic studies, optimization, mathematical modelling, surfactant recovery, membrane fouling was considered in different studies. Studies to provide a sustainable solution for concentrated fluoride stream in membrane separation were carried out. Study of separation of different ions and their effect on separation efficiencies is also carried out. Membrane Bioreactor for separation of pesticides by controlled approach has been included in the recent studies. Other studies include development of metal composites, nano composites and corrosion based material failure analysis.

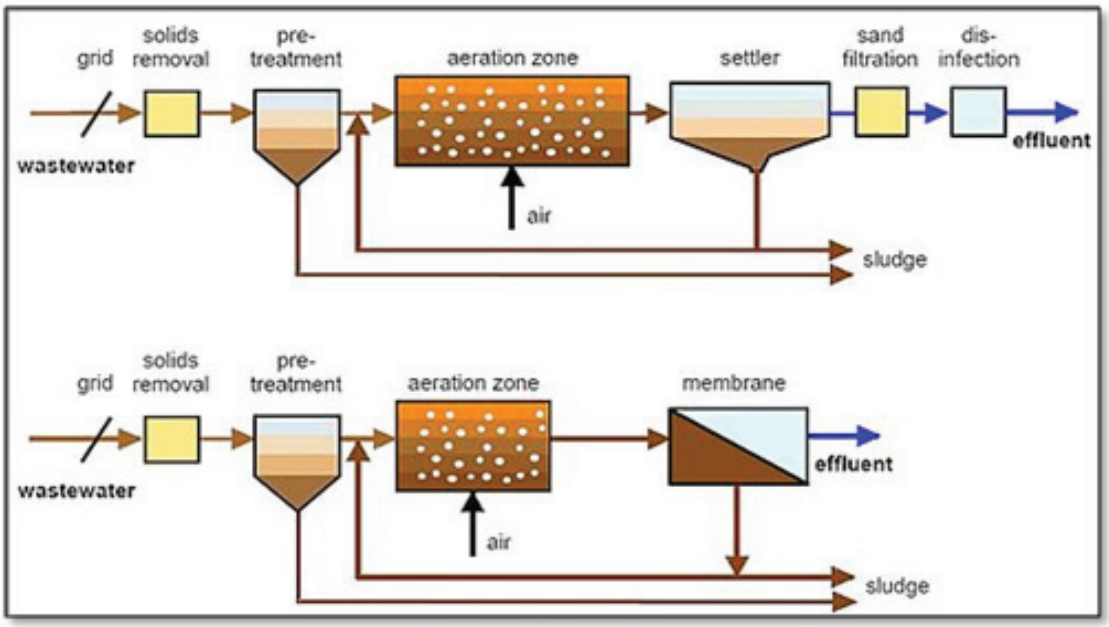


Figure 1: Membrane Bioreactor

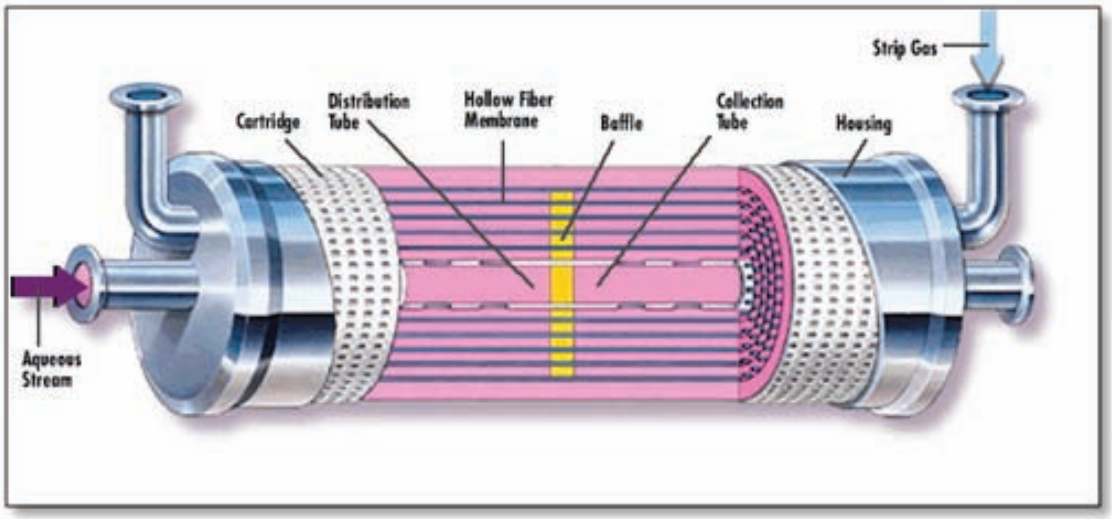


Figure 2: Micellar Enhanced UltraFiltration

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	Jadhav, S.V., Marathe, K.V.	Canadian Journal of Chemical Engineering (2013)	91(2)	311-317	1.003
2	Antonio Dominguez-Ramos, Karan Chavan, Verónica García, Guillermo Jimeno, Jonathan Albo ,Kumudini V. Marathe, Ganapati D. Yadav, Angel Irabien	Industrial & Engineering Chemistry Research (2014)			2.206
3	Vibhandik, A.D., Marathe, K.V.	Frontiers of Chemical Science and Engineering (2014)	8(1)	79-86	0.886
4	Patil, P.N., Marathe, K.V.	Separation Science and Technology (Philadelphia) (2013)	48(4)	547-553	1.16
5	Anthati, V.A.K., Marathe, K.V.	Canadian Journal of Chemical Engineering (2010)	89(2)	292-298	1.003
6	Tadakamalla, K., Marathe, K.V.	Desalination(2011)	266(1-3)	98-107	2.751
7	Manchalwar, S.M., Anthati, V.A., Marathe, K.V.	Journal of hazardous chemicals (2012)	184(1-3)	485-492	4.679
8	Chaudhari, R.R., Marathe, K.V.	Separation Science and Technology(2010)	45(8)	1033-1041	1.16
9	Karate V.D., Marathe K.V.	Journal of hazardous chemicals(2008)	157(2-3)	464-471	4.679
10	Chhatre, A.J., Marathe, K.V.	Separation Science and Technology(2007)	43(11-12)	3286-3304	1.16

SUBJECT TAUGHT:

Material Technology, advanced material science, industrial and engineering chemistry

RESEARCH INTERESTS :

Functionalization of Membranes, Membrane Bioreactor and New Energy Materials.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) – 2 M. Chem. Eng – 4

UNDERGRADUATE SUMMER FELLOWS : 2

RESEARCH PUBLICATIONS:

International – 21
(Peer-reviewed) - 21
Conference proceeding - 16

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY :

- Member scientific advisory committee SWDEWES-2013

AWARDS/HONOURS / ACCOLADES :

- Best Paper Award SESTEC-2008
- Guiding Best MTech Thesis - Indian Society for Technical Education, 2005

DR. PARAG R. GOGATE

B. Chem. Eng., M. Chem. Eng., Ph.D. (Tech.)

Assistant Professor of Chemical Engineering (Sr. Scale)

RESEARCH INTEREST AND EXPERTISE:

Cavitation assisted physical and chemical processing, Wastewater treatment, Process Intensification, Sonochemistry, Enzymatic reactions

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Member, Indian Institute of Chemical Engineers, 2003
- Young Associate of Maharashtra Academy of Sciences, 2007
- Member, National Academy of Sciences, Allahabad, 2009
- Young Associate, Indian Academy of Sciences, Bangalore, 2009
- Member, Indian Society for Technical Education, 2011
- Chartered Member, Institution of Chemical Engineers, UK
- Fellow, Maharashtra Academy of Sciences, 2014

PUBLICATIONS (PEER REVIEWED) SO FAR : 171

CONFERENCE PROCEEDINGS/PAPERS : 23

SEMINARS/LECTURES/ ORATIONS DELIVERED : 50

PH.D.S AWARDED AS SINGLE/ CO-GUIDE : 04

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 20

AWARDS/HONORS :

- National - 19
- International - 05

H-INDEX : 40

CITATIONS : 5005

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

Dr. Gogate's research work has concentrated on the design and application of cavitational reactors for intensification of chemical and physical processing operations and also on studies related to the design of novel large scale reactors. The work has opened up many new areas and techniques for industrial exploitation of cavitation based transformations. The specific areas being targeted include chemical synthesis (oxidation, hydrolysis, epoxidation, transesterification etc.), wastewater treatment (chemical treatment, advanced oxidation processes, use of hybrid treatment schemes based on the combination of different oxidation processes and improvements in biological oxidation), enzyme synthesis and intensification of enzymatic reactions, ultrasound assisted crystallization of pharmaceutical products and liquid atomization. The work is mainly aimed at understanding the theoretical principles for desired intensification/improvement followed by the experimental investigations at different scales of operation using various configurations of the novel reactors with an objective of establishing the scale up strategies. The final goal is to design and successfully operate cavitational reactors at industrial scales of operation with minimized costs of operation for different applications of commercial relevance with specific reference to Indian economy.

The theoretical aspects have considered the different approaches to understand the non-linear bubble dynamics also considering the chemical reactions occurring inside

the bubble. Also based on fundamental analysis, a scheme has been developed to predict the cavitational intensity in the reactor which can aid in obtaining optimum design for cavitational reactors. The work has resulted into establishing the optimum set of design and operating parameters for maximizing the cavitational effects for acoustic and hydrodynamic cavitation reactors and also formed the basis for new designs which can be functional at commercial scale operations.

A major highlight of the work is the successful design and application of pilot scale reactors operating on the basis of multiple frequency multiple transducer ultrasound irradiation. The energy efficiency and the cavitational yields i.e. yield per unit energy supplied, have been found to be order of magnitude higher as compared to the conventional designs of sonochemical reactors. The reactor is the first depiction of operating sonochemical reactors at pilot scale in India and one of the very few all over the world. One such design is being commercialized for application of improvements in crystallization of pharmaceutical products.

Dr. Gogate has also put forward and successfully established the utility of hydrodynamic cavitation reactors with much higher energy efficiencies as compared to sonochemical reactors. Strategies for intensification of the cavitational activity have also been successfully established with an objective of reducing the processing costs as well as enhancing the applicability of the cavitation phenomena. The mechanism of synergy for the combinatorial techniques of oxidation has been conclusively identified and this should help in achieving the intensification goals by using variable operation of the cavitational reactors especially for the wastewater treatment applications.

The work on intensification of enzyme activity due to the use of ultrasound has revealed that the application of ultrasound under optimized conditions results in about two fold increase in the activity of enzyme. This can be a major breakthrough in the area of enzymatic reactions which have been criticized for slow rates despite being Green processes with much higher selectivity. Thermodynamic studies with various enzymes indicated that there is a favorable change in the thermodynamic parameters due to the changes in the enzyme structure leading to enhanced reaction rates.

Dr. Gogate has recently started working in the area of application of cavitational reactors for polymer degradation as well as in the pulping and paper technologies for improving the digestion process. Cavitation generated using ultrasound has been recently looked upon as an new technique for degradation of polymer compounds, mainly due to the fact that the reduction in the molecular weight is simply by splitting the most susceptible chemical bond without causing any changes in the chemical nature of the polymer. The research work in the area of pulp and paper technology applications is concentrated on improving the existing standard operating procedures in the paper and pulp industry by utilizing the effects of the ultrasound generated cavitation phenomena.

Dr. Gogate has been collaborating with many research groups nationally as well as internationally which reflects the networking skills and key commitment towards professional development. Some of the institutes where Dr. Gogate has collaborated in the past include University of Abertay Dundee, Dundee, Scotland (Prof. David Bremner); Technical University of Hamburg-Harburg, Germany (Prof. Uwe Neis); INPT-ENSIACET, Toulouse, France (Prof. Henri Delmas and Prof. Anne Marie Wilhelm); University of Cape Town, South Africa (Prof, Sue Harrison); University of West Hungary, Sopron, Hungary (Prof. Levente Csoka). Dr. Gogate has actively contributed towards development of new research groups in India in many colleges and research institutes and many of the recent joint publications has been a result of this approach.

TEN BEST / REPRESENTATIVE PUBLICATIONS/PATENTS:

Sr. No.	Authors	Journal	Volume (Year)	Page numbers	Journal Impact Factor
1	P.R. Gogate and A.B. Pandit	AIChE J.	46 (2000)	Part I: 372-79 Part II: 1641-49	2.49
2	P.R. Gogate, I.Z. Shirgaonkar, M. Sivakumar, P. Senthilkumar, N.P. Vichare and A.B. Pandit	AIChE J.	47 (2001)	2526-38	2.49
3	P.R. Gogate	Adv. Env. Res.	6 (2002)	335-52	2.08
4	P.R. Gogate and A.B. Pandit	Adv. Env. Res.	8 (2004)	Part I: 501-551 Part II: 553-597	2.08
5	P.R. Gogate	Chem. Eng. Proc.	47(2008)	515-527	1.95
6	V. S. Sutkar, P.R. Gogate	Chem. Eng. J.	155 (2009)	26-36	3.47
7	P.R. Gogate, A.M. Kabadi,	Biochem. Eng. J.	44 (2009)	60-72	2.579
8	K.P. Mishra, P.R. Gogate	Sep. Purif. Tech.	75 (2010)	385–391	2.894
9	A. A. Pradhan, P.R. Gogate	J. Haz. Mat.	173 (2010)	517-522	3.925
10	A.V. Mohod, P.R. Gogate	Ultrason Sonochem	18 (2011)	727-34	3.516

SUBJECT TAUGHT :

Separation Processes, Advanced Reaction Engineering, Material Energy Balance Calculations, Engineering Applications of Digital Computers

RESEARCH INTERESTS:

- Sonochemistry, Hydrodynamic Cavitation,
- Process Intensification, Water and Wastewater Treatment,
- Enzymatic Reactions, Polymer Chemistry, Advanced Oxidation Processes

RESEARCH STUDENTS CURRENTLY WORKING :

Ph.D. (Tech.) - 07
Ph.D. (Sc)-01
M. Tech. - 05
M. Chem. Eng-03

RESEARCH PUBLICATIONS:

International- 24
Book Chapters - 01

SPONSORED PROJECTS :

Government- 02
Private- 01

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Member, Executive Council, Mumbai Regional Center of IIChE
- Member, Board of Governors, UDCT Alumni Association

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY:

- Member, Editorial Board, Advances in Environmental Research – An international journal, 2013-2015
- Member, Editorial Board, Ultrasonics Sonochemistry, 2013-onwards

SPECIAL AWARDS/ HONOURS:

- Chartered Engineer and Member, Institution of Chemical Engineers, UK, 2013
- The SCEJ Award for Outstanding Asian Researcher and Engineer given by The Society of Chemical Engineers, Japan, 2013
- Hindustan Lever Biennial Award for the Most Outstanding Chemical Engineer of the Year Under The Age of 45 Years of Indian Institute of Chemical Engineers, 2013
- Fellow, Maharashtra Academy of Science, 2014

DR. P. D. VAIDYA

B. E. (Chem. Eng.), M. Chem. Eng., Ph.D. (Tech.) in Chem. Eng.

V. V. Mariwala Assistant Professor of Chemical Engineering

RESEARCH INTEREST AND EXPERTISE :

Separation and Reaction Engineering

NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING (IF ANY):

Young Associate, Maharashtra Academy of Sciences (2010)

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Alumnus, Alexander von Humboldt Foundation (Germany)
- Life Member, Indian Institute of Chemical Engineers

PUBLICATIONS (PEER REVIEWED) SO FAR : 40

PATENTS : 01

CONFERENCE PROCEEDINGS/PAPERS: 03

SEMINARS/LECTURES/ ORATIONS DELIVERED : 06

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 04

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 21

POST DOCTORAL FELLOWS SUPERVISED : 01

AWARDS/HONORS

- National - 01
- International - 02

H-INDEX : 17

CITATIONS : 1000

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Discovery of new absorbents for CO_2 capture

Reactive absorption in alkanolamines is a useful CO_2 capturing technology for several chemical processes, e.g., steam methane reforming, natural gas processing, coal gasification and flue gas treatment. The commonly used absorbents, viz. monoethanolamine (MEA) and diethanolamine (DEA) have major limitations, e.g., high solvent regeneration cost, low CO_2 loading capacity, reduced scrubbing efficiency due to amine decomposition and degradation, and corrosion in the equipment and piping. Therefore, development of more efficient and easily regenerable amines is desirable. N,N-Diethylethanolamine (DEEA) represents a tertiary alkanolamine having good potential for the bulk removal of CO_2 from gaseous streams. DEEA is especially promising absorbent, as it can be prepared from renewable resources (i.e. ethanol). The CO_2 reaction with DEEA can be accelerated by using suitable promoters; by this way, the high CO_2 loading capacity of DEEA is combined with the high reactivity of the promoter. In this work, piperazine (PZ), N-ethylethanolamine (EEA), N-(2-aminoethyl) ethanolamine (AEEA) and 1,6-hexamethyl diamine (HMDA) were selected as plausible promoters for DEEA. The efficacy of all these promoters for enhanced CO_2 capture was probed. The equilibrium and kinetic characteristics of promoted DEEA solutions were investigated. The performance of EEA and DEEA as CO_2 absorbents appears encouraging. The results of this study will be able to facilitate design and operation of gas treating plants with DEEA and EEA as the CO_2 capturing component.

Production of renewable hydrogen for fuel cells via reforming reaction

Today, there is considerable interest in the use of hydrogen as an alternative fuel. It can be used in a fuel cell for the production of electricity for stationary and automotive applications. Fuel cells are promising because they provide clean energy and are highly efficient. Methanol, natural gas, ammonia and gasoline are possible sources of hydrogen for fuel cells. Hydrogen generation by steam reforming of these fuels is extensively reported in the literature. Because of concerns about the future supply of petroleum, the usage of renewable resources appears desirable. In this work, many such feedstocks were selected, viz. ethanol, glycerol, ethylene glycol, n-butanol and bio-oil. Catalytic steam reforming of these biomass-derived oxygenates was investigated in a fixed-bed reactor at 773 K. The role of the metal catalyst and the influence of reaction variables on the conversion of feedstock, production of H2 and distribution of the carbonaceous species in the product were studied.

Treatment of wastewater containing chlorinated and nitrogenous organic pollutants

In this work, the destruction of chlorinated organic pollutants by aqueous-phase catalytic hydrodechlorination was investigated. The performance of Ruthenium as a catalyst appears encouraging. Besides, the efficacy of catalytic wet air oxidation for destruction of wastewaters contaminated with nitrogenous organic pollutants was investigated. Once again, it was found that Ruthenium is very effective catalyst for oxidative degradation.

Production of renewable diesel by hydrotreatment of non-edible vegetable oils

Renewable or bio-hydrogenated diesel (BHD) from catalytic hydrotreatment of non-edible vegetable oil represents a promising alternative to petroleum-based diesel. There are several advantages of using BHD, e.g., better product quality, avoidance of byproduct glycerol formation (unlike in biodiesel manufacturing), process flexibility and adaptability for wide variation in feedstock, possibility of the use of existing hydrotreatment units in petroleum refineries (and thus, low capital investment) and integration of renewable fluids in the refinery infrastructure. Therefore, BHD fuel has recently received extensive attention. Triglycerides are the major constituents of vegetable oil. After all unsaturated C=C double bonds are hydrogenated and all oxygen atoms of the triglycerides are eliminated during the hydrotreatment process, a paraffin mixture is produced from vegetable oil. Oil deoxygenation occurs via decarboxylation, decarbonylation, and hydrodeoxygenation, thereby resulting in the formation of CO_2, CO and water. The yield of C_{15}-C_{18} n-paraffins in the liquid hydrogenation product determines the quality of BHD fuel. In this work, the catalytic hydrotreatment of Jatropha oil was investigated. In India, large-scale plantation of Jatropha trees has taken place during the past few years, primarily for biodiesel production. BHD production from Jatropha oil is a candidate technique for its effective utilization. Two types of catalysts, viz. noble metals (Pd, Pt) and sulfided bimetals (Co-Mo, Ni-Mo and Ni-W) were selected for this study. The scope of this work was extended to other non-edible vegetable oils.

Chemical recycling of CO_2 to methanol

Methanol demand is continuously increasing in the chemical and energy industries. It is commercially produced from natural gas or other petroleum products (such as naphtha) through a syngas route. Today, much effort is focused on the catalytic hydrogenation of CO_2 to form methanol. This method is a useful strategy for CO_2 utilization and a practical approach to sustainable development. It is technically competitive with the industrial production of methanol from syngas. It is also at the core of the methanol economy. However, a good catalyst is

crucial to convert CO_2 into methanol. The CAMERE (CO_2 hydrogenation to form methanol via reverse water gas shift or RWGS reaction) process is an alternative low-cost technique for methanol synthesis. It consists of RWGS and methanol synthesis reactions. CO_2 and H_2 are converted to CO and H_2O by RWGS; then, the gaseous mixture of $CO/CO_2/H_2$ is fed into the methanol reactor after removing water. High conversion of CO_2 to CO in RWGS facilitates methanol formation because CO formed can chemically remove water which poisons the methanol synthesis catalyst. Knowledge on RWGS reaction kinetics will aid the design and operation of the RWReactor of the CAMERE process. Pt has high WGS activity; thus, its application for RWGS should be advantageous. In this work, kinetics of the RWGS reaction was comprehensively investigated using Pt-based catalysts. Besides, other catalysts (e.g., Cu and Zn) were investigated too.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr.	Title & Authors	Journal			Impact Factor
		Vol.	Pages	Year	
1	Vaidya, P D, Mahajani, V V, Insight into heterogeneous catalytic wet oxidation of phenol over a Ru/TiO_2 catalyst, Chem. Eng. J.	87	403-416	2002	4.058
2	Vaidya, P D, Rodrigues, AE, Insight into steam reforming of ethanol to produce hydrogen for fuel cells, Chem. Eng. J.	117	39-49	2006	4.058
3	Vaidya, P D, Rodrigues, AE, Kinetics of steam reforming of ethanol over a Ru/Al_2O_3 catalyst, Ind. Eng. Chem. Res.	45	6614-6618	2006	2.235
4	Vaidya, P D, Kenig, EY, CO2-alkanolamine reaction kinetics: A review of recent studies, Chem. Eng. Technol.	30	1467-1474	2007	2.175
5	Vaidya, PD, Rodrigues, AE, Glycerol reforming for hydrogen production: A review, Chem. Eng. Technol.	32	1463-1469	2009	2.175
6	Konduru, PB, Vaidya, PD, Kenig, EY, Kinetics of removal of CO_2 by aqueous solutions of N,N-diethylethanolamine and piperazine, Environ. Sci. Technol.	44	2138-2143	2010	5.481
7	Dubey, VR, Vaidya, PD, Kinetics of steam reforming of acetol using a Pt/C catalyst, Chem. Eng. J.	180	263-269	2012	4.058
8	Sundari, R, Vaidya, PD, Reaction kinetics of glycerol steam reforming using a Ru/Al_2O_3 catalyst, Energy Fuels	26	4195-4204	2012	2.733
9	Sutar, PN, Vaidya, PD, Kenig, EY, Activated DEEA solutions for CO_2 capture – A study of equilibrium and kinetic characteristics, Chem. Eng. Sci.	100	234-241	2013	2.613
10	Jadhav, SG, Vaidya, PD, Bhanage, BM, Joshi, JB, Catalytic carbon dioxide hydrogenation to methanol: A review of recent studies, ChERD	92	2557-2567	2014	2.281

SUBJECTS TAUGHT :
Design and Analysis of Experiments, Fuels Engineering, Environmental Engineering, Chemical Reaction Engineering, Industrial Catalysis, Industrial & Engineering Chemistry.

RESEARCH INTERESTS:
Production of alternative fuels (renewable diesel and hydrogen)
Capture and utilization of CO_2
Wastewater treatment

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
P.D.F. - 01
Undergraduate Summer Fellows - 03
Ph.D. (Tech.) - 10
Ph.D.(Sc) - 10
M.Tech. - 07
M. Chem. Eng - 04

RESEARCH PUBLICATIONS:
International - 06
(Peer-reviewed) - 06

PATENTS :
International - 01
Indian - 01 (Provisional Application Filed)

SPONSORED PROJECTS :
Government - 02
Private- 02

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):
- Alumnus, Alexander von Humboldt Foundation (Germany)
- Life Member, Indian Institute of Chemical Engineers

AWARDS/HONORS / ACCOLADES :
Best Teacher Award (Final Year B. Tech.)

DR. C. S. MATHPATI

B. Chem. Engg., M. Chem. Engg., Ph.D.
Assistant Professor

RESEARCH INTEREST AND EXPERTISE :
COMPUTATIONAL FLUID DYNAMICS AND MULTIPHASE REACTOR DESIGN

FELLOWSHIPS/

MEMBERSHIPS OF PROFESSIONAL BODIES:
Life Member, IIChE

PUBLICATIONS (PEER REVIEWED) SO FAR :14

CONFERENCE PROCEEDINGS/PAPERS: 2

SEMINARS/LECTURES/ ORATIONS DELIVERED : 8

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 7

H-INDEX : 7

CITATIONS : 138

TEN BEST / REPRESENTATIVE PUBLICATIONS:

Sr. No.	Title and Authors	Year	Source Title	Volume	Issue	Page start	Page end	Impact Factor
1	Investigation of flow and heat characteristics and structure identification of FLiNaK in pipe using CFD simulations Sona, C.S., Khanwale, M.A., Mathpati, C.S., Borgohain, A., Maheshwari, N.K.	2014	Applied Thermal Engineering	70	1	451	461	2.488

2	High temperature corrosion studies in molten salt-FLiNaK Sona, C.S., Gajbhiye, B.D., Hule, P.V., Patwardhan, A.W., Mathpati, C.S., Borgohain, A., Maheshwari, N.K.	2014	Corrosion Engineering Science and Technology	49	4	287	295	0.537
3	Computational fluid dynamics of two-opposed-jet microextractor Hule, P.V., Murthy, B.N., Mathpati, C.S.	2012	International Journal of Chemical Engineering	Article ID: 2641 84		1	11	
4	Investigation of flow structures and transport phenomena in bubble columns using particle image velocimetry and miniature pressure sensors Sathe, M.J., Mathpati, C.S., Deshpande, S.S., Khan, Z., Ekambara, K., Joshi, J.B.	2011	Chemical Engineering Science	66	14	3087	3107	2.653
5	CFD simulation of stirred tanks: Comparison of turbulence models. Part I: Radial flow impellers Joshi, J.B., Nere, N.K., Rane, C.V., Murthy, B.N., Mathpati, C.S., Patwardhan, A.W., Ranade, V.V.	2011	Canadian Journal of Chemical Engineering	89	1	23	82	1.003
6	Effect of flow structures on heat transfer in single and multiphase jet reactors Deshpande, S.S., Mathpati, C.S., Gulawani, S.S., Joshi, J.B., Kumar, V.R.	2009	Industrial and Engineering Chemistry Research	48	21	9428	9440	2.206
7	Computational and experimental fluid dynamics of jet loop reactor Mathpati, C.S., Deshpande, S.S., Joshi, J.B.	2009	AIChE Journal	55	10	2526	2544	2.493

8	Dynamics of flow structures and transport phenomena, 1. Experimental and numerical techniques for identification and energy content of flow structures Joshi, J.B., Tabib, M.V., Deshpande, S.S., Mathpati, C.S.	2009	Industrial and Engineering Chemistry Research	48	17	8244	8284	2.206
9	Analysis of flow pattern and heat transfer in direct contact condensation Gulawani, S.S., Dahikar, S.K., Mathpati, C.S., Joshi, J.B., Shah, M.S., RamaPrasad, C.S., Shukla, D.S.	2009	Chemical Engineering Science	64	8	1719	1738	2.653
10	Insight into theories of heat and mass transfer at the solid-fluid interface using direct numerical simulation and large eddy simulation Mathpati, C.S., Joshi, J.B.	2007	Industrial and Engineering Chemistry Research	46	25	8525	8557	2.206

SUBJECTS TAUGHT :

- Process Simulation Laboratory-I (Third Year Chemical Engineering, Sem-V)
- Transport Phenomena (M Tech-BPT, Sem I)
- Advance Flow Visualization Techniques (M ChemEngg, Sem II)
- Bioreactor Design and Control (M Tech-BPT, Sem II)
- Transport Phenomena (Second Year B.Tech., Sem IV)

RESEARCH INTERESTS :

Computational Fluid Dynamics, Multiphase Reactor Design, High Temperature Corrosion Analysis

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

M.Chem.Eng - 4
RA - 4
Ph.D. (Tech.) - 7
Undergraduate Summer Fellows - 3

RESEARCH PUBLICATIONS:

International - 2 Conference proceeding - 1

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

Life Member, IIChE

DR. VISHWANATH H. DALVI

B.Chem.Engg, M.S., Ph.D. (Chemical Engg.)
Assistant Professor

RESEARCH INTEREST AND EXPERTISE :
Solar Thermal Systems, Liquid Phase Thermodynamics, Molecular simulation of condensed phases

PUBLICATIONS (PEER REVIEWED) SO FAR : 3

PATENTS : 1 (applied)

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 1

h-Index : 3

Citations : 67

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :
We have developed low cost solar thermal solutions for process heat and electricity production. We are looking at understanding liquid phase thermodynamic models to develop a platform that can handle complex mixtures.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	Dalvi, Rossky	PNAS	107	13603-13607	9.7
2	Dalvi, Srinivasan, Rossky	J. Phys. Chem. C	114	15562-15573	4.8
3	Dalvi, Srinivasan, Rossky	J. Phys. Chem. C	114	15553-15561	4.8
4	Snap, Kadam, Narayan, Kgsthirangem, Nemade, Dalvi	Desalination	357	150-162	3.96

SUBJECTS TAUGHT :
Process Simulation Lab II, Process Simulation Lab III, Instrumentation and Process Control, Advanced Mass Transfer

RESEARCH INTERESTS:
Designing low cost solar thermal solutions, developing general equations for complex mixture thermodynamics

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED : 3
Ph.D.(Sc) -1
M.Chem.Eng - 2

RESEARCH PUBLICATIONS:
International-3
(Peer-reviewed) - 3

PATENTS : Indian - 1

SPONSORED PROJECTS :
Government- 1

DR. PARAG RAMESH NEMADE

B. Chem. Eng., M. S., Ph. D.

UGC Assistant Professor in Engineering Science

RESEARCH INTEREST AND EXPERTISE :

Membrane separations, Catalysis, Biosensors, Sustainability Engineering,

PUBLICATIONS (PEER REVIEWED) SO FAR : 3

PATENTS : 1 (filed)

CONFERENCE PROCEEDINGS/PAPERS : 4

SEMINARS/LECTURES/ ORATIONS DELIVERED : 2

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 1

h-Index : 2

Citations :121

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

Membranes

Many operations in oils industry are solvent based wherein the solvent is recovered, usually by distillation at lower pressures. These vacuum based distillations are quite sensitive to leakages and lead to off spec products. Our endeavour is to develop pervaporation based membrane processes to replace or reduce the reliance of industry on vacuum distillation. Further, with increasing efforts towards zero-discharge, efficient use and reuse of water is paramount. Use of membrane technologies such as ultrafiltration and reverse osmosis could significantly aid these efforts to reclaim water as well as carry out process separations more efficiently. The research focuses on developing new membranes for use in process liquids and gases separation including pervaporation, reverse osmosis, anti-fouling ultrafiltration membranes. Another focus of research in membranes is development of ultrathin barrier films for packaging applications. Currently, polymeric membranes are being developed using polymers such as polyethersulfone, polyvinylidene fluoride, cellulose acetate, etc. The membranes are then coated with high performance coating to achieve desired properties. The research is based both on developing better membranes and to improve the performance of the membranes with new coatings.

Waste Management

Our group has been active in development of abatement techniques for industrial wastes such as copper smelter sludges, gypsum, fly ash, red mud, etc. We have recently developed a gypsum based water resistant plaster that is currently being evaluated for potential commercialization. We are also working on developing a robust water free toilet systems for improving urban sanitation. Our concept of water free toilet was selected for award of Reinvent The Toilet Challenge (RTTC), a flagship initiative of DBT in collaboration with Bill and Melinda Gates Foundation.

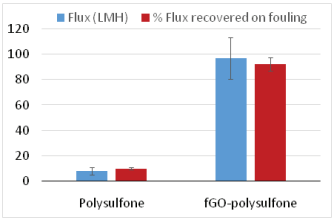
Carbon Nanomaterials

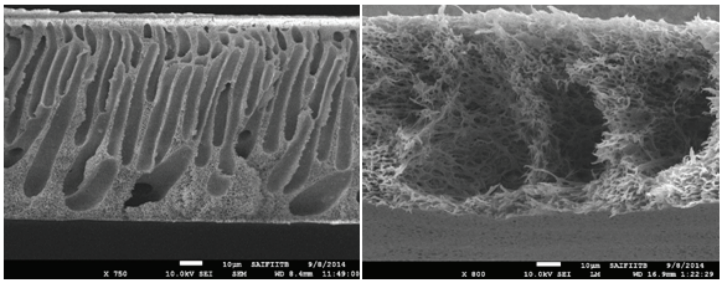
We are looking to develop formulations with antioxidant, anti-ultraviolet nanoparticles for use in cosmetics, self-healing plastics etc. We also looking to develop thin barrier films using inorganic nanoparticles, platelets for long term storage of materials for improved packaging. Carbon nanomaterials are also been investigated in the development of high performance lubricants. We are also working on developing catalysts based on carbon nanomaterials. Some of the catalysts developed in our labs can carry out selective oxidation of benzylic alcohols to aldehydes without overoxidation to carboxlic acids, this route is

not employed in the industry currently as further oxidation of products cannot be prevented in the processes currently used. Efforts are on to study the catalytic effect for other substrates such as fatty alcohols. We were able to replace Lewis acid catalyst used in antibiotics synthesis and perform the reaction at room temperature with high yields, with efforts being directed to carry out the reaction in absence of organic solvent.

Sensors

There is an acute need for simple sensors for detecting adulteration in everyday food stuffs such as milk, oils, ghee, water, etc. If the general populace is armed with awareness, knowledge and tools to identify pollution and adulteration, menace of pollution and adulteration can be tackled more effectively. Our focus is on developing facile techniques for detection of adulteration, pollutants, and unwanted chemicals. Our efforts are currently focussed on developing a facile, inexpensive sensor for detection of arsenic and pesticides in ground water, detection of milk and oil adulteration for mass usage.





SEM of cross section of low fouling functionalized graphene oxide (fGO)-polysulfone membranes

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors	Title	Journal	Year	Vol.	Pages	Impact Factor
1	P. R. Nemade, Gaikar, V. G., Jha, N., Dhopte, K. B., Kadam, M. M.	Novel nanocomposites of γ-MnO_2 supported on graphene oxide used as a catalyst	Indian Patent Application: 473/ Mum/2014				
2	Zhou, M., Nemade, P.R., Lu, X., Zeng, X., Hatakeyama, E.S., Noble, R.D., Gin, D.L.	New type of membrane material for water desalination based on a cross-linked bicontinuous cubic lyotropic liquid crystal assembly	Journal of the American Chemical Society	2007	129	9574	10.677
3	Gin, D.L., Lu, X., Nemade, P.R., Pecinovsky, C.S., Xu, Y., Zhou, M.	Recent advances in the design of polymerizable lyotropic liquid-crystal assemblies for heterogeneous catalysis and selective separations	Advanced Functional Materials	2006	16	865	9.765
4	Nemade, P.R., Davis, R.H.	Secondary membranes for flux optimization in membrane filtration of biologic suspensions	Applied Biochemistry and Biotechnology	2004	113-116	417	1.893

SUBJECTS TAUGHT :
Chemical Engineering Laboratory, Advanced Membrane Separations

RESEARCH INTERESTS :
New membrane materials, green catalysis, green construction materials

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Ph.D. (Tech.) - 3
Ph.D.(Sc) - 1
M.Tech. - 4
M. Chem. Eng - 3
Undergraduate Summer Fellows (if any) - 4

PATENTS :
Indian - 1

SPONSORED PROJECTS :
Government - 3 Private - 2

AWARDS/HONOURS / ACCOLADES :
Award of Project under DBT-Bill and Melinda Gates Foundation Re-Invent The Toilet Challenge (RTTC)

DR. SHARAD M. SONTAKKE

PhD (Chem. Eng.)
DST INSPIRE Faculty

RESEARCH INTEREST AND EXPERTISE :
Catalysis, water treatment, solar cell

PUBLICATIONS (PEER REVIEWED) SO FAR : 4

CONFERENCE PROCEEDINGS/PAPERS: 2

SEMINARS/LECTURES/ ORATIONS DELIVERED : 2

AWARDS/HONORS
National - 1

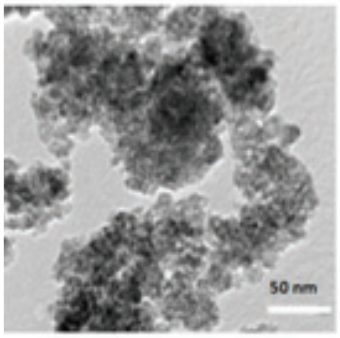
H-INDEX : 3

CITATIONS : 36

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Development of novel catalyst for photocatalytic inactivation of microorganisms

TiO_2 and silver impregnated and silver substituted TiO_2 catalysts were developed by a novel combustion synthesis technique. The catalysts were characterized by powder XRD, TEM, BET surface area, UV-Vis spectroscopy, TGA and photoluminescence spectroscopy. The characterization results were found to be better than the commercially available Degussa catalyst.



Ag/TiO_2 (Sub) Ag/TiO_2 (Sub)

Transmission electron micrographs of (a) Ag/TiO2 (Sub), (b) Ag/TiO2 (Imp) catalysts; Ag clusters encircled.

Photocatalytic inactivation of microorganisms in presence of UV light:

The photocatalytic inactivation experiments were carried out using E. coli (K-12 MG 1655), a bacterial strain and P. pastoris (X-33), a yeast strain, as model microorganisms. The results demonstrate higher photocatalytic activity of all the combustion synthesized catalysts than commercial Degussa P-25 catalyst. The optimum catalyst concentration was 0.25 g/L and the maximum inactivation was observed in the presence of Ag/TiO_2 (Imp) catalyst. Rapid and complete inactivation of the microorganisms was observed at lower initial cell concentrations. A reduced photocatalytic inactivation was observed in presence of various anions ($HCO3^-$, $SO42^-$, Cl^- and $NO3^-$) and cations (Na+, K+, Ca2+ and Mg2+). Even a small addition of H2O2 was observed to improve the photocatalytic inactivation. At higher dosage of H2O2, a 2 min exposure was sufficient to result in a complete inactivation. Changing the initial pH of the solution was observed to have no significant effect on the photocatalytic inactivation.

Photocatalytic inactivation of microorganisms in presence of visible light:

All the combustion synthesized catalysts showed higher activity as compared to those obtained with commercial Degussa P-25 TiO2 in presence of visible light. The higher photocatalytic activity of combustion synthesized TiO2 can be attributed to the lesser crystallite size, higher surface area, large amount of hydroxyl groups and decreased band-gap energy of the catalyst.

Mechanism and kinetics of photocatalytic inactivation:

Various microscopy techniques such as optical microscopy and scanning electron microscopy (SEM) were used to study the inactivation mechanism. From the images obtained, it was suggested that the inactivation is caused due to rupture of cell wall. It was observed that power-law based kinetic model showed good agreement with the experimental data. A mechanistic Langmuir-Hinshelwood type model was also observed to model the inactivation reactions with certain assumptions.

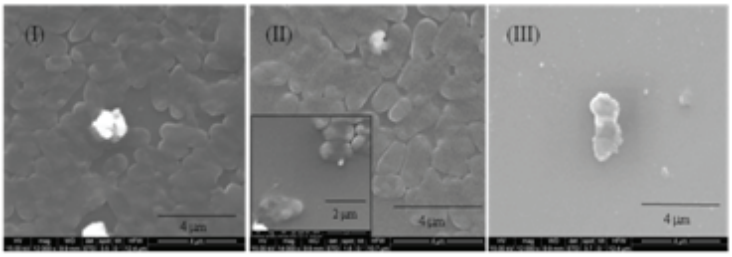
Photocatalytic inactivation of E. coli in presence of immobilized catalyst:

The CS-TiO_2 catalyst was immobilized on glass substrate by LbL deposition technique. The performance of immobilized CS-TiO_2 was compared to commercial Degussa Aeroxide TiO2 P-25 (Aeroxide) catalyst. The effect of various operating parameters on inactivation has been investigated. It was observed that the inactivation process can be studied in continuous mode by using catalyst immobilized on glass beads.

IMPACT OF THE RESEARCH WORK:

The research work is published in 4 international peer reviewed journals. Three of the 4 publications are published in journals having impact factors greater than 3. The research papers have received 36 citations till date as per GoogleScholar database.

The work is also presented at 3 international conferences held at the USA and Singapore.



SEM images of E. coli at (I) 0 min, (II) 15 min, (III) 45 min of UV light assisted photocatalytic inactivation in presence of CS-TiO2 catalyst.

SUBJECTS TAUGHT :

- Environmental engineering and process safety (TY Chem Eng)
- Transport phenomena (SY BTech)
- Chemical Engineering Laboratory (TY Chem Eng)

RESEARCH INTERESTS:

- Catalyst development for MTO reaction,
- photocatalytic degradation of dye,
- anodic material for dye sensitized solar cells

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

RA - 2
Ph.D. (Tech.) -3
Undergraduate Summer Fellows – 4
M. Chem. Eng -3

RESEARCH PUBLICATIONS:

Conference proceeding -2

SPONSORED PROJECTS:

Government- 1
Private- 2

AWARDS/HONOURS / ACCOLADES :

Received DST INSPIRE Fellowship (Aug, 2013)

DR. NEETU JHA

PhD
UGC Assistant Professor

RESEARCH INTEREST AND EXPERTISE :

Carbon Nanomaterials and their Applications

PUBLICATIONS (PEER REVIEWED) SO FAR : 14

PATENTS : 03

CONFERENCE PROCEEDINGS/PAPERS: 15

SEMINARS/LECTURES/ ORATIONS DELIVERED : 10

AWARDS/HONORS

National – 1

H-INDEX : 8
CITATIONS : 292

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Vol.	Pages	Impact Factor
1	Neetu Jha, Imran Jafri and S. Ramaprabhu	International Journal of Hydrogen energy	36	7284	4.086
2	Neetu Jha and S. Ramaprabhu	Nanoscale	2	806	6.739
3	Neetu Jha and S. Ramaprabhu	Journal of Applied Physics	106	84317	2.259
4	Neetu Jha and S. Ramaprabhu	Journal of nanoscience and nanotechnology	10	3798	1.339
5	Irina Kalinina, Elena Bekyarova, Santanu Sarkar, Mikhail E. Itkis, Sandip Niyogi, Neetu Jha, and Robert C Haddon	Macromolecular Chemistry and Physics	213	1001	2.451
6	Neetu Jha and S. Ramaprabhu	Journal of Physical Chemistry C	112	9315	4.835

PATENTS:

INDIA

- S. Ramaprabhu, Neetu Jha and A. Leela Mohana Reddy, "CNT based magnetic nanofluids" Indian Patent filed, (408/CHE/2008)
- S. Ramaprabhu and Neetu Jha, "CNT-M biosensor for detection of OP nerve agents" Indian Patent filed, (1328/CHE/2008)

USA

- S. Ramaprabhu and Neetu Jha, "Nanocomposites including carbon nanotubes having metal nanoparticles" (US Patent (2010)) (12/909547)

SUBJECTS TAUGHT :

Advanced Materials; Physical Methods of Ananlysis and Nanotechnology in Green Technology

RESEARCH INTERESTS:

Carbon Nanomaterials, Fuel Cell, Supercapacitors and Biosensors

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) - 1
Ph.D.(Sc) - 3
M.Tech. - 1
M. Chem. Eng - 1

PATENTS :

International - 1
Indian - 2

SPONSORED PROJECTS :

Government - 4

AWARDS/HONOURS/ ACCOLADES :

Young Scientist Research Award, BRNS

DR. RATNESH JAIN

Ph. D. (Tech.) in Pharmaceutics

UGC Assistant Professor in Engineering Sciences

RESEARCH INTEREST AND EXPERTISE :

Biomaterials for controlled release, Computational Pharmaceutics, Engineering of polymeric and metal nanoparticles for biomedical applications Tissue engineering, Biomedical devices and sensors

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING (IF ANY):

Young Associate of Maharashtra Academy of Sciences

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Member, European Respiratory Society, Switzerland
- Member, Young Scienctist Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA
- Member, Controlled Release Society- USA and Indian Chapter

PUBLICATIONS (PEER REVIEWED) SO FAR : 15

PATENTS/TRADEMARKS : 03

CONFERENCE PROCEEDINGS/PAPERS : 33

SEMINARS/LECTURES/ ORATIONS DELIVERED : 01

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 01

AWARDS/HONORS

- National - 12
- International - 02

H-INDEX : 07
CITATIONS : 186

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

"To learn ● To integrate ● To apply ● To achieve"

This has been my motivation towards achievement of my short term and long term goals. I have a strong penchant for learning not only what is a part of my field of specialization, "Drug delivery systems in Pharmaceutical sciences", but also allied sciences bearing indirect but significant implications on the areas of my expertise. The research work conducted by myself during my early days to formulate a locally injectable liquid crystalline nanocarrier (LCNC) of ofloxacin-serratiopeptidase for effective non-surgical treatment of periodontitis. The dosage form was designed to form an in-situ "gel" after administration into the periodontal pocket where it would adhere to the mucosa of periodontal pocket due to its bioadhesive properties. Also, such a dosage form would act as a matrix to control release of both drug and peptide molecules. This formulation was found to be very effective in clinical studies and the results after thorough investigation are ready for publications.

The objective of second investigation was to formulate a nanoemulsion for intranasal delivery of nitrendipine, which could deliver the drug through the nasal route for an increased bioavailability.

Further research undertaken by myself involved work packages concerning formulation and characterization of various polymeric nanocarriers including soft-shelled systems like polymeric micelles and hard-shelled systems like polymeric nanoparticles. Nose to brain route of administration was studied to present a safe and acceptable alternative to conventional administration of various CNS targeted drugs despite the fact that less than 1% of the researchers all over the world engage in this research. The rationale behind designing micelles was that micellar nanocarriers exhibit sizes (approximately 25 nm) that make them suitable for transport through the olfactory mucosa thus offering direct targeting of the entrapped moieties to the brain. Potential molecules like sumatriptan and zolmitriptan was investigated in various animal models like rats and rabbits. The effect of this delivery system was interpreted by combination of various sensitive radio-imaging techniques like gamma scientigraphy, autoradiography and SPECT and provided an in-depth knowledge of the nose-to-brain transfer of these molecules. We have also shown a detailed mechanism of transfer of these molecules involving various physiological and neurological phenomenons.

In addition to the above mentioned research, due to my keen interest in polymeric nanoparticles, I have established various collaborations for working with these systems. Here, drug loaded polymeric nanoparticles were formulated employing Poly Lactic-Glycolic acid (PLGA) derivatives, Poly-Lactic acid derivatives and PLGA-Heparin were developed for coating them on cardiac stents. The research work was aimed at probing the mechanism of drug release and evaluating the safety and efficacy of drug nanoparticle coated stents.

The objective of the post-doctoral work undertaken by myself was to employ novel biodegradable starch derivatives for targeting drug nanoparticles to the tumour cells. The project involved exploitation of various hydrophobically modified starch derivatives for application as polymer matrix for nanoparticle preparation. The hydrophobic modifications were found to facilitate

encapsulation of hydrophobic moieties like idarubicin and docetaxel. As a Humboldt post-doctoral researcher I moved a step ahead and am attempting to integrate principles of molecular biology to develop delivery systems that can tackle diseases at the genetic level. This investigation has been initiated with the objective of developing nanoparticlulate system for the siRNA delivery for the treatment of pulmonary diseases. These nanoparticles, formulated with a commercial polymer, were found to sufficiently bind and stabilize a model siRNA against luciferase protein. The transfection efficiency and the knockdown of luciferase protein with this formulation was found to be significantly higher when compared with naked siRNA. Furthermore, the kinetics of siRNA release inside live cells is currently being evaluated by labeling different cell organelles and siRNA with suitable dyes and subsequent Fourier resonance energy transfer technique.

Currently, my research grioup is focused on development of Biomaterials for controlled release of drugs/genes/ proteins, Computational Pharmaceutics, Engineering of polymeric and metal nanoparticles for biomedical applications, Tissue engineering, Biomedical devices and sensors.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	Dandekar P*, Jain R*, Keil M, Loretz B, Mujis L, Schneider M, Auerbachd D, Jung G, Lehr CM, Wenz G	Journal of Controlled Release,	164	387-393	8.078
2	Dandekar P, Jain R, Stauner T, Loretz B, Koch M, Wenz G, Lehr CM	Macromolecular Bioscience	12	184-194	3.742
3	Jain R, Dandekar P, Loretz B, Melero A, Stauner T, Wenz G, Koch M, Lehr CM	International Journal of Pharmaceutics	420	147-155	3.991
4	Dandekar P, Jain R, Patil S, Dhumal R, Tiwari D, Sharma S, Vanage G, Patravale V	Journal of Pharmaceutical Sciences	99	4992-5010	3.13
5	Dandekar P, Jain R, Dhumal R, Tiwari D, Vanage G, Patravale V	Food and Chemical Toxicology	48	2073-2089	3.215
6	Jain R, Nabar S, Dandekar P, Patravale V	Pharmaceutical Research	27	655-664	4.742
7	Jain R, Nabar S, Dandekar P, Hassan P, Aswal V, Talmon Y, Shet T, Patravale V	Nanomedicine	5	575-587	7.647
8	Dandekar P, Jain R, Kumar C, Subramanian S, Samuel G, Venkatesh M, Patravale V	Journal of Biomedical Nanotechnology	5	445-455	5.256
9	Koli U, Krishnan RA, Pofali P, Jain R*, Dandekar P*	Journal of Biomedical Nanotechnology	10	1953-1997	5.256
10	Dyawanapelly S, Ghodke S, Vishwanathan R, Dandekar P*, Jain R*	Journal of Biomedical Nanotechnology	10	1998-2037	5.256

SUBJECTS TAUGHT :
Biological Sciences (B. Chem. Engg.), Biomaterials (B. Chem. Engg.) Research Methodology (M. Pharm, M. Chem. Engg., PhD Sci/Tech.)

RESEARCH INTERESTS:
Biomaterials for controlled release, Engineering of polymeric and metal nanoparticles for biomedical applications like cancer, infectious diseases and vaccines. Polymeric Scaffolds and Tissue engineering, Molecular Imaging for preclinical applications, Biomedical devices

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
RA - 3
Ph.D. (Tech.) – 3
M.Chem.Eng - 1
M.Tech. - 3
Undergraduate
Summer Fellows – 2

RESEARCH PUBLICATIONS:
International- 02
Conference proceeding - 10
Books(if any) -04

SPONSORED PROJECTS:
Government - 03
Private - 02

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):
- Member, European Respiratory Society, Switzerland
- Member, Young Scientist Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA
- Member, Controlled Release Society- USA and Indian Chapter

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY:
- UltrasonicsSonochemistry - Elsevier
- European Journal of Pharmaceutics and Biopharmaceutics - Elsevier

AWARDS/HONOURS / ACCOLADES :
- N. R. Kamath Book Award for book entitled 'Nanoparticulate Drug Delivery: Perspectives on the Transition from Laboratory to Market', (Woodhead Publishing Series in Biomedicine), Woodhead Publishing (Elsevier), 2014

DR. DIPAK VITTHAL PINJARI

Ph.D. (Tech)
DST-INSPIRE Faculty (Associate professor grade)

RESEARCH INTEREST AND EXPERTISE :
Cavitation, Nanotechnology, Polymerization technique

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING (IF ANY):
DST-INSPIRE Faculty (Assistant professor grade), Nehru Fulbright post doctorate fellowship

PUBLICATIONS (PEER REVIEWED) SO FAR : 27

PATENTS : 2

AWARDS/HONORS
- National - 27
- International - 1

H-INDEX : 11
CITATIONS : 272

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT : Annexure - I

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	Krishnamurthy Prasad*, **D. V. Pinjari***, A. B. Pandit, S. T. Mhaske	Ultrasonics Sonochemistry	18	1128-1137	3.83
2	Dipak Vitthal Pinjari, Aniruddha B. Pandit	Ultrasonics Sonochemistry	18	1118-1123	3.83
3	K. J. Jarag*, D. V. Pinjari*, A. B. Pandit, G. S. Shankarling	Ultrasonics Sonochemistry	18	617-623	3.83
4	DipakVitthalPinjari and Aniruddha B. Pandit	Ultrasonics Sonochemistry	17	845–852	3.83
5	Krishnamurthy Prasad, D. V. Pinjari, A. B. Pandit and S. T. Mhaske	Ultrasonics Sonochemistry	17	697-703	3.83
6	Krishnamurthy Prasad*, D. V. Pinjari*, A. B. Pandit and S. T. Mhaske	Ultrasonics Sonochemistry	17	409-415	3.83
7	SunitaRaut- Jadhav, Virendra Kumar Saharan, Dipak Pinjari Shirish Sonawane Daulat Saini, Aniruddha Pandit	Journal of Hazardous Materials	261	139–147	4.68
8	B. A. Bhanvase, D. V. Pinjari, S. H. Sonawane, P. R. Gogate and A. B. Pandit	Ultrasonics Sonochemistry	19	97-103	3.83
9	Balvant S. Singh, Hyacintha R. Lobo, Dipak V. Pinjari, Krishna J. Jarag, A. B. Pandit, Ganapati S. Shankarling	Ultrasonics Sonochemistry	20	287-293	3.83
10	S.R. Shirsath, D.V. Pinjari, P.R. Gogate, S.H. Sonawane, A. B. Pandit	Ultrasonics Sonochemistry	20	277-286	3.83

SUBJECTS TAUGHT :

Chemical Engineering Laboratory, Introduction to Polymer Engineering, Introduction to Polymer Science and Engineering

RESEARCH INTERESTS :

Sustainable and Environmental Engineering, Process Intensification, Cavitation Engineering and Technology, Synthesis of Nanomaterials, Polymers, Sonochemistry, and Paints Technology

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Undergraduate Summer Fellows – 2
RA - 1
Ph.D. (Tech.) – 3
M. Chem. Eng – 1
M.Tech. – 3

RESEARCH PUBLICATIONS:

National - 3
International -24
(Peer-reviewed) -24
Conference proceeding -31
Books (if any) -2

PATENTS : Indian -2

SPONSORED PROJECTS :

Government - 1

AWARDS/HONOURS / ACCOLADES :

- Young Engineering Award 2014 by The Institution of Engineers India
- Wipro Earthian Award 2013 by Wipro foundation, Banglore (India)
- Young Associate, Maharashtra Academy of Sciences 2013
- M. P. Chary Memorial Award 2013 by Indian Institute of Chemical Engineers (IIChE).
- Swiss Government Excellence Scholarship 2013-2014.
- DST (Govt. of India) Inspire Faculty Fellowship 2013-2018.
- Fulbright Nehru Postdoctoral Fellowship Program 2013-2014.

DR. SUJIT SURESH JOGWAR

Ph. D. in Chemical Engineering

DST INSPIRE Assistant Professor

RESEARCH INTEREST AND EXPERTISE :

Process Systems Engineering, Energy Integration, Process Optimization and Control

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

PUBLICATIONS (PEER REVIEWED) SO FAR : 10

CONFERENCE PROCEEDINGS/PAPERS: 11

SEMINARS/LECTURES/ ORATIONS DELIVERED : 11

AWARDS/HONORS

- National - 1
- International - 1

H-INDEX : 5

CITATIONS : 93

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

The ever increasing price of energy is the prime reason behind highly integrated chemical plants. Such integrated systems exhibit complex dynamic characteristics and are therefore considered difficult to operate and control. Existing contributions in the area of dynamics and control of such energy integrated systems typically address system-specific issues, and have limited general applicability. Motivated by this, my research focuses on the development of a generic analysis framework for energy integrated networks based on their structural properties (energy flow structure). To this end, generic classes of prototype networks that form the core of these integrated networks have been identified. These prototype networks exhibit unique dynamic features which allow for the reduction (in terms of size and complexity) of the underlying process model.

A class of networks featuring a large recycle of energy compared to the input and output of energy captures tightly integrated configurations which employ a feed-effluent heat exchanger or a heat pump cycle to recover a large fraction of energy from the effluent stream and recycle it back into the network. The underlying energy balance equations were shown to evolve in two time scales and be amenable to a model reduction using singular perturbations. Specifically, the enthalpies of the individual units were shown to evolve in both a fast and a slow time scale, while the overall network enthalpy was shown to evolve only over a slow time scale. In a slightly different vein, a class of energy integrated networks featuring large energy throughput captures networks incorporating an exchange of the latent heat of vaporization between a vapor and a liquid stream (as in the case of multi-effect evaporators and heat integrated distillation columns). These networks exhibit similar (though not identical) time scale properties; specifically, faster energy dynamics compared to the material dynamics were shown to emerge. These networks also allow for model reduction via singular perturbations resulting in fast and slow models of dimensions equal to the size of the energy and material balance variables, respectively.

The time scale properties and the developed model reduction methods for the above classes of networks lend themselves

naturally to a hierarchical control framework, whereby fast, distributed control at the process unit level is combined (possibly in a cascaded form) with slow, supervisory control at the process network level. Nonlinear supervisory controllers (inversion-based) that are well-conditioned are designed directly on the basis of the nonlinear, non-stiff network models to control network-level variables (product purity and temperature, production rate, total inventory) during transitions, while accounting for the nonlinear network dynamics induced by integration.

This work thus presents a systematic and generic analysis and concrete operational strategies for economically attractive energy integrated networks. The novel (and better) operational strategies emerging from the fundamental analysis are generic in nature and find application to a wide range of energy integrated configurations ranging from conventional systems to emerging technologies.

Traditionally, such integrated networks had limited practical significance due to operational and control challenges. Moreover, there had been a tendency to design integrated plants `conservatively' to alleviate these challenges, resulting in suboptimal designs. My work demonstrates that the time scale multiplicity inherent to process networks with tight energy integration, in fact, facilitates controller design, naturally lending them to a hierarchical control strategy. The effect of strong dynamic interactions manifests itself in the form of a network-wide dynamics over a long time horizon. Consequently, control objectives at the network-level are addressed separately from the unit-level control objectives, using a distinct set of manipulated inputs. Furthermore, the state-space realization of the slow dynamics has the additional advantage of a reduced dimensionality, which makes it suitable for model-based controller design and optimization purposes. This will certainly encourage designers to amend their existing design philosophy to incorporate tighter integration and hence, achieve better energy efficiency and economic performance.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1	S. S. Jogwar, M. Baldea and P. Daoutidis	Ind. Eng. Chem. Res.	48(13)	6087-6097	2.206
2	S. S. Jogwar and P. Daoutidis	J. Proc. Contr.	19(10)	1737-1750	1.805
3	S. S. Jogwar, M. Baldea and P. Daoutidis	Comput. Chem. Eng.	34(9)	1457-1466	2.091
4	S. S. Jogwar and P. Daoutidis	Ind. Eng. Chem. Res.	49(17)	8048-8061	2.206
5	D. Georgis, S. S. Jogwar, A. S. Almansoori and P. Daoutidis	Comput. Chem. Eng.	35(9)	1691-1704	2.091
6	S. S. Jogwar, A. I. Torres and P. Daoutidis	AIChE J.	58(6)	1764-1777	2.493
7	S. Heo, S. S. Jogwar, S. Rangarajan and P. Daoutidis	AIChE J.	60(3)	995-1012	2.493
8	S. S. Jogwar, S. Rangarajan and P. Daoutidis	Automatica	-	-	2.919
9	S. S. Jogwar and P. Daoutidis	Ind. Eng. Chem. Res.	-	-	2.206

SUBJECTS TAUGHT :
Instrumentation and Process Control, Chemical Engineering Laboratory

RESEARCH INTERESTS:
Control of Energy Integrated Batch Systems, Scheduling and Optimal Control

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Undergraduate
Summer Fellows - 2
RA - 1

RESEARCH PUBLICATIONS:
International -1
Conference proceeding -2

SPONSORED PROJECTS :
Government - 2

AWARDS / HONOURS / ACCOLADES :
Smt. Padma Kelkar Endowment Award for Encouragement to New Chemical Engineering Faculty

SUPPORT STAFF

U. A. Paralkar
Jr. Engineer

U. A. Sathe
Jr. Engineer

S. M. Mane
Sr. Tech. Assistant

M. S. Harkar
Sr. Tech. Assistant

R. M. Pillai
Sr. Steno Typist

P. P. Bhole
Lab Assistant

L. E. Sawant
Lab Assistant

R. B. Mohite
Lab Assistant

V. A. Bhambid
Lab Assistant

S. D. Shigwan
Lab Assistant

J. P. Gavhane
Lab Attendant

UNDERGRADUATE STUDENTS' SEMINARS/PROJECTS/HOME PAPERS :

B.CHEM. ENG./ B.PHARM/ B.TECH. – SEMINARS :

No.	Student	Topic	Supervisor
1	Battinwar Nandkishor Arunrao	Surfactant in drilling fluids	S.S. Bhagwat
2	Botre Chiranjivi Chandrakant	Derivatives from guvar gum for shale gas	S.S. Bhagwat
3	Pardeshi Kunaal Rohit	Foamability: measurements and its applications	S.S. Bhagwat
4	Singhal Supriya Siya Sharan	Surfactant based on amidoamine as intermediate	S.S. Bhagwat
5	Tawani Ruchika Rajesh	Edible sugar from ligno cellusoic material	S.S. Bhagwat
6	Gupta Apoorv Ajay	Recovery of strategic metals (Li, Sr, La and U) from sea water	V.G. Gaikar
7	Kaku Aakash Rajesh	Purification of carbon nanotubes	V.G. Gaikar
8	Kuber Pranali Nitin	Cellulose to BioPlastic composites	V.G. Gaikar
9	Sarda Parikshit Sanjay	Ceramic Foam and Membrane reactors	V.G. Gaikar
10	Thakkar Harsh Parimal	Potential Applications of rice husk	V.G. Gaikar
11	Ukidwe Mayuri Sunil	Silicon liquid crystals	V.G. Gaikar
12	Abhilasha Dehankar	Use of wavelet transform in signal analysis	A.B. Pandit
13	Suraj Dhoke	Effect of vessel geometry on thermal efficacy of food cooking	A.B. Pandit
14	Abha Gosavi	Techniques of metal/materials erosion evaluations	A.B. Pandit
15	Vatsal Modi	Laser based analytical tools for chemical analysis	A.B. Pandit
16	Krishnan Shetty	Electro-refining techniques of uranium purification	A.B. Pandit
17	Shruti Murli	Chromophore development and its distruction: Physical and chemical techniques and their analysis	A.B. Pandit
18	Shah Radish P.	Microbial colorants	Anand V. Patwardhan
19	Vibhute Anil V.	Compact heat exchangers	Anand V. Patwardhan
20	Menon Bharat Kumar	Membrane-based metal ion recovery technology	Anand V. Patwardhan
21	Sahu Prasad S.	Ionic liquids as reaction media and in solvent extraction	Anand V. Patwardhan
22	Gawade Prathamesh M.	Prediction of gas-liquid and solid-liquid equilibrium	Anand V. Patwardhan
23	Agarwal Kshitij Sanjay	Water Purification using Ceramic Membranes	Ashwin W. Patwardhan
24	Chemburkar Ashwin Madhav	Recent Advances in Membrane Distllation	Ashwin W. Patwardhan
25	Deeksha Jain	Gas - liquid - solid flow in pipelines	Ashwin W. Patwardhan
26	Patil Bhagyesha Sunil	Extractants for Lanthanides Separation	Ashwin W. Patwardhan
27	Patil Sachin Shivaji	Solvent Resistant Nanofiltration	Ashwin W. Patwardhan
28	Vinaya Venkatesh	Ceramic Proton Exchange Membranes	Ashwin W. Patwardhan
29	Kolhekar Snehal Harishchandra	Recent development in Gas-liquids reactors	V.K. Rathod

30	Lanjewar Anand Baburao	Recent development in Tannery waste water treatment technologies	V.K. Rathod
31	Mehta Shivani Jitendra	Process intensification using microwaves	V.K. Rathod
32	Moharir Manjiri Arun	Thermodynamics aspect of liquid-liquid extraction systems	V.K. Rathod
33	Pal Vrishnak Prithvipal	Low cost adsorbent from Agricultural waste	V.K. Rathod
34	Chiluka Nandini Rabindranath	Material science in stem cells	K.V. Marathe
35	Haribal Vasudev Pralhad	Design of pulverised fuel flames and burners	K.V. Marathe
36	Shah Kruti Ashwin	Internal corrosion in multiphase oil and gas pipelines	K.V. Marathe
37	Sonone Nitesh Ramdas	Mechanical behavior of emerging materials	K.V. Marathe
38	Srinivas Venkatesha Shenoy	Coal refinery and coal plex	K.V. Marathe
39	Tupe Saurabh Subhash	Carbonization models	K.V. Marathe
40	Tidke Rutvik P.	Recent advances in cyanide treatment using hydroxyl radicals	P. R. Gogate
41	Rana Kanika	Improvements in membrane separation using pretreatment methods	P. R. Gogate
42	Krishnan Pratik	Advanced oxidation based treatment of wastewater containing surfactants	P. R. Gogate
43	Lele Bhagyashree	Mechanisms for improvements in biological oxidation using cavitation	P. R. Gogate
44	Jain Tushar	Recent advances in polymer degradation using cavitation	P. R. Gogate
45	Bhoyar Soumitra S.	Application of cavitation in the petroleum industry	P. R. Gogate
46	DangeSuchit	CFD simulation of photo-bioreactors for algal biomass production	C.S. Mathpati
47	DeokateParth	Model contactors for determination of intrinsic kinetics of gas-liquid and solid-liquid reactions	C.S. Mathpati
48	GarudSushant	Recent advances in Friedel Craft Acylation	C.S. Mathpati
49	KabraKeshav	CFD simulation of gas-solid fluidization	C.S. Mathpati
50	LahaneDatta	CFD simulation of reactive precipitation processes	C.S. Mathpati
51	Mehta Anjoli	Development of correlation using support vector machine algorithm	C.S. Mathpati
52	Andani Raj Ashwinbhai	A study of environmental impact of increased coal consumption	P. R. Nemade
53	Bote Sayli Devdas	Graphene oxide as catalytic supports	P. R. Nemade
54	Gutte Sachin Suryakant	Capacitive Desalination	P. R. Nemade
55	Mehta Kunal Narendra	Recent advances in hybrid membranes for gas separations	P. R. Nemade
56	Mullerpatan Akshat Prasad	Chiral separations using membranes	P. R. Nemade
57	Shende Surjit Ramesh	Photocatalytic reactions using SrTiO3	P. R. Nemade
58	Sarode Apoorva	Synthesis and applications of TiO2 nanowires	S. M. Sontakke
59	Nirmal Ghata	Electrolytes in dye sensitized solar cells: advantages, disadvantages and modifications	S. M. Sontakke
60	Bhosekar Atharv	OLED: advantages and disadvantages	S. M. Sontakke
61	Vanmali Sushant	Advances in energy storage devices	S. M. Sontakke
62	Tijare Dhanshri	Advances in catalysts used for GTL process	S. M. Sontakke

B.CHEM. ENG./ B.PHARM/ B.TECH. - PROJECT / HOME PAPER :

No.	Student	Topics	Supervisor
1	Patankar Gaurang	Design a plant to manufacture dioctyl sebacate from castor oil	S.S. Bhagwat
2	Kapoor Rishi Shashi	Design a plant to manufacture 100 TPA of Rhamnolipids	S.S. Bhagwat
3	Lele Bhagyashree Jayendra	Design a plant to manufacture float glass at a suitable scale with specific attraction to energy optimization	S.S. Bhagwat
4	Sarode Apoorva Dattatraya	Design electroprecipitation system for 1000 MW Power plant using Indian coal	S.S. Bhagwat
5	Sonone Nitesh Ramdas	Design a plant to manufacture 1 TPD of adipic acid	S.S. Bhagwat
6	Asawa Ramawatar	Design a plant to manufacture 10 TPD of Q acid	V.G. Gaikar
7	Kapur Madhav Karankumar	Design a plant to manufacture 500 TPA of Metformin HCl..	V.G. Gaikar
8	Lahane Datta Sakharam	Design a plant to manufacture 10 TPD of dimethylsuccinate.	V.G. Gaikar
9	Sahu Prasad Sunil	Design a plant to manufacture 1 TPD Tipidazole	V.G. Gaikar
10	Shende Surjit Ramesh	Design a plant to manufacture 1 TPD of NIACIN	V.G. Gaikar
11	Sudarshan Ganesh Kala	Design a plant to manufacture 10 TPD each of chlorobenzotrile	V.G. Gaikar
12	Aman Tandon	Design a plant to manufacture 10 TPD of Acetophones	A.B. Pandit
13	Gayatri Belhekar	Design a plant to manufacture 10 TPD of Glutaric Acid	A.B. Pandit
14	Pranav Kannan	10 TPD of sodium Hexa Meta Phosphate (SHPM)	A.B. Pandit
15	Punit Narwani	Design a plant to manufacture 1TDP of 1,2,3 Benzotriazole	A.B. Pandit
16	Rakesh Tayde	Design a plant to manufacture 2 TDP of Ammonium Molybdate	A.B. Pandit
17	Salman Khan	Design a plant to manufacture 10 TDP of Sodium (Di) hydrogen Citrate	A.B. Pandit
18	Chemburkar Ashwin M.	Design a plant to manufacture 10,000 TPA of epoxidised soyabean oil	Anand V. Patwardhan
19	Bhosekar Atharv A.	Design a plant to manufacture 1,000 TPA of manganese diacetate tetrahydrate crystals	Anand V. Patwardhan
20	Jain Deeksha	Design a plant to manufacture 1,000 TPA of 4,4□-dichlorophenyl sulphone	Anand V. Patwardhan
21	Khedekar Kalpesh K.	Design a plant to manufacture 10,000 TPA of lubricant from epoxidised karanja oil	Anand V. Patwardhan
22	Chaurasia Shabdiki	Design a plant to manufacture 10,000 TPA of 2,2□-dinitrochlorobenzene	Anand V. Patwardhan
23	Chiluka Nandini Rabindranath	Design a plant to manufacture 10000 TPA of polyoxymethylene	Ashwin W. Patwardhan
24	Kondekar Rakesh Ashok	Design a plant to manufacture 10 TPA of Ncyclohexylthiophthalimide	Ashwin W. Patwardhan
25	Modi Vatsal Biren	Design a plant to manufacture 10 TPD of 2-pyrrolidone 5 - carboxylic acid	Ashwin W. Patwardhan
26	Moharir Manjiri Arun	Design a plant to manufacture 10000 TPA of 4-Methyl-2-Pentanol	Ashwin W. Patwardhan
27	Nirmal Ghata Manishkumar	Design a plant to manufacture 20000 TPA of 1,3dioxolane	Ashwin W. Patwardhan
28	Pardeshi Kunaal Rohit	Design a plant to manufacture 30000 TPA of phenylactonitrile	Ashwin W. Patwardhan

29	Bote Sayli Devdas	Design a plant to manufacture 100 TPA of cinnamyl acetate	V.K. Rathod
30	Chavan Kanchan Sukalal	Design a plant to manufacture 10,000 TPA Itaconic acid.	V.K. Rathod
31	Kaku Aakash Rajesh	Design a plant to manufacture 50 TPD p-cresol	V.K. Rathod
32	Kuber Pranali	Design a plant to manufacture 10 TPA octyl acetate	V.K. Rathod
33	Shroff Tanvi Vineet	Design a plant to manufacture 100 TPD of glycerol carbonate	V.K. Rathod
34	Wadekar Shardul Sudhir	Design a plant to manufacture 100 TPA of ibuprofen	V.K. Rathod
35	Apoorva Vinayak Rudra	Design a plant to manufacture 1 TPD zirconium oxychloride	K.V. Marathe
36	Dehankar Abhilasha Vinod	Design a plant to manufacture 5 TPD chromium nitrate	K.V. Marathe
37	Patil Bhagyesha Sunil	Design a plant to manufacture 10 TPD dimethyl sulphoxide	K.V. Marathe
38	Rana Kanika Dhyan Singh	Design a plant to manufacture 10 TPD of sulphuric acid	K.V. Marathe
39	Vora Digna Lalitkumar	Design a plant to manufacture 1 TPD cinnamyl alcohol	K.V. Marathe
40	Dange Suchit Ramesh	Design a plant to produce dimethyl sulfoxide	P.R. Gogate
41	Dhoke Suraj Ambadas	Design a plant to manufacture Triacetin	P.R. Gogate
42	Gutte Sachin Suryakant	Design a plant to manufacture Bisphenol A	P.R. Gogate
43	Kabra Keshav Arvind	Design a plant to manufacture methyl methacrylate	P.R. Gogate
44	Parakh Sheetal Kishor	Design a plant to manufacture beta-carotene	P.R. Gogate
45	Shah Kruti Ashwin	Design a plant to manufacture Triphenyl phosphate	P.R. Gogate
46	Borse Nikhil	Design a plant to produce 20 Ton per day Sodium Phenate	C.S. Mathpati
47	Bansode Umakant	Design a plant to produce 500 TPA of 2,3-epoxypropyl-o-tolylether	C.S. Mathpati
48	Gosavi Abha	Design a plant to produce 200 TPA of sodium diacetate	C.S. Mathpati
49	Kolhekar Snehal	Design a plant to produce 500 TPA of Acetyl Tributyl Citrate	C.S. Mathpati
50	Lanjewar Anand	Design a plant to produce 1000 TPA of isoborneol	C.S. Mathpati
51	Vinaya Venkatesh	Design a plant to produce 200 TPA of Maple Lactone	C.S. Mathpati
52	Agarwal, Kshitij Sanjay	1 TPD Trometamol	P.R. Nemade
53	Bharat, Kumar Menon	10 TPD 3-Oxo-n-Phenyl Buntanamide	P.R. Nemade
54	Pal, Vrishnak Prithvipal	10 TPD 2-Aminobenzaldehyde	P.R. Nemade
55	Parulekar, Raj Kuldeep	10 TPD of Phthalonitrile	P.R. Nemade
56	Tijare, Dhanshri Rajendra	10 TPD Bis(trimethylsilyl)amine	P.R. Nemade
57	Khurana Ishant	Design a plant to manufacture 100 TPD of Monochlorobenzene	S. M. Sontakke
58	Vanjaria Jignesh	Design a plant to manufacture 50 TPA of Rhodamine	S. M. Sontakke
59	Tawani Ruchika	Design a plant to manufacture 100 TPD of Portland cement	S. M. Sontakke
60	Katageri Aakash	Design a plant to manufacture 100 TPD of Chloromethane	S. M. Sontakke
61	Gupta Apoorv	Design a plant to manufacture 300 TPA of Hydrazine hydrate	S. M. Sontakke
62	SwethaMeena S	Synthesis of Ionene with Disulphide linkage for Gene Delivery	Ratnesh Jain
63	SonalNayak	Docking Studies On Chitosan Oligosaccharide	Ratnesh Jain
64	Rishabh Shah	Preparation and Optimization of Micron sized Chitosan Beads	Ratnesh Jain

M.CHEM.ENG./ M.PHARM. / M.TECH./ M.SC. – SEMINAR :

No.	Student	Topic	Supervisor
1	Amar L. Patil	Separation and recovery of H2 from refinery streams by membranes	V.G. Gaikar
2	Viplav H. Pise	Simulation of metal organic frameworks for CO_2 capture	V.G. Gaikar
3	Rohit Shinde	Advances in continuous agitated dryers/calciners: modelling and analysis	A.B. Pandit
4	Joshi Bhushan	Modelling of hydration and swelling of food materials	Anand V. Patwardhan
5	Gupta Harsh	Current and potential application of membrane separation to foods and related industry	Anand V. Patwardhan
6	Maske Harsh G.	Energy analysis of a new design of a photovoltaic cell assisted solar dryer	B.N. Thorat
7	Namdas Nilesh V.	Optimization of spray drying process conditions for the production of maximally viable microencapsulated Lactobacillus acidophilus NCIMB 701748	B.N. Thorat
8	Pachauri Ashutosh Purushottam	Extraction of Lanthanides with various extractants in presence of nitric acid	Ashwin W. Patwardhan
9	Tyagi Shashank Baliram	Membrane processes for recovery of pharmaceuticals from fermentation broths	Ashwin W. Patwardhan
10	Subodh Gautam	Studies in membrane separation processes	K.V.Marathe
11	Srivats Gopalan	Studies in membrane bioreactor	K.V.Marathe
12	Sonune Rishikant K.	Ultrasound applications in Green Chemistry	P.R. Gogate
13	Nadar Kathiresan	Recent advances in Electro Fenton oxidation for wastewater treatment	P.R. Gogate
14	Navale A.N.	Improvement in food quality parameters using ultrasound	P.R. Gogate
15	Velani S.N.	Recent advances in deliginification of sustainable biomass	P.R. Gogate
16	Vikas	Drying of biopharmaceutical products	C.S. Mathpati
17	KhareHrishikesh	Hydrodynamic studies of fluidized and packed-fluidized bed contactors	C.S. Mathpati
18	Kadam, Kiran	Desalination by Directed Solvent Extraction	V. H. Dalvi
19	Yewale, Ashish Gyaniram	Biomimetic membranes	P.R. Nemade
20	Mousiq Wasi	Advances in development of sodium ion batteries	P.R. Nemade
21	Salodkar Vicky	Effective thin film coating techniques	S. M. Sontakke
22	Maharshi Rishi	Recent advances in dye sensitized solar cell towards increasing its efficiency	S. M. Sontakke
23	Vedraj Awate	Engineering Nanomaterials of Different Shapes For Biomedical Applications	R.D. Jain
24	Kshitija Japhalekar	Microbial Production of Low Molecular Weight Hyaluronic Acid	R.D. Jain
25	Sonali Pawar	DNA Staining Using Different Fluorescent Dyes	R.D. Jain
26	Kirti Chavan	Controlled Release Of Fragrances	R.D. Jain
27	Honmane Bharat	Current and future technologies for thesustainable and cost-efficientproduction of high quality food oils	D.V. Pinjari
28	Bhutada Payal	Extraction of Ben oil from MoringaOleifera and its application in cosmetic Industry.	D.V. Pinjari
29	Kabade Ketan	Microreactor	D.V. Pinjari
30	Golewar Rupesh	Development of polymeric based surfactant	D.V. Pinjari
31	Katke Prashant	Design and control aspects of indirect energy integration for batch process systems	S.S.Jogwar

M.TECH (GREEN TECHNOLOGY)

1	Shaikh, Zulkif M.	Recent advances in use of gypsum composites	P.R. Nemade

M.TECH (OOST)

1	Datir, Kirti	Nanoparticle synthesis using emulsions	P.R. Nemade
2	Mishra, Amit	Recent advances in synthesis of green chelating agents	P.R. Nemade
3	Waghmode, Amol	Recent advances in green transformer oils	P.R. Nemade

RESEARCH TOPICS (THESIS WORK) :

ONGOING Ph.D. (TECH)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Tongaonkar Jitendra	ICT, Mumbai	Studies in Interracial Science: Dynamics and Stabilization of Foam	S.S. Bhagwat
2	Dengle Vrushali	ICT, Mumbai	Production and Characterisation of Sophorolipids	S.S. Bhagwat
3	Meshram Pawan	ICT, Mumbai	Studies in Adsorption Kinetics of Surfactant–Modified Clay and Biosorbent	S.S. Bhagwat
4	Pakhale Swapnil	ICT, Mumbai	Studies in biomolecule: Fermentation and downstream processing	S.S. Bhagwat
5	Kalsulkar Sudarshan	ICT, Mumbai	Utilization of agricultural waste	S.S. Bhagwat
6	Mahalle Kalpana	UDCT, Jalgaon	Study of absorption cycle for power and refrigeration	S.S. Bhagwat
7	Patil Rahul	ICT, Mumbai	Thermodynamics of Power Cycle	S.S. Bhagwat
8	Bote Pravin P	Bharti Vidyapeeth CoE, Kharghar	Novel Reactor Design for synthesis of different oleochemicals	V.G. Gaikar
9	Thaore Vaishali B.	UICT	Investigation of Red oil explosion	V.G. Gaikar
10	Singh Meena B.	RYK college, Nashik, (University of Pune)	Molecular Dynamic study of metal ions and design of ligand for metal extraction	V.G. Gaikar
11	Heer Parminder Kaur	UDCT	Engineering Analysis of Renewable Energy and Chemical Resources	V.G. Gaikar
12	Arora Jyotsna	Wilson College	Separation of metal ions using molecular modeling and process intensification of the macrocyclic ligands	V.G. Gaikar
13	Koli Aditya	UICT	Production of Valuable Chemicals from carbohydrates	V.G. Gaikar
14	Ansari Khursheed B.	UICT	Renewable biofuels from ligno-cellulosic and waste biomass	V.G. Gaikar
15	Sawant Vishal M.	UDC	under approval	V.G. Gaikar
16	Labrath Yogita	ICT	"Process intensification of extraction and isolation of natural products."	V.G. Gaikar
17	Rathi Noopur	ICT	Engineering aspects of synthesis of nanoparticles and pharmaceutical cocrystals in microreactor and continuous reactors.	V.G. Gaikar
18	Khot Lalit	ICT, Mumbai	Flux analysis of metabolic pathways for biochemical system improvisation	A.M. Lali

19	Sunkara Sunil	University of Wisconsin Madison, United States	Design of strategies to improve fermentation productivities: use of single and multiple substrate continuous fermentation systems	A.M. Lali
20	Chatterjee Mandrita	ICT, Mumbai	Designing process for isolation and detoxification of proteins and sugar for therapeutic and diagnostic application	A.M. Lali
21	Amritkar Vinod	ICT, Mumbai	Extraction and purification of therapeutic natural products using quality by design approach	A.M. Lali
22	Pednekar Mukesh	ICT, Mumbai	Controlled chemo-enzymatic hydrolysis of polysaccharides	A.M. Lali
23	Deore Gaurangi	ICT, Mumbai	Quality based designing of downstream process of purification of polyclonal and monoclonal antibodies	A.M. Lali
24	Prashant Kumar	ICT, Mumbai	Downstream processing, chara-cterization and application of proteins	A.M. Lali
25	Degwekar Gautam	D. Y. Patil University, Navi Mumbai	Design of immobilized cell systems	A.M. Lali
26	Rao Suruchi	Macquarie University, Sydney	Isolation, cloning and functional characterization of cellulose specific carbohydrate binding modules (CBMs)	A.M. Lali
27	Bajwa Singh Arjun	ICT, Mumbai	Engineering of corynebacterium glutamicum for the production of Lamino acids	A.M. Lali
28	Pramod Kharatmol		Chromatographic separation and purification of biomolecules	A.B. Pandit
29	Shinde Yogesh		Energy optimization studies in heating and cooking devices	A.B. Pandit
30	Shingade Sunil		Design and scale up of continuous process and equipments system for MOX	A.B. Pandit
31	Manchalwar Shirish		Disinfection of potable water using hydrodynamic cavitations in hand pump	A.B. Pandit
32	Mandar Badve		Studies in cavitationally induced transformations	A.B. Pandit
33	Kausley Shankar		Water Recycle Reuse and its Management	A.B. Pandit
34	Atul Bari		Studies in Sonocrystallization Kinetics	A.B. Pandit
35	Karuna Nagula		Process intensification of enzymatic hydrolysis using various process intensification techniques	A.B. Pandit
36	Sachin Jadhao		Exergy Analysis of Resource consumption in India	A.B. Pandit
37	Dipak Kokate		Sustainable Development: Resources; Electricity and ground water conservation through integration of Solar water Pumps and micro drip irrigation system	A.B. Pandit
38	Yogesh Urunkar		Thermal efficiency improvements in solid fuel burning device	A.B. Pandit

39	Zakir Hussain		Modeling and simulation of solid fuel burning devices	A.B. Pandit
40	Chandrakant Bhogle		Depolymerisation of Post-consumer Poly(Ethylene Terepthalate) into value added products using cavitation phenomenon	A.B. Pandit
41	Bhand Dnyaneshwar V. (bioprocess technology)	ICT, Mumbai	Biotechnological approaches for the production of L-ascorbic acid	A. V. Patwardhan
42	Chaudhari Swapnil R. (chemical engineering)	ICT, Mumbai	Studies in advanced membrane separation processes	A. V. Patwardhan
43	Kulkarni Vaishali M. (bioprocess technology)	ICT, Mumbai	Studies in development and application of microbial colorants / pigments	A. V. Patwardhan
44	Prabhu Vandana (chemical engineering)	ICT, Mumbai	Synthesis of ceramic membranes and its applications	A. V. Patwardhan
45	Mirage Yogesh H. (chemical engineering)	ICT, Mumbai	Studies in computational fluid dynamics: pulsed sieve plate column	A. V. Patwardhan
46	Shingare Shyamala P.	LIT, Nagpur	Studies in Dehydration of Biomass and Cellulosic Materials	B.N. Thorat
47	Aware Rahul S.	ICT, Mumbai	Drying Technology - Process Development and Value Addition	B.N. Thorat
48	Deulgaonkar Sushil U.	ICT, Mumbai	End Technologies in the Manufacturing of Pharmaceuticals and Biomolecules	B.N. Thorat
49	Tidke Vaibhav B.	ICT, Mumbai	Techno-commercial evaluation of sustainable technologies	B.N. Thorat
50	Rajput Shailendrasingh P.	ICT, Mumbai	Industrial Process Development	B.N. Thorat
51	Manish S Shah		Transport Phenomena in Gas Jet Reactor: Flow Visualization and CFD Modelling	J. B. Joshi
52	Sharma Ajay	DDIT	Advanced Membrane Separation Processes	A.W. Patwardhan
53	Patil Navarutti	UDCT, Jalgaon	Process Intensification using Advanced Membrane Separation Processes	A.W. Patwardhan
54	Farkate Raosaheb	ICT	Transport Phenomena in Multiphase Processes	A.W. Patwardhan
55	Sharma Anita (Co-supervised)	ICT	Synthesis of Carbon NanoTubes	A.W. Patwardhan
56	Sharma Dipankar (Co-supervised)	Texas	Jet Loop Reactors: Hydrodynamic Characteristics and Design	A.W. Patwardhan
57	Yadav Geeta (Co-supervised)	Dr. L.H. Hiranandani Colleghe of Pharmacy	Extraction and Formulation of Actives from Natural Materials	A.W. Patwardhan
58	Charpe Trupti	Institute of Chemical Technology	Studies in Extraction and Purification of Natural Ingredients	V. K. Rathod

59	Lade Vikesh	Institute of Chemical Technology	Hydrodynamics and Mass transfer Studies in Pulsed Sieve-plate Extraction Column and Mixer-settler	V. K. Rathod
60	Avhad Devchand	Institute of Chemical Technology	Studies in production and purification of a proteolytic enzyme	V. K. Rathod
61	Vetal Mangesh	Institute of Chemical Technology	Studies in extraction and and purification of biomolecules from natural products	V. K. Rathod
62	Vrushali Kulkarni	Institute of Chemical Technology	Study of Extraction and Downstream Processing of Biomolecules from Various Natural Sources	V. K. Rathod
63	Niphadkar Sonali	Institute of Chemical Technology	Study of Extraction and Downstream Processing of Biomolecules of Therapeutic values from Various Natural Sources	V. K. Rathod
64	Rao Priyanka	Bharati Vidyapeeth's College of Phamacy	Study of Extraction and Downstream Processing of biomolecules of medicinal value from natural source	V. K. Rathod
65	Pandhare Dhanashree	Institute of Chemical Technology	Studies in biocatalysis	V. K. Rathod
66	Khan Nishat	Institute of Chemical Technology	Studies in enzyme catalyzed reactions	V. K. Rathod
67	Rathod Wadilal Rohidas	Dr. BATU, Lonere -Raigad	Process Intensification studies using spinning disc reactor	V. K. Rathod
68	Pawar Shweta Vitthal	DR. D. Y. Patil University, Navi Mumbai.	Fermentative production of a biomolecule.	V. K. Rathod
69	Chavan Revati	Institute of Chemical Technology	Extraction of proteins from oil seeds	V. K. Rathod
70	Bhagwat Komal	ICT	Extraction of medicinally important compounds from natural sources	V. K. Rathod
71	Ingle Pradnya	Institute of Chemical Technology	Studies in waste water treatment	V. K. Rathod
72	Dange Parmanand	AISSMS,Pune	Studies in biodiesel production	V. K. Rathod
73	Shewale Sandip	TKIET, Warnanagar	Process intensification of extraction and purification if natural ingredients from herbs	V. K. Rathod
74	Shivraj Yadav		Prcoess intensification studies in ethanol production from waste	V. K. Rathod
75	Pravin Tadkar	ICT	Process intensification in chemical engineering reactions	V. K. Rathod
76	Patil Pankaj N.	ICT	Pesticide degradation using Advanced oxidation processes	P. R. Gogate
77	Ramteke Lokesh P.	ICT	Improvements in biological oxidation	P. R. Gogate
78	Subhedar Preeti	ICT	Intensification of enzymatic reactions using Ultrasound	P. R. Gogate
79	Jawale Rajashree H.	ICT	Advanced oxidation processes based on cavitation for wastewater treatment	P. R. Gogate

80	Mohod Ashish	ICT	Intensification of Chemical Processing Applications Using Cavitational Reactors	P. R. Gogate
81	Barik Aarti	N.I.T. Rourkela	Combined Treatment Schemes based on Cavitation, Ozone and Photocatalysis for Wastewater Treatment	P. R. Gogate
82	Bhandari Praveen	ICT	Intensified Industrial wastewater treatment	P. R. Gogate
83	Bindwal Ankush B.	ICT, Mumbai	Aqueous-phase processing of bio-oil for hydrogen production - A model compound study	P. D. Vaidya
84	Kanawade Ravindra B.	UDCT, Amravati	Studies in reactive absorption	P. D. Vaidya
85	Nimkarde Mahesh R.	LIT, Nagpur	A study on hydrotreatment of Karanja oil for the production of renewable diesel	P. D. Vaidya
86	Karemore Ashvin L.	BITS, Pilani	Development of catalyst for synthesis gas production via CO_2 reforming of methane	P. D. Vaidya
87	Mrs. Joseph Elizabeth	ICT, Mumbai	Studies in reactive absorption of CO_2 by alkanolamines	P. D. Vaidya
88	Bhosale Ghanshyam	ICT, Mumbai	Multiphase reactor design for wastewater treatment	P. D. Vaidya
89	Ms. Barge Aditi	ICT, Mumbai	Studies in water purification	P. D. Vaidya
90	Ms. Budhwani Neha	NIT, Raipur	Studies in reactive absorption	P. D. Vaidya
91	Dewoolkar Karan D.	ICT, Mumbai	Studies in sorption enhanced reforming	P. D. Vaidya
92	Patil Mayurkumar P.	UICT, Jalgaon	Discovery of novel absorbents for enhanced CO_2 capture	P. D. Vaidya
93	Bhoite Ganesh M.	ICT, Mumbai	Pretreatment of biomethanated distillery waste by catalytic wet air oxidation to enhance further biomethanation	P. D. Vaidya
94	Sona C. S.	ICT, Mumbai	Thermal hydraulic investigations on various coolants	C. S. Mathpati
95	Hrushikesh Khadamkar	ICT, Mumbai	Studies in liquid-liquid extraction:Marangoni convection	C. S. Mathpati
96	Shekhar Sawant	BATU, Lonere	Computational and Experimental Studies in Scale-Up of Multiphase Reactor	C. S. Mathpati
97	Achyut Pakhre	ICT, Mumbai	Role of Fluid Mechanics and Supersaturation Fields on the Size Distribution and Morphology of Crystals	C. S. Mathpati
98	Sandeep Gosavi	ICT, Mumbai	Computational and Experimental Study of Fluidization Phenomena	C. S. Mathpati
99	Bhavesh Gajbhiye	ICT, Mumbai	Transport Phenomena at Solid-Fluid and Fluid-Fluid Interface: Computational Fluid Dynamics and Flow Visualization	C. S. Mathpati
100	Yogesh Urankar	LIT, Nagpur	Thermal Efficiency Improvement in Solid Fuel Burning Device	C. S. Mathpati

101	Zambare Rahul S.	UDCT, NMU	Development of carbon nanomaterial based membranes for antifouling applications	P.R. Nemade
102	Chaudhari, Sushil M.	UDCT, NMU	Catalytic studies for on activation of methane for value added products	S.M. Sontakke, P.R. Nemade
103	Sane, Priyanka	DBATU, Lonere	Development of catalyst for conversion of Methane to Olefins	S.M. Sontakke, P.R. Nemade
104	Chaudhari Sushil (Ongoing)	UDCT, NMU	Development and screening of catalysts for MTO reactions	S.M. Sontakke, P.R. Nemade
105	Sane Priyanka (Ongoing)	DBATU	Study of MTO reactions: modeling and kinetics	S.M. Sontakke, P.R. Nemade
106	Pagare Akash (Ongoing)	ICT	Photocatalytic degradation of agrochemical wastes	S.M. Sontakke
107	Pofali Prasad	RMS College of Pharmacy, Bhanpura, Bhopal	Development and evaluation of Nanoplex for nucleic acid delivery	Ratnesh Jain
108	Ghodke Sharwari	Institute of Chemical Technology, Mumbai	Topic Approval pending	Ratnesh Jain
109	DeyAnomitra	Marathwada Agriculture University,Parbhani	Cellular and computational studies for nucleic acid-polymer complexes	Ratnesh Jain
110	Karekar Sammit Ekanath	Vishwakarma Institute of Technology, Pune	Devlopment of Nanocontainers for performance based applications	D. V. Pinjari & A. B.Pandit
111	Jadhav Anand Jaysing	Indian Institute of Technology, Roorkee	Development of Nanocontainers for Anticorrosive Applications	D. V. Pinjari & A. B.Pandit
112	Chandre Dipak K.	SVIT, Chincholi Sinnar,Nashik	Industrial waste water treatment System by Advanced Process.	D. V. Pinjari & A. B.Pandit
113	Zoheb Khan		CFD Simulation and Flow Visualization of Transport Phenomenon in Multiphase Reactors	J. B. Joshi
114	G Gouthaman		Structure-Property Relationship, Characterization and Synthesis of Polyester Based Carbon Composites	J. B. Joshi
115	Pooja Ashish Thorat		Novel Approaches in Biopharmaceutical Synthesis and Separations	G. D. Yadav
116	Moreshwar P. Hude		Utilization of Renewable Resources for the Production of Biofuels, Bioenergy and Biopharmaceuticals	G. D. Yadav
117	Rahul Kumbhar		Functionalised And Tailored NanoparticleCatalysts As In Organic Transformations	G. D. Yadav
118	Prasad Mandade		Evaluating the Life Cycle Environmental and Economic Aspects of Tropical Biofuels	G. D. Yadav
119	Satish Kabra		Valorisation of Biomass through Catalysis and Process Intensification	G. D. Yadav
120	Manish Tiwari		Process Intensification Using Micromodels& Novel Catalysts	G. D. Yadav

121	Saurabh Patankar		Novelties in Cascade Engineered Catalytic Reactions	G. D. Yadav
122	Amarsingh L. Jadhav		Selectivity Engineering in Synthesis of Valuable Chemicals	G. D. Yadav
123	Apoorva M. Ranjekar		Design and Development of Advanced Materials and Processes for Energy Storage	G. D. Yadav

Ph.D. (Science)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Goswami Anik	R. N. Ruia college	EcofriendlySurfactants: Dynamic Studies and Applications	S.S. Bhagwat
2	Ahire Manisha	RYK Science college Nasik	Interfacial Science for greener synthesis methods	S.S. Bhagwat
3	Desai Shobha	University of Mumbai	Study of Phase equilibria in surfactant solutions	S.S. Bhagwat
4	Parab Pallavi	R. N. Ruia college	Thermodynmaics of Phase equilibria relevant for absorption cycles	S.S. Bhagwat
5	Lokhande Kumudini	University of Mumbai	Synthesis and Characterization of surfactants derived from natural sources	S.S. Bhagwat
6	Kedar Vaibhav	Bhavan's College	Application of surfactant solution in petroleum industry	S.S. Bhagwat
7	Kotian Prashant	University of Mumbai		S.S. Bhagwat
8	Kadam Mahesh	UICT, Matunga Mumbai	Synthesis of CdS and other semiconducting nanoparticles using surfactant and hydrotropic combinations and their application in photosynthesis	V.G. Gaikar
9	Khot Kalpesh	Institute of Science	Design and synthesis of functionalized ligands for adsorptive separation of CO_2/N_2 and CO_2/CH_4 mixture	V.G. Gaikar
10	Dabir Tasneem	Wilson college	Thermodynamic studies of extraction and purification of phytochemicals from plant extract	V.G. Gaikar
11	Dubhashe Yogeshwar	UDC	under approval	V.G. Gaikar
12	Hiware Suwarna	S.S.G.M College	under approval	V.G. Gaikar
13	M K Muffidah K	Kerala	Synthesis and characterization of nanoparticles using alumina membrane as template.	V.G. Gaikar
14	Pathan Arif Khan	Ahmadnagar College	Under approval	V.G. Gaikar
15	Shukla Hiral	M. S. University of Baroda, Baroda	Integrative for butanol fermentation	A. M. Lali
16	Pawar Hitesh	Pratap College, Amalner	Synthesis of bio-based chemicals	A. M. Lali
17	Gangal Swanand	Mumbai University, Mumbai	Designing strategies to improve microalgae lipid production for biofuels	A. M. Lali
18	Patil Mallikarjun	Solapur University, Sholapur	Recovery and transformation of lignin to value added products	A. M. Lali
19	Yadav Manish	University Department of Chemistry, Mumbai	Strategies for enzyme mediated synthesis of fatty acid esters	A. M. Lali

20	Maurya Ritu	University Dept. of Chemistry, Kalina	Reactive separation of organic acids from fermentation broth	A. M. Lali
21	Sarnaik Aditya	Mumbai University	Growth Engineering of cyanobacteria and optimizing conditions to upgrade the productivity	A. M. Lali
22	Deb Shalini	Bangalore University	Metabolic engineering of E. coli for the production of isobutanol	A. M. Lali
23	Kavadia Monali	Mumbai University, Kalina	Lipase mediated synthesis of designer lipids	A. M. Lali
24	Asodekar Bhupal	K.M.C. College, Khopoli	Fractionation of high lignin content biomass	A. M. Lali
25	Singh Nitesh Kumar	University of Mumbai, Mumbai	Extraction and purification of phenolic acid and conversion to value added products	A. M. Lali
26	Patil Parmeshwar	PAU, Ludhiana	Characterization of holoceullose	A. M. Lali
27	Rathod Jayant	Mumbai University, Mumbai	Molecular cloning, over expression and characterization of stress responsive genes for its functional analysis in green algae	A. M. Lali
28	Sawant Sonal	Birla College, Kalyan	Engineering microbial host strains for heterologous production of value added chemicals	A. M. Lali
29	Patil Smita	Ramnarain Ruia College Matunga, Mumbai	Study of photosynthetic efficiency of microalgae in experimental and designed conditions	A. M. Lali
30	Gaikwad Sujata	Birla College, Kalyan	Deployment of nutrient regulation strategy for generation of sustainable oleaginous microalgae feedstock	A. M. Lali
31	Vira Chaitali	Mumbai University, Mumbai	Growth engineering of algae for biomass production	A. M. Lali
32	Pillai Vijita	Mumbai University, Mumbai	Engineering Propionibacterium for organic acid production	A. M. Lali
33	Palkar Juilee	Mumbai University, Mumbai	Dynamics of microalgal physiology with sewage as a sustainable fertilizer for biofuels	A. M. Lali
34	Nainan Lucy	St. Xaviers Fort, Mumbai	Production of C3 metabolites in E. coli	A. M. Lali
35	Krishnan Archana R.	G.N. Khalsa College of Arts, Sci. Commerce, Mumbai	Designing microbial cell factory for IPP pathway engineering	A. M. Lali
36	Abha Sahu		Ultrasonication-assisted synthesis of eco-friendly nano chelating agent/ composites for waste water treatment	A.B. Pandit
37	Bhagwat Patil		Ultrasound assisted physiochemical transformation from renewable sources	A.B. Pandit
38	Bhalerao Machhindra S. (chemistry)	Padmashri Vikhe-Patil College of Arts, Commerce and Science, Pravaranagar, Maharashtra	Studies in organic reactions and catalysis	A. V. Patwardhan

39	Kumbhaj Shweta (chemistry)	Government Girls' Postgraduate College, Bilaspur, Guru Ghasidas University, Chhattisgarh	Studies in chemistry aspects of membrane separation and ceramic membrane synthesis	A. V. Patwardhan
40	Choughule Yogesh K. (chemistry)	Institute of Science, Mumbai	Studies in organic reaction systems for chiral discrimination processes	A. V. Patwardhan
41	Mane Satish M.	Mumbai University	Process development of Organic Phsophate and Phosphite Compounds	B.N. Thorat
42	Nagwekar Nupur N.	Mumbai University	Quality Analysis of Dried Foods and Biologicals	B.N. Thorat
43	Varsha G Kankani		Mathematical Modeling of NOx Absorption and Optimisation of Absorption Systems.	J. B. Joshi
44	Gadipelly Chandrakanth	Wilson College,Mumbai	Studies in process intensification in wastewater treatment technologies	V. K. Rathod
45	Jadhav Sachin	Institute of Chemical Technology	Studies in wastewater treatment technologies	V. K. Rathod
46	Gadalkar Sagar	Ahmednagar College, Ahmednagar	Studies in process intensification of Biomolecules Extraction and Application	V. K. Rathod
47	Waghmare Govind	G. S. Gawande College Umarkhed	Utilization of waste cooking oil for useful products	V. K. Rathod
48	Bansode Sneha	University of Mumbai. Dept. of Chemistry	Studies in Enzyme catalyzed synthesis	V. K. Rathod
49	Gupta Anilkumar	VES college of Arts, Science and Commerce	Studies in biodiesel production	V. K. Rathod
50	Gawas Sarita Deepak	Mumbai University Sub-Centre , Ratnagiri	Studies in Process Intensification in Enzyme catalyzed Reaction.	V. K. Rathod
51	Yadav Suraj Vasantrao	University of Pune,Pune	Studies in synthesis and applications of heterogeneous catalyst	V. K. Rathod
52	Prajapati Amrut	University Department of Chemical Technology, North Maharashtra University, Jalgaon	Studies in polymer degradation using ultrasound based treatment approaches	P. R. Gogate
53	Jadhav Suhas G.	IoSc, Mumbai	CO_2 hydrogenation to methanol	P. D. Vaidya
54	Jain Anandkumar B.	BPHE College, Nagar	Studies in heterogeneous reactions	P. D. Vaidya
55	Yadav Abhimanyu K.	I.Y. College, Mumbai	Sustainable H_2 production by catalytic reforming	P. D. Vaidya
56	Payal Dipak D.	Siddharth College, Mumbai	Destruction of chlorinated organics by catalytic hydrotreatment	P. D. Vaidya
57	Bhandare Sachin G.	University of Mumbai	Studies in catalytic hydrogenation	P. D. Vaidya
58	Vemula Shrikant.Y.	D.G. Rupalel College, Mumbai	Studies in advanced oxidation process	P. D. Vaidya
59	Patil Shailesh J.	C.K. Thakur College, Panvel	Renewable diesel via catalytic hydrotreatment of vegetable oil	P. D. Vaidya
60	Ms. Baviskar Chetana V.	UICT, Jalgaon	The steam reforming of bio-oil model compounds	P. D. Vaidya
61	Ms. Pachupate Nilam	University of Mumbai	Studies in wet air oxidation of nitrogen containing organic pollutants	P. D. Vaidya

62	Babu Prabijna S.S.	IIT Bombay, Mumbai	CO2 utilization via RWGS reaction	P. D. Vaidya
63	Dhopte, Kiran B.	Dnyanopasak College, Parbhani	Application of Graphene oxide as Heterogeneous catalyst support for organic transformations	A. V. Patwardhan / P. R. Nemade
64	Godfree P. Fernandes		Green Chemistry & Sustainable Processes Based on Biomass	G D Yadav
65	Mandar G. Kulkarni		Synthesis and Applications of Chiral Phase Transfer Catalysts in Multiphasic Green Reactions	G D Yadav
66	Bapu A. Gawade		Novel Organic Transformations by Using Catalysis	G D Yadav
67	Jeetendra Y. Salunkhe		Waste Minimisation through Development of Novel Catalytic Process	G D Yadav
68	Kalpesh H. Bhadra		Green Processes for Industrially Important Phenolics	G D Yadav
69	Shivaji Bhanawase		Novel Base Catalysis in Organic Tranformations	G D Yadav
70	Gunjan P. Deshmukh		Green Synthesis of Agrochemicals	G D Yadav
71	Dhiraj Katole		Synthesis of safer chemicals using new approaches	G D Yadav
72	Akhil Nakhate		Synthesis of Biobased Novel Compounds through Catalysis	G D Yadav
73	Jayaram Molleti		Design and Synthesis of Safer Chemicals by Benign Green Routes	G D Yadav
74	Abhilash Sukhadeve		Synthesis and Applications of Novel Multifunctional Catalysts in Organic Transformations	G D Yadav
75	PoojaTambe		Carbon Dioxide Valorization	G D Yadav
76	Kalidas Rasal		Insight into Catalysis in Utilisation of Carbon Dioxide into Chemicals and Solvents	G D Yadav
77	Anil B. Gawade		Forays into Novel Catalysis	G D Yadav

M.CHEM. ENG. / M. PHARMA / M. TECH. :

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Nirgude Vikrant.H.	Vishwakarma Institute of Technology, Pune		S.S. Bhagwat
2	Mascarenhas Joyfree	Tatyasaheb Institute of Engg. & Tech., Warananagar	Study & Modeling of surfactants & its Mixtures	S.S. Bhagwat
3	Kamath Suhas	Vishwakarma Institute of Technology, Pune	Structure Property Relationship of Performance Chemicals using Artificial Neural Network	S.S. Bhagwat
4	Roy Indrayani	Baba Saheb Ambedkar Technological University Lonere		S.S. Bhagwat

5	Walwatkar Mayur	Datta Meghe College of Engineering Mumbai	Greener Approach towards synthesis of Organic compounds using Aqueous Media	S.S. Bhagwat
6	Mohite Harshad	Datta Meghe College of Engineering, Mumbai	Microwave assisted reactions	V.G. Gaikar
7	Navale Anagha	NDVMP college of Pharmacy, Nasik	Adsorbent designing for lactic acid	V.G. Gaikar
8	Bole Ameya	Shivaji University, Kolhapur	Process Intensification in Pharmaceutical industries	V.G. Gaikar
9	Abhijit Kale		Role of cavitation in enhancing Biological Processes	A.B. Pandit
10	Chandrakant Holkar		Recycle & Reuse of Water in Textile Industry	A.B. Pandit
11	Balaji Bhingole		Cavitation damage in Centrifugal pumps Numerical and Experimental Studies	A.B. Pandit
12	Akshay Sharma		Advanced oxidation processes for treatment of pollutants in water.	A.B. Pandit
13	Vijay Yadav		Optimization of sophorolipid production from Starmerella bombicola	A.B. Pandit
14	Rituraj	Guru Gobind Singh Indraprastha University, New Delhi	Separation using supported liquid membranes	A. V. Patwardhan
15	Rajput Swapnil	K. K. Wagh Institute of Engineering Education & Research, Nashik, Maharashtra	Separation using supported liquid membranes	A. V. Patwardhan
16	Shingate Vittal N.	Karnataka Lingaraj Education Society's College of Engineering and Technology, Belgaum, Karnataka	Removal of organic acids using supported liquid membrane containing tri-n-octylamine as an extractant	A. V. Patwardhan
17	Maske Harsh G.	ICT, Mumbai	Advanced Drying Technology in the manufacture of chemicals and pharmaceuticals	B.N. Thorat
18	Namdas Nilesh V.	KIT College of Engg.	Effect of different drying method on polyphenolic compounds of medicinal herbs	B.N. Thorat
19	Shrivastava Shobhit	BITS Ranchi	Effect of particle morphology and moisture content on flowability	B.N. Thorat
20	Kulkarni Amod	Datta Meghe College of Engineering	Hollow fibre supported liquid membranes	A. W. Patwardhan
21	Gade Hrushikesh	BITS, Rajasthan	Manufacture of Ceramic Membranes and its use in water disinfection	A. W. Patwardhan
22	Joshi Bhushan	Datta Meghe College of Engineering	Tea Infusion Kinetics	A. W. Patwardhan
23	Yewale Ashish	Jawaharlal Darda Institute of Engg. and Techn.	Supported Liquid Membranes	A. W. Patwardhan

24	Kulkarni Hrishkesh	Production and purification of biomolecule	NDMVP Samaja's college of pharmacy,Nasik	V. K. Rathod
25	More Amol	Process intensification of downstream processing of biomolecule	Government college of pharmacy,Aurangabad	V. K. Rathod
26	Dhage Avinash	Fermentative production of B-glucosidase from A. niger	MGV Pharmacy college,Amravati	V. K. Rathod
27	Thorat Sachin	Studies in liquid liquid extraction equipment	K.K Wagh college of engineering	V. K. Rathod
28	Pandey Rinky	Equilibrium and thermodynamic studies in iquid liquid extraction of tri-butyl phosphate from aqueous solutions	BATU,Lonere,Raigad	V. K. Rathod
29	Khode Pranjali	Catalytic wet air oxidation of tannery waste	Kolhapur Institute of Technology	V. K. Rathod
30	Tomke Prerna	Green synthesis of flavours	Queens college of food technology and research center,Aurangabad	V. K. Rathod
31	Deshmukh Ashwini	Studies in enzyme catalyzed synthesis of flavours	Marathwada Agricultural University,Parbhani	V. K. Rathod
32	Sutar Rahul	Studies in waste water treatment	KIT College of engineering	V. K. Rathod
33	Nivekar Girish	Preparation and characterization of combi magnetic crossed linked enzyme aggregates of lipase and cellulase	Kolhapur Institute of Technology	V. K. Rathod
34	Nadar Shyamraja	Studies in enzyme immobilization	Kolhapur Institute of Technology	V. K. Rathod
35	Bharambe Bhavna	Synthesis of nanoparticles using novel techniques	M.J College, Jalgaon	V. K. Rathod
36	Gaikwad Namrata D.	Dr. Babasaheb Ambedkar Technological University, Lonere	Intensification in Liquid-Liquid reaction using Sonochemical reactors	P. R. Gogate
37	Nadar Sathish G.	SSBT's COET, Jalgaon	Novel cell Disruption approaches	P. R. Gogate
38	Kaur Paramjeet	REC, Hulkoti (Visveswaraya Technological University, Belgaum, Karnataka)	Sonochemical Reactors for Food Sterilization	P. R. Gogate
39	Tripathi Puneet	Bharati Vidyapeeth College of Engineering, Navi Mumbai.	Waste water treatment using biological and oxidation methods	P. R. Gogate
40	Gupta Harsh	M.B.M Engineering college Jodhpur, rajasthan	Improved Catalyst synthesis and application in heterogeneous reactions	P. R. Gogate

41	Khare Hrishikesh	Tatyasaheb kore institute of engineering & technology	Combined treatment processes for wastewater remediation	P. R. Gogate
42	Patil Vijay S.	MGM's College of Engineering and Technology	Green synthesis approach based on ultrasound	P. R. Gogate
43	Ghanpande Shrinidhi	Institute of Chemical Technology, Mumbai	Improvements in biological oxidation processes	P. R. Gogate
44	Nadar Kathiresan	Bharati Vidyapeeth, Mumbai	Modeling and thermodynamic studies in reactive absorption	P. D. Vaidya
45	Bhavsar Sanket	ICT, Mumbai	Study of CO2 capture by alkanolamines	P. D. Vaidya
46	Deshpande Vaibhav K.	Dr. BATU, Lonere	Catalytic hydrodechlorination of chlorinated organic compounds	P. D. Vaidya
47	Balki Aniket	VNIT, Nagpur	Study of hydrogenation reaction	P. D. Vaidya
48	Pisal Devendra S.	MMCP, Pune	Catalytic hydrogenation of non-edible vegetable oil to produce renewable diesel	P. D. Vaidya
49	Ms. Dadia Harini K.	MGMCET, Navi Mumbai	A study on H2 production by reforming of oxygenated hydrocarbon	P. D. Vaidya
50	Ms. Vedak Tanmayee S.	KMKCP, Mumbai	A study on glycerol hydrogenolysis to 1,3-propanediol	P. D. Vaidya
51	Ms. Bhattacharya Munmi	Amity University, Noida	Study on dry reforming of methane	P. D. Vaidya
52	Gharote Shrinivas	ICT, Mumbai	Study of reverse water gas shift reaction	P. D. Vaidya
53	Ms. Sankhe Neha	MGM College, Mumbai	Liquid phase catalytic hydrogenation in a slurry reactor	P. D. Vaidya
54	Dhonde Loukik	S.S. Jondhale CoE, Mumbai	Study of catalytic hydrogenation	P. D. Vaidya
55	Divya Raghunandanan	GEC Thrissur	Corrosion and Heat Transfer Studies in Molten Salts	C. S. Mathpati (2012-14)
56	Minu Pious	NIT Calicut	Solid Phase Residence Time Distribution in Suspension Flow in Microchannels	C. S. Mathpati (2012-14)
57	Shashank Tyagi	IET, Lucknow	Heat Transfer and Corrosion Analysis with Molten Salts	C. S. Mathpati (2013-15)
58	Rishi Maharshi	RGIPT, Raebarely	Computational Fluid Dynamics of Heat Transfer Effects in Fluidized and Packed Fluidized Bed Column.	C. S. Mathpati (2013-15)
59	Raut, Gauravkumar	ICT, Mumbai	Development of Cellulose Acetate-Polysulfone Blend membranes for ultrafiltration	P. R. Nemade
60	Shinde, Rohit		Development of hybrid membranes for pervaporation	P. R. Nemade
61	Tahialyani, Khushboo K.		Development of a sensor for early detection of dengue viral fever	P. R. Nemade
62	Datir, Kirti		Investigations in the use of ceria as antioxidant	P. R. Nemade
63	Mishra, Amit			P. R. Nemade
64	Waghmode, Amol		Ecofriendly greases using industrial wastes	P. R. Nemade

M. TECH (GREEN TECH)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Sable Mohini		Intensification of pervaporation using surfactants	P. R. Nemade
2	Modak Swapnil	DBATU	Synthesis of ITO and TiO_2	S.M. Sontakke
3	Awate Vedraj		Photocatalytic degradation of pesticides	S.M. Sontakke
4	Katke Prashant		Studies in dye sensitized solar cell	S.M. Sontakke
5	Lokare Omkar	ICT Mumbai	Carbon Nanomaterial based supercapacitor	Neetu Jha
6	Kapadnis Gaurav	Sinhgad Institute of Pharmacy, Univ. of Pune	Conversion Of Chitosan Into Its Soluble Derivatives With Improved Properties	Ratnesh Jain
7	Inamdar Manasi	Sinhgad Institute of Pharmacy, Univ. of Pune	Production and characterization of low molecular weight chitosan from fungal mycelia	Ratnesh Jain
8	Patil Ajinkya	Shivajirao S. Jondhale, Dombivali	Engineering non-spherical nanoparticles for biomedical applications	Ratnesh Jain
9	Shitole Mayur	M.G.M college of Engineering and Technology, Mumbai	Development of DNA Staining dye for quantitative analysis	Ratnesh Jain
10	Chavan Kirti	Shivajirao S. Jondhale, Dombivali	Development and Characterization of controlled release systems for fragrances	Ratnesh Jain
11	Honmane Bharat	Dr. Babasaheb Ambedkar Technological University, Lonere.	Deacidification ofcottonseed oil	D. V. Pinjari
12	Bhutada Payal	University Department of Chemical technology (UDCT), Dr. BAMU, Aurangabad	Extraction of Moringa Oil from MoringaOleifera Lam. seeds and its application in cosmeceutical industry	D. V. Pinjari
13	Kabade Ketan	Institute of Chemical Technology, Mumbai	Quantitative Mapping of Solids Handling in Miniaturized Flow Reactors Under Sonication	D. V. Pinjari
14	Golewar Rupesh	University Department of chemical technology (UDCT) Aurangabad	Synthesis of surfactant from melanisation of sunflower oil	D. V. Pinjari
15	Shivani S. Vedula		Novelties of catalytic membrane reactors and microreactors for development of green processes	D. Yadav
16	Kalpesh Bhavsar		White Biotechnology and Green Chemistry for Applications in Environmental and Fine Chemical Industries	G. D. Yadav
17	Nikhil H. Margi		Selective Engineering of Heterogeneously Catalysed Reactions using Multiphase Rectors and Microreactors	G. D. Yadav
18	Ashish D. Shejale		Membrane Assisted Catalytic Hydrogen Production and Storage	G. D. Yadav

M.TECH (Bioprocess)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Manoj Kamble		Selectivity Engineering in Synthesis of Biotechnological Products and Pharmaceutical Intermediates	G. D. Yadav
2	Pravin D. Patil		Enzyme Engineered Green Reactions	G. D. Yadav
3	Deepali Magadum		Selectivity Engineering of Enzymes in Synthesis of Industrially Relevant Chemicals	G. D. Yadav

M.TECH

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Singh Gourav	VIT University Vellore	Separation of acetic acid from lignocellulosic biomass.	A.M. Lali
2	Singh Vishwajeet	University School of Biotechnology	Membrane based recovery of sugars from different biomass.	A.M. Lali
3	Velani Sneha	Sinhagad College of Engineering, Pune	Growing thraustochytrids for production of oil from biomass derived sugars	A.M. Lali

POST DOCTORAL FELLOWS RESEARCH PROJECTS

No.	Research Scholar	Previous Institution	Project	Supervisor
1	Dr. Nimaje Vanita	National Chung Cheng University, Taiwan	Design and Development of Microbial Fuel Cells	V. G. Gaikar
2	Dr. Sutar Parag N.	ICT, Mumbai	Experimental investigation of solubility of CO_2, H_2S and NH_3 in aqueous solutions	P. D. Vaidya
3	Dr. Jyoti S. Gokhale	Hindustan Insecticides Ltd	Alternatives to DDT	G. D. Yadav
4	Dr. Vikas Patil	Indo-US S and T Forum	PROTECT: Program for Research On Thin-Films and nanostructured Emerging Coating Technologies	G. D. Yadav
5	Dr. Ashwini B. Nirukhe	ONGC Energy Centre	ICT-OEC Technology of Hydrogen production	G. D. Yadav
6	Dr. Prakash Parhad	ONGC Energy Centre	ICT-OEC Technology of Hydrogen production	G. D. Yadav

DETAILS OF SPONSORED PROJECTS :

GOVERNMENT AGENCIES:

Sr. No.	Sponsor	Title	Duration	Total amount	Principal Investi-gator	Co-Investi gator:	Research Fellows
1	BRNS	Development of foam formulation	3 years	16 Lakhs	Sunil S. Bhagwat		Jitendra Tongaonkar
2	Rajiv Gandhi Commission for Science & Technology (RGCST)	Cold storage for Post harvest preservation of fruits & vegetables using Solar & Biomethane Heat Based Refrigeration	4 years	266.8 Lakhs	Sunil S. Bhagwat		Kalpana Mahalle and Pallavi Parab
3	Department of Atomic Energy/ Knowledge Based Engineering Centre	Design of novel extractants by molecular modeling for heavy metal ions	5 years (2011-2015)	84.4 lacs	V. G. Gaikar		Jyotsna S. Arora (Ph.D. (T)), Meena B. Singh (Ph.D. (T)), Vishal M. Sawant (Ph.D. (T))
4	MNRE, India	Improved Production of Biogas and Bio-CNG from Lignocellulosic Biomass	2013-2015	515.61 Lakhs	A. M. Lali		Suhas Gore and Priyanka Dargode
5	DST, India	Green enzymatic fat-splitting technology for production of fatty acids and acyl glycerols	2014-2016	1210. 188 Lakhs	A. M. Lali		-

6	DBT, India	DBT-ICT Centre for Energy Biosciences: New and Extension Proposals	2013 – 2018	1800. 00 Lakhs	A. M. Lali		Abhjit Rathi, Gaurangi Deore, Hitesh Pawar, Lalit Khot, Mandrita Chatterjee, S. P. Poorima Rao, Sachin kumar Birhade, Sandip Kadam, Sunil Sukara, Swanand Gangal, Juliee Palkar, Rutuja G. Vaze, Arjun Singh Bajwa, Archana Krishnan, Lucy Nainan, Mrunal Warke, Smita Patil, Vijita Pillai, Sonal Sawant, Vikram Choudhari, Prathamesh Wadekar, Bhupal Asodekar
7	BIRAC (DBT)	Extension: Intellectual Property Management and Technology Comme-rcialization (IPM-TC)Unit	2013-2015	90.00 Lakhs	A. M. Lali		-
8	DBT-BBSRC	Transnational Approaches to Resolving Biological Bottlenecks in Macroalgal Biofuel Production	2013-2016	498. 412 Lakhs	A. M. Lali		Mallikaarjun Patil, Ritu Maurya, Shalini Deb

9	DBT-BBSRC	Engineering Enzymes, Bacteria and Bioconversion Processes for Advanced Biofuels from Waste Grain Straw	2013-2016	806. 764 Lakhs	A. M. Lali		-
10	AISRF Indo-Australia Grand	Integrated Technologies for Economically Sustainable Bio-based Energy	2013-2016	700. 30 Lakhs	A. M. Lali		Suruchi Rao, Julitee Victoria and Sneha Sawant
11	DBT-SBIRI	Isolation, Purification and Stabilization of hCG , HMG, FSH,LH and other Urine Proteins, and Stabilization	2013-2015	22.5 Lakhs	A. M. Lali		Snehal Agarwal
12	DBT, India	Development and Chara-cterization of Alternative Affinity Adsorbent for Purification of Therapeutic Antibodies	2013-2016	68. 468 Lakhs	A. M. Lali		-
13	AISRF, DBT	Extraction, Purification of a Sorghum Seed Protein for Delayed Delivery of Bioactive	2010-2014	101.00 Lakhs	A. M. Lali		-
14	IGCAR	Scale up of MOX Precipitation			B. N. Thorat		Sunil Shingade
15	Rajiv Gandhi Commission for S&T, Gover-nment of Maharashtra	Ultrahealth: Water Fun Station	12 months	25 lakhs	B. N. Thorat		Shital Somani, Ashwin Pawade, Sandeep Shukla

16	Rajiv Gandhi Commission for S&T, Government of Maharashtra	Jaggery Granulation	18 months	1 Crore	B. N. Thorat		Shital Somani, Ashwin Pawade, Sandeep Shukla
17	DAE-ICT Centre	Transport of Actinides and fission products across hollow fibre supported liquid membrane (HFSLM)	5 years	Rs. 75 Lakh	Anand V. Patwardhan	Ashwin W. Patwardhan	Swapnil R. Chaudhari
18	Department of Science and Technology	Process intensification using hollow fibre supported liquid membranes	3 years	Rs. 31 Lakh	Ashwin W. Patwardhan	Anand V. Patwardhan	Mr. Nivarutti Patil
19	Department of Science and Technology	Synthesis of novel membranes and their applications in waste minimisation and recovery of valuable chemicals from dilute aqueous streams	3 years	Rs. 35 Lakh	Anand V. Patwardhan	Ashwin W. Patwardhan	
20	DAE	Transport of Actinides and Fission Products across Hollow Fibre Supported Liquid Membrane	2009 – 2014	119.6 Lakhs	A. W. Patwardhan		Sharma Ajay
21	DAE	Thermal hydraulic studies related to coolants for new generation reactors	2009 – 2014	72.4 Lakhs		A. W. Patwardhan	C. S. Sona

22	DST	Process Intensification using Holllow Fibre Supported Liquid Membranes	2012 – 2015	35.2 Lakhs	A. W. Patwardhan		Patil Nivarutti
23	UGC	Extraction of Ursolic acid from Ocimum sanctum (Tulsi)	2012-15	Rs 12 Lakh	V K Rathod		Revati Chavan (Ph. D. Tech)
24	RGSTC	Useful product from Dried leaves of mango tree	2013-2015	Rs 32 Lakh	V K Rathod		
25	DST	Treatment of ground water containing arsenic and fluoride		Rs. 17 lakh	K.V. Marathe		
26	Department of Science and Technology, Govt. of India, New Delhi	Development of novel treatment strategies for treatment of water containing pesticides	3 years (2010-2013)	10.2 Lacs	P. R. Gogate		-
27	University Grants Com-mission, New Delhi	Process Intensification of emulsification and atomization	3 years (2011-2014)	8.6 Lacs	P. R. Gogate		
28	Department of Science and Technology	Diesel production by Karanja oil hydro-treatment	08/12/2011 to 07/12/2014	29,82,000/-	P. D. Vaidya		Mahesh Nimkarde, Registered for PhD (Tech)
29	Department of Science and Technology	Novel solvents for CO_2 capture	01/07/2013 to 30/06/2015	14,52,000/-	P. D. Vaidya		Mayur kumar Patil
30	Rajeev Gandhi Science & Technology Commi-ssion	Pre-treatment of bio-methanated distillery waste by catalytic wet air oxidation (CWAO) to enhance further biometh-anation	2014-2016	22,34,353/-	P. D. Vaidya		Ganesh Bhoite

31	TEQIP Phase 2	Sorption-enhanced hydrogen production	01/11 /2013 to 31/12/ 2014	10,00, 000/-	P. D. Vaidya		
32	DAE	Thermal hydraulic studies related to coolants for new generation reactors	Five years	72,40, 000/-	C. S. Mathpati		Ms. Sona C.S. Mr.Bhavesh Gajbhiye
33	Centre of Excellence in Process Intensifi-cation (TEQIP-II)	Design aspects of Two opposed jet microextractor: Experimental and Computational Fluid Dyanmics	One year	16,00, 000/-	C.S. Mathpati		Mr. Aniket Waval Mr. Anand Chavan Mr. Harshva-rdhan Kulkarni Ms. Anjali Ingale
34	Ministry of Food Processing Industries	Development of a Continuous Rice Cooker	3 years	30 Lakhs	V. H. Dalvi		
35	BIRAC-Bill and Melinda Gates Foundation	Hygienic Water-Free Toilet	1 year	Rs 25.00 Lakh	P. R. Nemade	V. H. Dalvi, S. Kasthuri-rangan, C. S. Mathpati, A. S. Misra, N. Jha	
36	SERB: Scheme for Young Scientists	Development of Polymerizable Ionic Liquid Membranes for Gas Separations	3 years	Rs 22.40 Lakhs	P. R. Nemade		
37	Rajiv Gandhi Science and Technology Commission	Pre-Treatment of Biomethanated Distillery Waste by Catalytic Wet Air Oxidation (CWAO) to Enhance Further Biomethanation	2 years	Rs 22.00 Lakhs	P. D. Vaidya	P. R. Nemade	
38	DST	Development of anodic material for dye sensitized solar cell	5 years	35 lakh	S.M. Sontakke		Miss Tambat Sneha (Reseach associate) Miss Umale Sanjivani (Reseach associate)

39	DST	Development of electrocatalyst for fuel cell	5 yrs	35 lakh	Neetu Jha		Kota V.M.K. Kireeti
40	DAE-BRNS	Polysaccharide Based Nanocarriers for Improved Therapy of Systemic Fungal Infections	Three years (2013-2016)	16,95, 000/-	Ratnesh Jain		Mr. Akhil Krishnan
41	DBT	NANOCOS": -COS-siRN Ananoplexes for inhibiting intracellular mycobacteria	Two years (2013-2014)	Rs. 19, 99, 000/-	Ratnesh Jain (co-PI)		Mr. Sathish Dyawanapelly, RA
42	Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maha-rashtra, 2014-2017	3D cell culture Technology for Developing Affordable Bioengineered Skin for Burn Patients	Three years (2014-2017)	Rs. 85,10, 000 /-	Ratnesh Jain (co-PI)		Mr. Rohan Chhabra
43	DST Nano-mission 2014-2017	Development and evaluation of siRNA loaded nanomedicine in computational and cellular Models	Three years (2014-2017)	Rs. 2,82, 00,000 /-	Ratnesh Jain		Mr. Anurag Dobhal, Ms. Lipika Saha
44	Department of Science and Technology, Government of India	Development of Nanocontainers for Anticorrosive Applications	2013 – 2018	Rs. 35 lacs	D. V. Pinjari		Mr. Sammit E. Karekar (Ph.D. Tech) & Mr. Ananda J. Jadhav (Ph.D. Tech)
45	DST-INSPIRE	Design and control of energy integrated process networks	5 years	Rs. 35,00, 000	Sujit S. Jogwar		
46	DST	Scheduling and optimal control of energy integrated batch process systems	3 years	Rs. 28,89, 480	Sujit S. Jogwar		

INDUSTRIES:

Sr. No.	Sponsor	Title	Duration	Total amount	Principal Investi-gator	Co-Investi gator:	Research Fellows
1	GSK Ltd.	Development of interfacial analytical techniques for food additives	6 months	3 Lakhs	Sunil S. Bhagwat		-
2	HUL	Studies of formability	6 months		Sunil S. Bhagwat		
3	Petrofac Saudi Arabia Ltd.	Heat Effects on mixing of hazardous chemicals	One month	US $8000	V. G. Gaikar		Ms. Tasneem Dabir
4	Hindustan Unilever Ltd, Mumbai	Studies in adsorption	6 months	Rs. 4,25, 000/-	V. G. Gaikar		Mahesh Kadam
5	Hindustan Unilever Ltd, Mumbai	Thermodynamics of aqueous solutions	One year (2013-14)	Rs. 10,00, 000/-	V. G. Gaikar		Ms. Tasneem Dabir, Roshni Pandye
6	Hindustan Unilever Ltd, Mumbai	Studies on Solubilization	One year (2014-15)	Rs. 10,00, 000/-	V. G. Gaikar		
7	Hindustan Unilever Ltd, Mumbai	Thermodynamics of aqueous solutions	Four years (2014-18)	40,00, 000/-	V. G. Gaikar		
8	Department of Science and Technology	Design of In situ Photocatalytic system for CO_2 conversio	Three years (2014-17)	54,30, 000/-	V. G. Gaikar		
9	Nagar Haveli Perfumes and Aromatics	Microbial Biotransformation for Aromatic Chemicals	2014-2015	15.00 Lakhs	Annamma Anil and A. M. Lali		-
10	Wacker Chemie AG	Generation of Purified Phytoene from Yeast Cell Mass	2014-2015	14.49 Lakhs	A. M. Lali		-

11	Coca Cola Company USA	DBT-ICT Lignocellulosic Sugar Technology for Production of Food Grade Glucose from Agricultural Biomass Residues	2013-2014	150.00 Lakhs	A. M. Lali		-
12	India Gycols Ltd	Production of Furan Derivatives from Glucose	2012-2014	150.00 Lakhs	A. M. Lali		-
13	General Mills, USA	Value Addition to Vegetable Waste Streams of GMI	2012-2014	40.80 Lakhs	A. M. Lali		-
14	Bio-Rad Laboratories India Pvt. Ltd	Characterization of Chromatographic Adsorbents	2011-2014	22.00 Lakhs	A. M. Lali		-
15	JNCSS – UGC	Development of novel cavitation based treatment schemes for water disinfections	4 Years		A.B. Pandit		Mr. Shirish Manchalwar
16	Unilever	Synthesis of Nano particles using Hydrodynamic cavitation	1 year		A.B. Pandit		-
17	Unilever	Cavitation in converging and diverging nozzles	3 years		A.B. Pandit		-
18	Bill and Melinda Gates Foundation	Solar Grain Dryer	18 months	USD 100, 000	B. N. Thorat, Mr. Vaibhav Tidke		Tushar Gaware, Ganesh Bhere, Ashwini Gaikwad, Rajan Mishra, Manoj Gor
19	Bill and Melinda Gates Foundation	Cassava Drying	18 months	USD 100, 000	B. N. Thorat, Mr. Vaibhav Tidke		Tushar Gaware, Ganesh Bhere, Swati Shimpi, Rajan Mishra, Manoj Gor
20	Gujarat Heavy Chemicals Limited	Binder Application on Coal Briquetting	12 months	17 lakhs	B. N. Thorat		Harsh Thakkar, Bhaghyesha Patil

21	Unilever Ltd.	Studies in dissolution	2013 – 2016	Rs 29.5 Lakhs	A. W. Patwardhan		
22	Unilever, Bangalore	Wastewater treatment	July 2013 to July 2014	11.1 Lacs	P. R. Gogate		1. Tosif 2. Surabhi Sharma Chamanshaikh
23	GAIL (India) Limited	Development of catalyst for syngas production via CO_2 reforming of CH_4	01/07/ 2012 to 30/06/ 2015	45,10, 000/-	P. D. Vaidya		Ashvin Karemore, Registered for PhD (Tech)
24	GAIL (India) Limited	Development of new solvent for gas sweetening	01/12/ 2012 to 30/11/ 2014	67,74, 000/-	P. D. Vaidya		Neha Budhwani, Registered for PhD (Tech)
25	Reliance Industries Limited	Enhancement in mass transfer of CO_2	05/05/ 2014 to 04/11/ 2014	17,12, 500/-	P. D. Vaidya		
26	RCF Ltd.	Development of Water Resistant Gypsum Plaster	1 year	Rs 21.26 Lakhs	P. R. Nemade	D. D. Sarode, V. H. Dalvi, S. M. Sontakke	Zambare, Rahul S.
27	GAIL (India) Ltd.	Development of Catalyst for Conversion of Methane to Olefins	3 years	Rs 103.80 Lakhs	S. M. Sontakke	P. R. Nemade	Ph.D. (Tech): Chaudhari, Sushil M. Ph.D. (Tech): Sane, Priyanka
28	GAIL (India) Ltd.	Development of Adsorbents for Upgradation of Natural Gas	2 years	Rs 75.00 Lakhs	Neetu Jha	P. R. Nemade	
29	GAIL INDIA Limited	Development of catalyst for direct conversion of methane to olefins	3 years	103.8 lakh	S.M. Sontakke, P.R. Nemade (co-PI)		Sane Priyanka (PhD Tech) Chaudhari Sushil (PhD Tech)
30	RCF INDIA Limited	Development of Water Resistance Gypsum Plaster	Duration 1 years	12.51 Lakh	D.D. Sarode, A.V. Patwardhan (co-PI), P.R. Nemade (co-PI), V.H. Dalvi (co-PI), S.M. Sontakke (co-PI)		Sane Priyanka (PhD Tech) Chaudhari Sushil (PhD Tech)

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

PROFESSOR S.S. BHAGWAT

- Dr Asmita Prabhune National Chemical Laboratory, Pune, India
- Dr P.A.Hasan,Dr.V.K Aswal,Dr.C .Shreenivas,Dr. Wattal BARC, Mumbai, India
- Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. (Gokul Dairy)

PROFESSOR V.G. GAIKAR

- NMIMS- Nanoparticle synthesis and characterization
- COEP, Pune- Thermostable Enzymes (joint Ph.D. supervision)
- Bradford University, UK, Co-crystallization under UKIRI
- Bhabha Atomic Research Centre, India
- Dr. Babasaheb Ambedkar Technological University, Lonere
- Sardar Patel College of Engineering, Mumbai
- Shri Guru Gobind Singhji Institute of Engineering and Technology (SGGSIE&T), Nanded

PROFESSOR A.M. LALI

National

- International Centre for Gentic Engineering and Biotechnology (ICGEB), New Delhi, Dr. Shams Yazdani, Dr. Pawan Jutur, DBT New Extension Proposals, Indo Australia Grand Challenge Project, Indo UK BBSRC RICEFUEL Project
- CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum, India, Dr. Rajeev Sukumaran, Dr. Ashok Pandey, Indo-Australia Grand Challenge Project
- Centre for Advanced Bioenergy Research, Indian Oil Corporation Limited, India, Dr. D. K. Tuli, DBT New and Extension Proposals, Indo Australia Grand Challenge Project, Indo UK BBSRC RICEFUEL Project
- The Energy and Resources Institute (TERI), New Delhi, Dr. Sanjukta Subudhi, Dr. Piyali Das, Indo Australia Grand Challenge Project
- CSIR-Central Salt and Marine Chemical Research Institute (CSIR-CSMCRI), Bhavnagar, India, Dr. C.R.K Reddy, Indo UK BBSRC SuBBSea Project
- Tata Institute of Social Sciences, Mumbai (TISS), Dr. Satyajit Majumdar

International

- Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia,Prof. William Doherty, Dr. Philip Hobson, Indo Australia Grand Challenge Project.
- Centre for Energy, The University of Western Australia, Perth, Australia, Prof. Dongke Zhange, Indo Australia Grand Challenge Project.
- CSIRO Energy Transformed Flagship, North Ryde, New South Wales, Australia, Dr. Victoria Haritos, Indo Australia Grand Challenge Project.
- NSW Department of Primary Industries, New South Wales, Australia, Dr. Tony Vancov, Indo Australia Grand Challenge Project.
- Centre for Biomolecular Sciences, University Park, The University of Nottingham, UK, Prof. Nigel Minton, Indo UK BBSRC RICEFUEL Project.
- School of Biological Sciences, Queens University of Belfast, UK, Prof. Christine Maggs, Indo UK BBSRC SuBBSea Project.
- School of Biological and Biomedical Sciences, Durham University, Prof. John Bothwell, Indo UK BBSRC SuBBSea Project.
- Institute of Biological, Environmental and Rural Sciences, Aberystwyth University, Aberystwyth,

Dr. David Bryant, Indo UK BBSRC SuBBSea Project.

- Centre for Synthetic and Systems Biology and School of Biological Sciences, The University of Edinburgh, Edinburgh, UK, Dr. Chris French, Indo UK BBSRC SuBBSea Project.
- Bangor University, Bangor, Gwynedd, UK, Dr. Katherine Steele, Dr. Lewis Le Vay, Indo UK BBSRC SuBBSea Project.
- The University of York Wentworth Way, York, UK, Dr. Neil Bruce, Dr. Simon Mc Queen Mason, Indo UK BBSRC RICEFUEL Project.
- Institute for Cell and Molecular Biosciences, Newcastle University, UK, Dr. Harry Gilbert, Indo UK BBSRC RICEFUEL Project.
- Department of Biological and Medical Sciences, Oxford Brookes University, UK, Dr. David A Fell, Indo UK BBSRC RICEFUEL Project.
- Department of Chemical Engineering, Centre for Process System Computations, Curtin University, Perth, Western Australia, Prof. Vishnu Pareekh, Dr. Ranjit Utikar, Indo Australia Grand Challenge Project, AISRF DBT Project.

PROFESSOR B.N. THORAT

- National University of Singapore, Singapore
- Norwegian University of Science and Technology, Norway
- Lappeenranta University of Technology, Finland
- Otto von Guericke University of Magdeburg, Germany
- King Mongkut´s University of Technology (KMUTT) – Bangkok, Thailand

DR. P.R. GOGATE

National Collaborations:

- Chemical Engineering Department, VIT, Pune
- Chemical Engineering Department, Sinhgad Institute of Technology, Pune
- Chemical Engineering Department, AISSMS College of Engineering, Pune
- Chemical Engineering Department, VNIT, Nagpur

International Collaboration:

- University of West Hungary, Hungary
- University of Minho, Portugal

DR. P.D. VAIDYA

Professor Eugeny Kenig Chair of Fluid Separation Processes, Faculty of Mechanical Engineering
University of Paderborn, Germany

DR. R.D. JAIN

National Collaborations

- National Institute of Research in Reproductive Health, Parel, Mumbai/ Exploring biodegradable polymer combination for developing nanoparticles for delivering therapeutic nucleic acids
- Foundation of Medical Research, Mumbai, India/ NANOCOS": -COS-siRNAnanoplexes for inhibiting intracellular mycobacteria/Mr. SathishDyawanapelly
- National Burns Centre, Airoli, Navi-Mumbai/3D cell culture Technology for Developing Affordable Bioengineered Skin for Burn Patients/Mr. RohanChhabra
- National Chemical Laboratory, Pune/Akhil Krishnan

DR. S.S. JOGWAR

Professor Prodromos Daoutidis, University of Minnesota.

PUBLICATIONS (PEER REVIEWED) :

No.	Title	Name of students	Journal Name	Vol. No.	Pages	Year
1	Transport of strontium through a hollow fibre supported liquid membrane containing N,N,N′,N′-tetraoctyl diglycolamide as the carrier	Yogesh D. Jagdale, Ashwin W. Patwardhan, Kruti A. Shah, Shabdiki Chaurasia, Anand V. Patwardhan*, Seraj A. Ansari, Prasanta K. Mohapatra	Desalination	325	104-112	2013
2	Optimisation of concentration of ingredients for simultaneous dyeing and finishing using response surface methodology	Abhinav Nathany, Neha Mehra, Anand V. Patwardhan, Ravindra V. Adivarekar*	The Journal of The Textile Institute	On-line	14 pages	2014
3	Simultaneous extraction of Neodymium and Uranium using hollow fiber supported liquid membrane	Prasad V. Vernekar, Yogesh D. Jagdale, Ajay D. Sharma, Ashwin W. Patwardhan*, Anand V. Patwardhan, Seraj A. Ansari, Prasanta K. Mohapatra	Separation Science and Technology	49	1509-1520	2014
4	Steam reforming of methane and methanol in simulated macro & micro-scale membrane reactors: Selective separation, of hydrogen for optimum conversion	AnubhavPratap Singh, Siddhartha Singh, Somenath Ganguly*, Anand V. Patwardhan	Journal of Natural Gas Science and Engineering	18	286-295	2014
5	Non-dispersive solvent extraction of Neodymium using N, N, N′, N′-tetraoctyl diglycolamide (TODGA). Prasanta K. Mohapatra	Prasad V. Vernekar, Yogesh D. Jagdale, Ashwin W. Patwardhan*, Anand V. Patwardhan, Seraj A. Ansari,	Separation Science and Technology	49	1541-1554	2014
6	Degradation of reactive orange 4 dye using hydrodynamic cavitation based hybrid techniques	Gore, M.M.,Saharan, V.K.,Pinjari, D.V.,Chavan, P.V.,Pandit, A.B.	Ultrasonics Sonochemistry	21 (3)	pp. 1075-1082	2013-14
7	Heat transfer analysis and waste heat recovery of specially designed heat exchanger used in hybrid solar water system	Palaskar, V.N.,Deshmukh, S.P.,Pandit, A.B.	International Journal of Renewable Energy Research	4 (1)	pp. 122-127	2013-14

8	Treatment of cyanide containing wastewater using cavitation based approach	Jawale, R.H.,Gogate, P.R.,Pandit, A.B.	Ultrasonics Sonochemistry	21 (4)	pp. 1392-1399	2013-14
9	Application of cavitation in uranium leaching	Ladola, Y.S.,Chowdhury, S.,Roy, S.B., Pandit, A.B.	Desalination and Water Treatment	52 (1-3)		2013-14
10	Exploration of a cheaper carbon source for extracellular β-glucosidase synthesis from Debaryomyces pseudopolymorphus NRRL YB-4229	Pandit, N.T.,Pandit, A.B.	Applied Biochemistry and Biotechnology	172 (7)	pp. 3606-3620	2013-14
11	Hydrodynamic cavitation as a novel approach for delignification of wheat straw for paper manufacturing	Badve, M.P.,Gogate, P.R.,Pandit, A.B.,Csoka, L.	Ultrasonics Sonochemistry	21 (1)	pp. 162-168	2013-14
12	Studying the effect of nature of glass surface on immobilization of glucose isomerase	Rajendra Chopda, V., Narsappa Nagula, K., Vitthal Bhand, D.,Bhalchandra Pandit, A.	Biocatalysis and Agricultural Biotechnology	3 (3)	pp. 86-89	2013-14
13	Kinetics of cooking of rice: A review	Shinde, Y.H.,Vijayadwhaja, A.,Pandit, A.B., Joshi, J.B.	Journal of Food Engineering	123	pp. 113-129	2013-14
14	Ultrasound-assisted antisolvent crystallization of benzoic acid: Effect of process variables supported by theoretical simulations	Ramisetty, K.A.,Pandit, A.B.,Gogate, P.R.	Industrial and Engineering Chemistry Research	52 (49)	pp. 7573-17582	2013-14
15	Ultrasound assisted synthesis of polythiophene/SnO2 hybrid nanolatex particles for LPG sensing	Barkade, S.S.,Pinjari, D.V.,Nakate, U.T. Sonawane, S.H.,Pandit, A.B.	Chemical Engineering and Processing: Process Intensification	74	pp. 115-123	2013-14
16	Synergetic effect of combination of AOP's (hydrodynamic cavitation and H_2O_2) on the degradation of neonicotinoid class of insecticide	Raut-Jadhav, S.,Saharan, V.K.,Pinjari, D., Saini, D., Pandit, A.	Journal of Hazardous Materials	261,	pp. 139-147	2013-14
17	Ultrasound assisted synthesis of calcium zinc phosphate pigment and its application in nanocontainer for active anticorrosion coatings	Bhanvase, B.A.,Kutbuddin, Y.,Borse, R.N., Sonawane, S.H.,Pandit, A.B.	Chemical Engineering Journal	231	pp. 345-354	2013-14

18	Ultrasound assisted interesterification of waste cooking oil and methyl acetate for biodiesel and triacetin production	Maddikeri, G.L.,Pandit, A.B.,Gogate, P.R.	Fuel Processing Technology	116	pp. 241-249	2013-14
19	Ultrasound assisted miniemulsion polymerization for preparation of polypyrrole-zinc oxide (PPy/ZnO) functional latex for liquefied petroleum gas sensing	Barkade, S.S.,Pinjari, D.V.,Singh, A.K., ,Ashokkumar, M.,Pandit, A.B.	Industrial and Engineering Chemistry Research	52 (23)	pp. 7704-7712	2013-14
20	Performance enhancement of batch anaerobic digestion of napier grass by alkali pre-treatment	Rekha, B.N.,Pandit, A.B.	International Journal of ChemTech Research	5 (2)	pp. 558-564	2013-14
21	Intensification of degradation of imidacloprid in aqueous solutions by combination of hydrodynamic cavitation with various advanced oxidation processes (AOPs)	Raut-Jadhav, S., Saharan, V.K., Pinjari, D.V., Saini, D.R., Sonawane, S.H., Pandit, A.B.	Journal of Environmental Chemical Engineering	1 (4)	pp. 850-857	2013-14
22	Hydrodynamic cavitation as a novel approach for wastewater treatment in wood finishing industry	Badve, M., Gogate, P.,Pandit, A., Csoka, L.	Separation and Purification Technology	106	pp. 15-21	2013-14
23	Comparative material study and synthesis of 4-(4-nitrophenyl)oxazol-2-amine via sonochemical and thermal method	Singh, B.S., Lobo, H.R.,Pinjari, D.V., (...), Pandit, A.B., Shankarling, G.S.	Ultrasonics Sonochemistry	20 (2)	pp. 633-639	2013-14
24	Ultrasound-assisted intensification of bio-catalyzed synthesis of mono-N-alkyl aromatic amines	Lobo, H.R., Singh, B.S.,Pinjari, D.V., Pandit, A.B.,Shankarling, G.S.	Biochemical Engineering Journal	70	pp. 29-34	2013-14
25	Crystallisation of ferrous sulphate heptahydrate: Experiments and modelling	Shaikh, L., Pandit, A.,Ranade, V.	Canadian Journal of Chemical Engineering	91 (1)	pp. 47-53	2013-14
26	Optimization of biodiesel production in a hydrodynamic cavitation reactor using used frying oil	Ghayal, D., Pandit, A.B.,Rathod, V.K.	Ultrasonics Sonochemistry	20 (1)	pp. 322-328	2013-14
27	Ultrasound assisted synthesis of doped TiO_2 nano-particles: Characterization and comparison of effectiveness for photocatalytic oxidation of dyestuff effluent	Shirsath, S.R., Pinjari, D.V., Gogate, P.R.,Sonawane, S.H., Pandit, A.B.	Ultrasonics Sonochemistry	20 (1)	pp. 277-286	2013-14

28	Effect of geometry of hydrodynamically cavitating device on degradation of orange-G	Saharan, V.K., Rizwani, M.A., Malani, A.A., Pandit, A.B.	Ultrasonics Sonochemistry	20 (1)	pp. 345-353	2013-14
29	Ultrasound and deep eutectic solvent (DES): A novel blend of techniques for rapid and energy efficient synthesis of oxazoles	Singh, B.S., Lobo, H.R.,Pinjari, D.V., Pandit, A.B., Shankarling, G.S.	Ultrasonics Sonochemistry	20 (1)	pp. 287-293	2013-14
30	Investigations into ultrasound induced atomization	Ramisetty, K.A., Pandit, A.B., Gogate, P.R.	Ultrasonics Sonochemistry	20 (1)	pp. 254-264	2013-14
31	Kafirin Adsorption on Ion-Exchange Resins: Isotherm and Kinetic Studies	Prashant Kumar, Pei Wen Lau, Sandeep Kale, Stuart Johnson, Vishnu Pareek, Ranjeet Utikar, Arvind Lali	Journal of Chroma-tography A	1356	105 -116	2014
32	Microwave assisted organocatalytic synthesis of 5-hydroxymethyl furfural in a monophasic green solvent system	Hitesh Pawar, Arvind Lali	RSC Advances	51(4)	26714-26720	2014
33	Transport of Cobalt(II) through a hollow fiber supported liquid membrane containing di-(2-ethylhexyl) phosphoric acid (D2EHPA) as the carrier,	Prasad V. Vernekar, Yogesh D. Jagdale, Ashwin W. Patwardhan*, Anand V. Patwardhan, Seraj A. Ansari, Prasanta K. Mohapatra, Vijay K. Manchanda	Chem. Eng. Res. Des.	91	141 – 157	2013
34	Mathematical model for extraction of Neodymium from nitrate media using hollow fiber supported liquid membrane operated in a recycling mode,	Vernekar P. V., Patwardhan A. W.*, Patwardhan A. V. , Ansari S. A., Mohapatra P. K., Manchanda V. K.	Sep. Sci. Tech.	48	1003 – 1014	2013
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36	Dilution Effect in a Tubular H2-F2 Flame Reactor,	Tiwari A. K.*, Prasad C. S. R., Patwardhan A. W., and Gantayet L. M.	Combustion Science and Technology	185	1 – 15	2013
37	Nattokinase purification by three phase partitioning and impact of t-butanol on freeze drying	Garg R., Thorat B. N.	Separation and Purification Technology	131	19-26	2014

38	Fluidized Bed drying of spouted wheat (Triticum aestivum)	Shingare S. P., Thorat B. N.	International Journal of Food Engineering	10(1)	29-37	2013
39	Effect of Hydrodynamics during Crystallization on Mechanical Dewatering of Salicylic Acid.	Deulgaonkar S.U., Hakkinen A. and Thorat B. N.	Drying Technology	31(12)	1354-1361	2013
40	Effect of freeze thawing study on curcumin liposome for obtaining better freeze dried product.	Jangle R. D. and Thorat B. N.	Drying Technology	31(9)	966-974	2013
41	Selective HPLC method development for Soy phosphatidylcholine fatty acids and its mass spectrometry.	Jangle R. D., Galge R. V., Patil V. V. and Thorat B. N.	Indian Journal of Pharmaceutical Sciences	75(3)	339-345	2013
42	RP-HPLC method development for curcuminoids and curcuminoids loaded liposome formulation.	Jangle R. D. and Thorat B. N.	Indian Journal of Pharmaceutical Sciences	75(1)	60-66	2013
43	Investigation of flow and heat characteristics and structure identification of FLiNaK in pipe using CFD simulations	Sona, C.S., Khanwale, M.A., Mathpati, C.S., Borgohain, A., Maheshwari, N.K.	Applied Thermal Engineering	70	451-461	2013
44	High temperature corrosion studies in molten salt-FLiNaK	Sona, C.S., Gajbhiye, B.D., Hule, P.V., Patwardhan, A.W., Mathpati, C.S., Borgohain, A., Maheshwari, N.K.	Corrosion Engineering Science and Technology	49	287-295	2013
45	Intensification of degradation of imidacloprid in aqueous solutions by combination of hydrodynamic cavitation with various advanced oxidation processes (AOPs)	SunitaRaut-Jadhav, Virendra Kumar Saharan, Dipak Pinjari, Shirish Sonawane Daulat Saini, Aniruddha Pandit	Journal of Hazardous Materials	261	139–147	2013
47	Recent Developments in Experimental (PIV) and Numerical (DNS) Investigation of Solid-Liquid Fluidized Bed	Reddy, R. K., Sathe, M. J., Joshi, J. B., Nandkumar, K., and Evans, G. M.	Chemical Engineering Science	92	12-Jan	2013
48	Study of Two Phase Thermal Stratification in Cylindrical Vessels CFD Simulations and PIV Measurements	Gandhi, M. S., Joshi, J. B., and Vijayan, P. K.	Chemical Engineering Science	98	125-151	2013

49	Reduction in Thermal Stratification in Two Phase Natural Convection in Rectangular Tanks CFD Simulations and PIV Measurements	Gandhi, M. S., Joshi, J. B., Nayak, A. K., and Vijayan, P. K.	Chemical Engineering Science	100	300-325	2013
50	Droplet Impact Dynamics on a Spherical Particle	Mitra, S., Sathe, M. J., Doroodchi, E., Utikar, R., Shah, M. K., Pareek, V., Joshi, J. B., and Evans, G. M.	Chemical Engineering Science	100	105-119	2013
51	Effect of Turbulence on Particle and Bubble Slip Velocity	Ghatage, S. V., Sathe, M. J., Doroodchi, E., Joshi, J. B., and Evans, G. M.	Chemical Engineering Science	100	120-136	2013
52	Heat Transfer and Flow Pattern in co-current Downward Steam Condensation in Vertical Pipes I CFD Simulations and Experimental Measurements	Dahikar, S. K., Ganguli, A. A., Gandhi, M. S., Joshi J. B., and Vijayan, P. K.	Canadian Journal of Chemical Engineering	91	959-973	2013
53	Heat Transfer and Flow Pattern in co-current Downward Steam Condensation in Vertical Pipes II Comparison with Published Work	Ganguli, A. A., Dahikar, S. K., Gandhi, M. S., Joshi J. B., and Vijayan, P. K.	Canadian Journal of Chemical Engineering	91	974-991	2013
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55	Performance Analysis of a Novel and Cost Effective CPC System	Jadhav, A. S., Gudekar, A. S., Patil, R. G., Kale, D. M., Panse, S. V., and Joshi, J. B.	Energy Conversion and Management, 66, 56-65 (2013)	66	56-65	2013
56	Cost Effective Design of Compound Parabolic Collector for Steam Generation	Gudekar, A. S., Jadhav, A. S., Panse, S. V., Joshi, J. B., and Pandit, A. B.	Solar Energy, 90, 43-50 (2013)	90	43-50	2013
57	Growth of Carbon Octopus-like Structures from Carbon Black in a Fluidized Bed	Dasgupta, K., Joshi, J. B., Paul, B., Sen, D., and Banerjee, S.	Materials Express, 3, 51-60 (2013)	3	51-60	2013

58	Selective Separation of Nickel (II) and Cobalt (II) from Waste Water by Using Continuous Cross-Flow Micellar Enhanced Ultrafiltration with Addition of Chelating Agent	PN Patil, KV Marathe	Separation Science and Technology	48 (4)	547-553	2013
59	Micellar enhanced ultrafiltration: A comparative study	SV Jadhav, KV Marathe	The Canadian Journal of Chemical Engineering	91 (2)	311-317	2013
60	Removal of Ni (II) ions from wastewater by micellar enhanced ultrafiltration using mixed surfactants	AD Vibhandik, KV Marathe	Frontiers of Chemical Science and Engineering 8 (1), 79-86	8 (1)	79-86	2013
61	Validation of Multiple Solute Model for Application to Micellar Enhanced Ultrafiltration and Comparison with Modified Resistance in Series Model	SK Pawar, KV Marathe	Journal of Applied Solution Chemistry and Modeling 2 (2), 110-121	2 (2)	110-121	2013
62	Arsenic Removal from Natural Waters by Adsorption or Ion Exchange: An Environmental Sustainability Assessment	A Dominguez-Ramos, K Chavan, V García, G Jimeno, J Albo, KV Marathe, ...	Industrial & Engineering Chemistry Research			2013
63	Treatment of fluoride concentrates from membrane unit using salt solutions	SV Jadhav, CR Gadipelly, KV Marathe, VK Rathod	Journal of Water Process Engineering			2013
64	Pharmaceutical Industry Wastewater: Review of the Technologies for Water Treatment and Reuse	C Gadipelly, A Pérez-González, GD Yadav, I Ortiz, R Ibáñez, VK Rathod, ...	Industrial & Engineering Chemistry Research 53 (29), 11571-11592	53 (29)	, 11571-11592	2013
65	Comparison of efficacy of different configurations of ultrasonic reactors for degradation of 2, 4-dinitrophenol using hybrid treatment schemes,	M.V. Bagal and P.R. Gogate	Industrial Engineering Chemistry Research	52(25)	8386-8391	2013
66	Comparison of effectiveness of acoustic and hydrodynamic cavitation in combined treatment schemes for degradation of dye wastewaters,	P.R. Gogate, G. S. Bhosale	Chemical Engineering Processing	71	59-69	2013

67	Hydrodynamic cavitation as an efficient approach for intensification of synthesis of methyl esters from sustainable feedstock,	V.L. Gole, K.R. Naveen, P.R. Gogate	Chemical Engineering Processing	71	70-76	2013
68	Ultrasound assisted interesterification of waste cooking oil and methyl acetate for biodiesel and triacetin production,	G. L. Maddikeri, A.B. Pandit, P. R. Gogate	Fuel Processing Technology	116	241-249	2013
69	Ultrasound Assisted Preparation of Calcium Zinc Phosphate Pigment and its Nanocontainer for Active Anticorrosion Coatings,	B. A. Bhanvase, Y. Kutbuddin, R. N. Borse, N. Selokar, D. V. Pinjari, P.R. Gogate, S. H. Sonawane and A. B. Pandit	Chemical Engineering Journal	231	345-354	2013
70	Process intensification of enzymatic hydrolysis of lignocellulose using ultrasound for an efficient bioethanol production: A review,	P.B. Subhedar, P.R. Gogate	Industrial Engineering Chemistry Research	52	11816-11828	2013
71	Ultrasound assisted synthesis of Polythiophene/SnO2 Hybrid nanolatex particles for LPG Sensing,	S. S. Barkade, D. V. Pinjari, U.T. Nakate, A. K. Singh, P.R. Gogate, J. B. Naik, S. H. Sonawane and A. B. Pandit	Chemical Engineering Processing	74	115-123	2013
72	Intensification of Synthesis of Zirconium dioxide using ultrasound: Effect of Amplitude Variation,	D. V. Pinjari, K. Prasad, P. R. Gogate, S. T. Mhaske, A. B. Pandit	Chemical Engineering Processing	74	178-186	2013
73	Photocatalytic and Sonophotocatalytic degradation of alachlor using different photocatalyst,	M.V. Bagal and P.R. Gogate	Advances in Environmental Research	2(4)	261-277	2013
74	Wastewater treatment based on combined approach of cavitation and heterogeneous Fenton based processes: A review,	M.V. Bagal and P.R. Gogate	Ultrasonics Sonochemistry	21	14-Jan	2014
75	Hydrodynamic cavitation as a novel approach for delignification of wheat straw for paper manufacturing,	M. P. Badve, P.R. Gogate, A.B. Pandit, L. Csoka	Ultrasonics Sonochemistry	21	216-225	2014

76	Alkaline and ultrasound assisted alkaline pretreatment for intensification of delignification process from sustainable raw-material,	P.B. Subhedar, P.R. Gogate	Ultrasonics Sonochemistry	21	216-225	2014
77	Intensification of glycerolysis of free fatty acid containing oil using microwave irradiations,	V.L. Gole, P.R. Gogate	Fuel Processing Technology	118	110-116	2014
78	Hybrid Advanced Oxidation Reactor Technology: From Concept to Practical Reality, P. R. Gogate, D. McGuire, S. Mededovic Thagard, R. Cathey, J. Blackmon, G. Chapas	P. R. Gogate, D. McGuire, S. Mededovic Thagard, R. Cathey, J. Blackmon, G. Chapas	Ultrasonics Sonochemistry	21	590-598	2014
79	Intensification of cavitational activity in the sonochemical reactors using gaseous additives,	P. R. Gogate, S. Shaha, L. Csoka	Chemical Engineering Journal	239	364-372	2014
80	Intensification of activity of Lipase enzyme using ultrasonic irradiations and stability studies	S.H. Jadhav, P.R. Gogate	Industrial Engineering Chemistry Research	53 (4)	1377-85	2014
81	Degradation of dichlofenac sodium using combined processes based on Hydrodynamic cavitation and heterogeneous Photocatalysis,	M.V. Bagal and P.R. Gogate	Ultrasonics Sonochemistry	21	1035-43	2014
82	Ultrasound-based treatment approaches for intrinsic viscosity reduction of polyvinyl pyrrolidone (PVP),	I. A. Pawar, P. J. Joshi, A. D. Kadam, N. B. Pande, P. H. Kamble, S. P. Hinge, B. S. Banerjee, A. V. Mohod and P. R. Gogate	Ultrasonics Sonochemistry	21	1108-16	2014
83	Enhancing the activity of cellulase enzyme using ultrasonic irradiations,	P.B. Subhedar, P.R. Gogate	Journal of Molecular Catalysis B. Enzymatic	101	108– 114	2014
84	Sonochemical decolorization of wastewaters containing Rhodamine 6G using ultrasonic bath at a capacity of 2 L,	B. S. Banerjee, A. V. Khode, A. P. Patil, A. V. Mohod, P. R. Gogate	Desalination and Water Treatment	52(7-9)	1378-87	2014

85	Intensification of sonochemical degradation of chlorobenzene using additives at an operating capacity of 2.5 litre,	V.L. Gole, P.R. Gogate	Water Science and Technology	69(4)	882-88	2014
86	Intensification of corrosion resistance of 2K epoxy coating by encapsulation of liquid inhibitor in nanocontainer core of sodium zinc molybdate and iron oxide,	S. A. Kapole, B. A. Bhanvase, D. V. Pinjari, R. D. Kulkarni, U.D. Patil, P. R. Gogate, S. H. Sonawane and A. B. Pandit	Composite Interfaces	21 (6)	469-86	2014
87	Ultrasound assisted synthesis of 4-benzyloxy-3-methoxybenzaldehyde by selective O-alkylation of Vanillin with Benzyl chloride in the presence of TBAB,	S.M. Dubey, P.R. Gogate	Industrial Engineering Chemistry Research	53(19)	7979-85	2014
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89	RNA Interference-Based Therapeutics: Molecular Platforms for Infectious Diseases	Dyawanapelly S, Ghodke S, Vishwanathan R, Dandekar P*, Jain R*.	Journal of Biomedical Nanotechnology	10	1998-2037	2014
90	Dynamic Interfacial Behaviour Poly (Oxyethylene) Lauryl Ether Based Surfactant Mixtures,	Anik Goswami, Gunjan Verma, P. A. Hassan, Vinod K Aswal & Sunil S Bhagwat	J. Disp. Sci. Tech.	35	1717-1726	2013
91	Equilibrium and dynamic surface tension behaviour of triblock copolymer PEO-PPO-PEO inaqueous medium	Anik Goswami Anik Goswami , Gunjan Verma, P. A. Hassan, and S.S.Bhagwat,	J. Disp. Sci. Tech.		Accepted DOI 10.1007/s11743-013-1495-87	2013
92	Antimicrobial & SEM studies of sophorolipids synthesized using lauryl alcohol	Dengle Vrushali,Parul Chandorkar, Sunil Bhagwat,Asmita Prabune	J of Surfactants & Detergents	17	543-552	2013
93	Microbial oxidation of medium chain length fatty alcohol in the synthesis of sophorolipid by candida bombicola & its physiological characterization Vrushali Dengle Suni Bhagwat & Asmita Prabhune	Vrushali Dengle Suni Bhagwat & Asmita Prabhune	J of Surfactants & Detergents	16	173-181	2013

94	Foaming properties of Amine oxide surfactants	J G Tongaonkar Sunil Bhagwat C. Shrinivas D. Banerjee J Goswami, P K Wattal	Int J of Nuclear energy science & Technology\\	8	277-289	2013
95	Density, viscosity, and interfacial tension of binary mixture of Tri- iso -amyl phosphate (TiAP) and n -dodecane: Effect of compositions and gamma absorbed doses	Singh, M.L., Tripathi, S.C., Lokhande, M., Gandhi, P.M., Gaikar, V.G*.	J. Chem. Eng. Data	59 (4)	1130-1139	2014
96	Correlations among composition, temperature, and density, viscosity, or derived thermodynamic properties of binary mixtures of Tri-n-butyl phosphate with n-hexane or n-dodecane	Singh, M.L., Tripathi, S.C., Venkata, P.P.K., Gaikar, V.G.*	Ind. Eng. Chem. Res.	53 (10)	3795-3804	2014
97	Pressmud as an alternate resource for hydrocarbons and chemicals by thermal pyrolysis	Ansari, K.B., Gaikar, V.G.*	Ind. Eng. Chem. Res.	53 (5)	1878-1889	2014
98	DFT studies for the evaluation of amine functionalized polystyrene adsorbents for selective adsorption of carbon dioxide	Madyal R. S.; Arora, J. S*	RSC Adv.	4	20323-33	2014
99	Green hydrotropic extraction technology for delignification of sugarcane bagasse by using alkybenzene sulfonates as hydrotropes	Ansari, K.B., Gaikar, V.G.*	Chemical Engineering Science	115	157–166	2014
100	Kinetic model development for steam pyrolysis of dimethylformamide in a tubular reactor	Thaore, V.B., Gaikar, V.G.*	Ind. Eng. Chem. Res.	52 (31),	10601-10608	2013
101	Experimental and theoretical investigations of consequence of ionic liquid anion on copper(I) catalyzed reaction of aryl iodide and thiols,	Deshmukh K.M., Madyal R.S., Qureshi Z.S., Gaikar V.G., Bhanage B.M.*	Ind. Eng. Chem. Res.	52, 13	4747-57	2013
102	Synthesis of N,N,N′,N′-Tetraoctyl-3-oxapentane-1,5-diamide (TODGA) and its steam thermolysis-nitrolysis as a nuclear waste solvent minimization method	Dicholkar D.D., Kumar P., Heer P.K., Gaikar V.G., Kumar S., Natarajan R.	Ind. Eng. Chem. Res.	52, 7	2457-69	2013

103	Sorption Behaviour of Thiourea Grafted Polymeric Resin towards Silver Ion, Reduction to Silver Nanoparticles and its Antibacterial Properties	Kumar, P.; Ansari, K. B; Koli, A.; Gaikar, V. G*	Ind. Eng. Chem. Res.	52 (19)	6438–45	2013
104	Ultrasound assisted enzymatic pre-treatment of high fat content dairy wastewater	Adulkar T.V., Rathod V.K.	Ultrasonics Sonochemistry	21	1083-1089	2014
105	Mass transfer studies in pulsed sieve plate extraction column for the removal of tributyl phosphate from aqueous nitric acid	Lade V.G., Pakhare A.D., Rathod V.K.	Industrial and Engineering Chemistry Research	53	4812-4820	2014
106	Ultrasound assisted three phase partitioning of a fibrinolytic enzyme	Avhad D.N., Niphadkar S.S., Rathod V.K.	Ultrasonics Sonochemistry	21	628-633	2014
107	Ultrasound assisted production of daunorubicin: Process intensification approach	Raskar H.D., Avhad D.N., Rathod V.K.	Chemical Engineering and Processing: Process Intensification	77	12-Jul	2014
108	Mapping of an ultrasonic bath for ultrasound assisted extraction of mangiferin from Mangifera indica leaves	Kulkarni V.M., Rathod V.K.	Ultrasonics Sonochemistry	21	606-611	2014
109	Microwave assisted extraction of ursolic acid and oleanolic acid from Ocimum sanctum	Vetal M.D., Chavan R.S., Rathod V.K.	Biotechnology and Bioprocess Engineering	19	720-726	2014
110	Synthesis of methyl butyrate using heterogeneous catalyst: Kinetic studies	Dange P.N., Sharma A., Rathod V.K.	Catalysis Letters	144	1537-1546	2014
111	Ultrasound assisted lipase catalysed synthesis of isoamyl butyrate	Bansode S.R., Rathod V.K.	Process Biochemistry	49	1297-1303	2014
112	Xylanase and laccase aided bio-bleaching of wheat straw pulp	Dedhia B.S., Vetal M.D., Rathod V.K., Levente C.	Canadian Journal of Chemical Engineering	92	131-138	2014
113	Process intensification approach for preparation of curcumin nanoparticles via solvent-nonsolvent nanoprecipitation using spinning disc reactor	Khan W.H., Rathod V.K.	Chemical Engineering and Processing: Process Intensification	80	10-Jan	2014

114	Synthesis of isobutyl propionate using immobilized lipase in a solvent free system: Optimization and kinetic studies	Kuperkar V.V., Lade V.G., Prakash A., Rathod V.K.	Journal of Molecular Catalysis B: Enzymatic	99	143-149	2014
115	Extraction of piperine from Piper longum using ultrasound	Rathod S.S., Rathod V.K.	Industrial Crops and Products	58	259-264	2014
116	Hydrodynamics of a Pulsed Sieve Plate Extraction Column	Somkuwar N., Kolhe N., Rathod V.	Indian Chemical Engineer	56	235-257	2014
117	Extraction of mangiferin from Mangifera indica leaves using three phase partitioning coupled with ultrasound	Kulkarni V.M., Rathod V.K.	Industrial Crops and Products	52	292-297	2014
118	Ultrasound stimulated production of a fibrinolytic enzyme	Avhad D.N., Rathod V.K.	Ultrasonics Sonochemistry	21	182-188	2014
119	Treatment of fluoride concentrates from membrane unit using salt solutions	Jadhav S.V., Gadipelly C.R., Marathe K.V., Rathod V.K.	Journal of Water Process Engineering	2	3136	2014
120	Utilization of glycerol for the production of glycerol carbonate through greener route	Lanjekar K., Rathod V.K.	Journal of Environmental Chemical Engineering	1	1231-1236	2013
121	Extraction of ursolic acid from Ocimum sanctum by ultrasound: Process intensification and kinetic studies	Vetal M.D., Lade V.G., Rathod V.K.	Chemical Engineering and Processing: Process Intensification	69	24-30	2013
122	Comparison of normal phase operation and phase reversal studies in a pulsed sieve plate extraction column	Lade V.G., Rathod V.K., Bhattacharyya S., Manohar S., Wattal P.K.	Chemical Engineering Research and Design	91	1133-1144	2013
123	Ultrasound assisted enzyme catalyzed transesterification of waste cooking oil with dimethyl carbonate	Gharat N., Rathod V.K.	Ultrasonics Sonochemistry	20	900-905	2013
124	Enzyme catalyzed transesterification of waste cooking oil with dimethyl carbonate	Gharat N., Rathod V.K.	Journal of Molecular Catalysis B: Enzymatic	88	36-40	2013
125	Separation of Bromelain by Aqueous Two Phase Flotation	Pakhale S.V., Vetal M.D., Rathod V.K.	Separation Science and Technology (Philadelphia)	48	984989	2013

126	Effect of tri-n-butyl phosphate on physical properties of dodecane-nitric acid system	Bajoria S.L., Rathod V.K., Pandey N.K., Mudali U.K., Natarajan R.	Journal of Radioanalytical and Nuclear Chemistry	295	271-276	2013
127	Ultrasound assisted extraction of β-carotene from Spirulina platensis	Dey S., Rathod V.K.	Ultrasonics Sonochemistry	20	271-276	2013
128	A study on CO_2 absorption kinetics by aqueous solutions of N,N-diethylethanolamine and N-ethylethanolamine.	Vaidya, P. D., Kenig, E.Y.	Chem. Eng. Technol.	32	556-564	2009
129	Kinetics of carbonyl sulfide reaction with alkanolamines: a review.	Vaidya, P. D., Kenig, E. Y.	Chem. Eng. J.	148	207-211	2009
130	Glycerol reforming for hydrogen production: a review.	Vaidya, P. D., Rodrigues, A. E.	Chem. Eng. Technol.	32	1463-1469	2009
131	Kinetics of removal of carbon dioxide by aqueous solutions of N,N-diethylethanolamine and piperazine.	Konduru, P. B.; Vaidya, P. D.; Kenig, E. Y.	Environ. Sci. Technol.	44	2138-2143	2010
132	Kinetics of carbon dioxide removal by aqueous alkaline amino acid salts.	Vaidya, P. D.; Konduru, P. B.; Vaidyanathan, M; Kenig, E. Y.	Ind. Eng. Chem. Res.	49	11067-11072	2010
133	Termolecular kinetic model for CO2-alkanolamine reactions: An overview.	Vaidya, P. D.; Kenig, E. Y.	Chem. Eng. Technol.	33	1577-1581	2010
134	Glycerol reforming kinetics using a Pt/C catalyst.	Sutar, P. N.; Vaidya, P. D.; Rodrigues, A. E.	Chem. Eng. Technol.	33	1645-1649	2010
135	Acceleration of the wet oxidation reaction of piperazine by heterogeneous Ru/TiO2 catalyst.	Vaidya, P. D.; Junghare, R. K.	Chem. Eng. Commun.	198	992-1003	2011
136	Kinetics of carbon dioxide removal by aqueous diamines.	Bindwal, A. B.; Vaidya, P. D.; Kenig, E. Y.	Chem. Eng. J.	169	144-150	2011
137	Activated DEEA solutions for CO2 capture – A study of equilibrium and kinetic characteristics.	Sutar, P. N.; Vaidya, P. D.; Kenig, E. Y.	Chem. Eng. Sci.	100	234-241	2013

ARTICLES ACCEPTED FOR PUBLICATION IN INTERNATIONAL/NATIONAL JOURNALS:

No.	Authors	Title	Publication details
1	Pinjari, D.V.,Prasad, K.,Gogate, P.R.,Mhaske, S.T.,Pandit, A.B.	Intensification of synthesis of zirconium dioxide using ultrasound: Effect of amplitude variation	Chemical Engineering and Processing Article in Press
2	Pukale, D.D.,Maddikeri, G.L.,Gogate, P.R.,Pandit, A.B.,Pratap, A.P.	Ultrasound assisted transesterification of waste cooking oil using heterogeneous solid catalyst	Ultrasonics Sonochemistry Article in Press
3	Badve, M.P., Alpar, T., Pandit, A.B.,Gogate, P.R.,Csoka, L.	Modeling the shear rate and pressure drop in a hydrodynamic cavitation reactor with experimental validation based on KI decomposition studies	Ultrasonics Sonochemistry Article in Press
4	Bari A., Pandit A.B.	Ultrasound facilitated particle breakage: estimation of kinetic parameters using population balance modeling	Canadian journal of chemical engineering, Article in press.

PATENTS :

APPLIED/GRANTED

No.	Inventors	Title	Country	Funding agency
1	V. G. Gaikar, P. K. K. S. Heer, K. M. Khot	Amine functionalized CO_2 selective polystyrene adsorbents for CO_2, CH4 and N_2 separation (4142/MUM/2013 A),	India	DST
2.	P. R. Nemade; V. G. Gaikar, N. Jha, K. B. Dhopte, M. M. Kadam	Synthesis of Graphene oxide / γ - MnO_2 nanocomposite. (473/MUM/2014)	India	TEQIP
3	A. B. Pandit, S.B.Patel, Y. H. Shinde	Cooking Vessel Design for energy efficient cooking, Indian Patent Application No. 2496/Mum/2011		
4	Thorat B. N. and Chokashi K. P	Haemostatic BioSponge	India	RGCST
5	Thorat B.N., Tidke V.B. and Kokate S.R.	Solar Dryer with control Radiation	India	RGCST
6	Thorat B.N., Tidke V.B. and Kokate S.R.	Turmeric Processing	India	Bill Gates
7	Thorat B.N., Tidke V.B. and Kokate S.R.	Solar Dryer with control Radiation	PCT/ International	Bill Gates
8	Prakash D. Vaidya, Sunil S. Bhagwat, Neha Budhwani, Renu Sinha, Parivesh Chugh, M.V. Ravi Someswarudu	Solvent composition and method for removing acid components from industrial gases	India	GAIL, India
9	J. B. Joshi, S. V. Panse, V. H. Dalvi	Device for Concentrating Solar Radiation	India	
10	P. R. Nemade, Gaikar, V. G., Jha, N., Dhopte, K. B., Kadam, M. M.	Novel nanocomposites of γ-MnO_2 supported on graphene oxide used as a catalyst	India	--

11	G. S. Shankarling, A. B. Pandit, K. J. Jarag, D. V. Pinjari	Ultrasound Assisted Process for Synthesis of Chalcone	India	
12	S. A. Kapole, S. H. Sonawane, R. D. Kulkarni, A. B. Pandit, B. A. Bhanvase, D. V. Pinjari, P. R. Gogate	Synthesis of Corrosion Inhibiting Nano Pigment Compraising Of Nano Container for Corrosion Inhibitive Coating	India	

APPLIED

No.	Inventors	Title	Country	Funding agency
1	Lali, Arvind Mallinath; Valte, Rajeshwar Dattatraya	Multistage membrane tree model for separation of binary mixtures	India	BIRAC, DBT
2	Lali, Arvind Mallinath; Matlani, Rekha Khushiramani; Sivadasan, Anil	Production of thermostable, xylose tolerant, beta-xylosidase in E. Coli	India	BIRAC, DBT
3	Lali, Arvind Mallinath; Pawar, Hitesh Suresh	Process for synthesis of furan derivatives from Saccharides using Solid acid catalyst and preparation thereof.	India	BIRAC, DBT
4	Lali, Arvind Mallinath; Matlani, Rekha Khushiramani; Sivadasan, Anil	Thermotolerant and xylose tolerant mutant β-xylosidase and sequence encoding thereof.	India	BIRAC, DBT
5	Lali, Arvind Mallinath; Reshamwala, Shamlan M.S.	Recombinant E. coli strain and Process for production of Mannitol there from.	India	BIRAC, DBT
6	Lali, Arvind Mallinath; Odaneth, Annamma Anil; Pednekar, Mukesh Prabhakar; Sigh, Niteshkumar Satish; Rathi, Abhijit; Iyer, Padmini; Deshmukh, Sharad	Process for extraction of polyphenols from biomass.	India	BIRAC, DBT
7	Lali, Arvind Mallinath; Odaneth, Annamma Anil; Pednekar, Mukesh Prabhakar;	A process for production of soluble sugars from biomass	India	BIRAC, DBT
8	Lali, Arvind Mallinath; Odaneth, Annamma Anil; Birhade, Sachinkumar Hiraman; Victoria, Juliet Joanna; Sawant, Sneha Chandrakant;	A process for fractionation of oligosaccharides from cereal bran	India	BIRAC, DBT
9	Lali, Arvind Mallinath; Odaneth, Annamma Anil; Yadav, Manish Gyanendra.	Enzymatic process for synthesis of fatty acid ester of polyols	India	BIRAC, DBT

10	Lali, Arvind Mallinath; Odaneth, Annamma Anil; Vadgama, Rajesh Natwarlal; Tribhuvan, Nikhil Vilas	Enzymatic production of monoacylglycerol from oil	India	BIRAC, DBT
11	Lali, Arvind Mallinath; Prakash, Gunjan; Shukla, Bhavya; Vira, Chaitali; Rathod, Jayant Pralhad.	Algal variants produced by genome shuffling	India	BIRAC, DBT

GRANTED

No.	Inventors	Title	Country		Funding Agency
1	Lali, Arvind Mallinath; Nagwekar, Pooja Devidas; Varavadekar, Jayesh Suman; Wadekar, Prathamesh Chandrashekher; Gujarathi, Swapnali Subhash; Valte, Rajeshwar Dattatray; Birhade, Sachinkumar Hiraman; Odaneth, Annamma Anil.	Method for preparation of fermentable sugars from biomass	USA		BIRAC, DBT
			Application No.	Granted Date	
			13/682,388 Divisional -I	13/12/2013	
			13/682,361 Divisional- II	28/10/2013	
			Pakistan		
			455/2010	3/9/2013	
			Patent under prosecution in following countries Australia, Argentia, Brazil, Bangladesh, Malaysia, Pakistan, Paraguay, Philippines, USPTO, Venezuela, Uruguay, Sri Lanka, S. Korea, S. Africa, Indonesia, India, EPO, Vietnam		
2	Lali, Arvind Mallinath; Varavadekar, Jayesh Suman; Wadekar, Prathamesh Chandrashekher;	Process for fractionation of biomass	Patent under prosecution in following countries EPO, India, Indonesia, USA, Malaysia, South Africa, Uruguay, Vietnam, Korea, Paraguay, Philippines, China, Sri Lanka, Bangladesh, Brazil, Argentina, Australia		BIRAC, DBT
3	Lali, Arvind Mallinath; Kale Sandeep B; Pakhale, Vinod D; Thakare Yogeshwar N.	Continuous counter current fluidized Moving Bed (FMB) and/or Expanded Moving Bed (EMB) PCT No: PCT/ IN2010/000133 Indian (Appl. No: 505/MUM/2009)	Korea Application No. 10/2011/7022903		BIRAC, DBT
			USA Application No. 13/255,890		
			Patent under prosecution in following countries Canada, EPO, India, china		

BOOK CHAPTER :

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
1	Jaya Narayan Sahu, Bhim Charan Meikap, Anand V. Patwardhan	Computational Fluid Dynamics Study for Hydrolysis of Urea. Chapter 13 in book: 'Computational Fluid Dynamics Applications in Green Design'. ISBN-13: 978-1494875756	Maher A. R. Sadiq Al-Baghdadi	International Energy and Environment Foundation		2014	369-386
2	D.V. Pinjari, P.R. Gogate, A.B. Pandit	Synthesis of Nanomaterials using Hydrodynamic Cavitation	M. Sivakumar and M. Ashokkumar	Pan Stanford,	Singapore	2014	
3	Dandekar Prajakta, Jain Ratnesh,	Polymeric Nanoparticles for Nucleic Acid in Nanoparticles for Catalysis, Energy and Drug Delivery Delivery	Ramesh S. Chaughule and Anant R. Kapdi	American Scientific Publishers	USA	2014	
4	Patel P, Pol A, Jain R, Dandekar P	Cyclodextrin Polyrotaxanes: Drug and Nucleic acid Delivery, Encyclopedia of Biomedical Polymers and Polymeric Biomaterials		Taylor and Francis	USA	2014	DOI: 10.1081 /E-EBPP-12005 0059
5	Kapadnis G., Havele O., Dandekar P., Jain R.	Chitosan Oligosaccharides for Drug and Gene Delivery, Encyclopedia of Biomedical Polymers and Polymeric Biomaterials		Taylor and Francis	USA	2014	DOI: 10.1081 /E-EBPP-12005 0068
6	**D. V. Pinjari**, P.R. Gogate, A.B. Pandit	Synthesis of Nanomaterials using Hydrodynamic Cavitation	M. Sivakumar& M. Ashokkumar, Pan Stanford	Cavitation: A Novel Energy Efficient Technique for the Generation of Nanomaterials	Singapore		2013

7	V. K. Saharan, **D. V. Pinjari**, P.R. Gogate, A.B. Pandit	Process Intensification using oxidation technologies at ambient conditions for wastewater treatment and recovery	Vivek Ranade & Vinay Bhandari	Industrial Wastewater Treatment, Recycling and Reuse, Elsevier	UK		2013

GENERAL NON-SCIENTIFIC PUBLICATIONS INCLUDING NEWSPAPER ARTICLES :

- Disparity in the growth of herbal medicines in competing with their modern equivalents, R Akhil Krishnan, UdayKoli, Ratnesh Jain and Prajakta Dandekar Jain, Institute of Chemical Technology, N. P. Marg, Matunga, Mumbai, India Rasamruta, Editorial, 1-5, June 2013

MEMBERSHIP OF IN-HOUSE COMMITTEES:

PROFESSOR S.S. BHAGWAT

- Head of Chemical Engg. Dept.
- Co-ordinator, Post Graduate Diploma in Chemical Technology Management Course
- Member, Stores Committee

PROFESSOR V.G. GAIKAR

- Co-ordinator, UGC-Networking Resource Centre in Chemical Engineering (2009-2014)
- ICT-DAE Centre for Chemical Engineering Education and Research(Oct 2012-
- Institute Coordinator, Technical Education Improvement Quality Program (TEQIP)
- Planning and Monitoring Board, ICT

PROFESSOR A.M. LALI

- Head, DBT-ICT Centre for Energy Biosciences
- Chairman, TEQIP Industry Institute Interaction Cell
- Chairperson: Research Recognition Committee (Bioprocess Technology)
- Chairperson: Research Recognition Committee (Sciences Biotechnology)

PROFESSOR ANAND V. PATWARDHAN

- Member – Planning and Monitoring Board of ICT
- Placement In-Charge for Department of Chemical Engineering with effect from August 2012
- Member – Departmental Committee for M. Chem. Eng. and Ph.D. admissions
- Member – Departmental Academic Programme Committee
- Member – Departmental Administrative Committee
- Coordinator – M. Chem. Eng.

DR. ASHWIN W. PATWARDHAN

- Conducting Ph. D. Interviews, allotment, etc.
- Member examination committee
- Member Library Committee
- Member of committees for Recommending and selecting thesis from CE
- Department, Best student, Best researcher, best home paper, etc.
- Instrumentation coordinator Chem. Engg. Dept.
- Member Statutes committee
- Member Bombay Technologist

MRS. K.V. MARATHE

- Member, Safety committee,ICT
- Member, Canteen committee, ICT
- Cordinator, CAS (UGC) Dept of Chem Engg

DR. P.R. GOGATE

- In-charge, Information Processing Center
- Member, Website Committee and

Computerization committee

DR. C.S. MATHPATI

- Admission Committee
- Sr. Supervisor, Examination Committee

DR. P.R. NEMADE

- CE Department TEQIP Coordinator,
- UGC NRC Summer Internships
- Institute - TEQIP MIS Committee (convener), Website Committee, TEQIP Innovation Networking Coordination Committee

DR. R.D. JAIN

- FIST Committee, Department of Chemical Engineering
- Member of committee to revamp the Institute website

SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/ WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS :

PROFESSOR S. S. BHAGWAT

- Poster presentation for research work entitled "Synthesis and Evaluation of Fat liquoring Emulsions Using Greener Surfactants " in the International Conference on "EMERGING TRENDS IN OLEOCHEMICALS & LIPIDS EXPO'' (OLEO -2013) by Anik Goswami and Prof. S. S. Bhagwat organized by Oil Technologists' Association of India in association with American Oil Chemists' Society and CSIR- Indian Institute of Chemical Technology during 8-10th August , 2013 at CSIR-Indian Institute of Chemical Technology, Hyderabad.
- Poster presentation for research work entitled " Studies in Interfacial Science: Dynamics and Stabilization of Foam '' in the International Conference on " EMERGING TRENDS IN OLEOCHEMICALS & LIPIDS EXPO'' (OLEO -2013) by Jitendra G Tongaonkar and Prof. S. S. Bhagwat organized by Oil Technologists' Association of India in association with American Oil Chemists' Society and CSIR- Indian Institute of Chemical Technology during 8-10th August , 2013 at CSIR-Indian Institute of Chemical Technology, Hyderabad.
- Sustainable energy alternatives in 9th Annual all sites energy meet Reliance Industry Ltd Reliance Corporate Park Navi Mumbai 11-12 Sept 2013
- Selective reactions in surfactant based green media in fourth asian conference on Colloid and interfacial science at North Bengal University Darjeling Nov 20-22 2013
- Foamablity & Its measurestruments in 17th National Conference on surfactants Emulsions and biocolloids CSIR -CLRI Chennai Nov 27-30 2013
- Equilibrium and dynamic surface tension behavior of PEO-PPO-PEO , triblock copolymers in aqueous medium, Anik Goswami , Gunjan Verma, P.A.Hassan, S.S.Bhagwat*, The 5th Asian Conference on Colloid and Interface Science , November 20-23 , 2013, University of North Bengal, pg no 207
- Investigating Adsorption Kinetics of Surfactant-pluronic Solutions, Anik Goswami , Gunjan Verma , P.A.Hassan, S.S.Bhagwat*, 16th National Conference on Surfactants, Emulsions and Biocolloids, November 28-30, 2013, Central Leather Research Institute, Chennai ,pg no 62
- Foamability with a

novel Instrument in International conference on nanotechnology and surface science DDU Nadiad Dec10-13 2013

PROFESSOR V. G. GAIKAR

- Engineering Aspects of Algal Growth in Photobioreactors, CSMCRI, Bhavnagar, 31st May 2013
- National Seminar "Role of Bio-Energy in Sustainable Growth" on 30th & 31st August, 2013, MIT, Alandi
- 'Need of Innovation' TEQIP Innovation Meet, ICT, Mumbai, 25th & 26th September 2013
- Workshop on " Intensifying and up-scaling of continuous processes (Indus CoP)", NCL, Pune, Dec 12th &13th 2013
- Process Engineering Aspects of Bio-diesel Manufacturing, Guru Gobind Singh Indraprastha University, New Delhi, 28th Feb and 1st March 2014
- V. G. Gaikar and V. B. Thaore, Reaction network modeling for kinetic parameters of pyrolytic reactions of CHON extractants in nuclear fuel processing waste management, Chemical Engineering in Nuclear Technology (CHEMENT-2014), Indira Gandhi Center for Atomic Research, Kalpakkam,6th-7th March,2014.
- Invited Lecture on Fine chemical technologies, Chemspec India 2014 , 11th April, 2014
- Synthesis of Different Degree of Oxidation of Graphene oxide, M. M. Kadam, O.R. Lokare, V.M.K. K. Kota, V. G. Gaikar & N. Jha, CHEMCON 2013
- Synthesis of Graphene Oxide / γ -MnO2 Nanocomposite., M. M. Kadam, V. G. Gaikar & N. Jha, CHEMCON 2013
- Molecular Dynamics Simulation of Lithium Chloride in water, M. B. Singh and V. G. Gaikar*, CHEMENT-2014, 06-07 March 2014, Kalpakkam, India
- Theoretical and Experimental studies for Selective Removal of Antimony from Zircaloy using Thiourea Grafted Polystyrene Adsorbent, J.S. Arora & V. G. Gaikar*, CHEMENT-2014, 06-07 March 2014, Kalpakkam, India
- Steam pyrolysis of organic waste in a tubular reactor as a waste solvent minimization method., V. B. Thaore, D. D. Dicholkar & V. G. Gaikar*, 25th September TEQIP- Innovation Meet-2013, Institute of Chemical Technology
- Amine Functionalized polystyrene adsorbents for CO_2 , methane and N_2 separation, K. M. Khot, P K. K. S Heer & V. G. Gaikar*, 25th September TEQIP- Innovation Meet-2013, Institute of Chemical Technology
- Molecular recognition Technology, J. S. Arora, R. S. Madyal, A. Patil, K.N. Shobha, L. Devendra & V. G. Gaikar*, 25th September TEQIP- Innovation Meet-2013, Institute of Chemical Technology
- Thermal pyrolysis of ligno-cellulosic biomass with in situ vapor upgradation for renewable hydrocarbons and chemicals. K. B. Ansari and V.G. Gaikar*, 25th September TEQIP-Innovation Meet-2013, Institute of Chemical Technology

PROFESSOR A.M. LALI

- Attended 4th Annual European Algal Biomass 2014 conference at Seville, Spain on 5th to 7th May 2014.
- Attended 11th Annual world congress on industrial biotechnology conference from 12th to 15th May 2014 at Pennsylvania convention centre Philadelphia USA.
- Attended international seminar on "Sustainable

industrial algae production and related business opportunities" by ONGC & CLEEN Ltd (Finland) at New Delhi on 27th March 2014.

- Attended "Brainstorming workshop on R&D in Biogas" on 24th March at MNRE, New Delhi.
- Delivered a lecture at the International Bioenergy Conference 2014 on "Biological Conversion technologies" organized by Prof. Tuncker of the University of Nottingham on 11th to 13th March 2014 at Manchester Central Convention Complex, Manchester UK.
- Delivered lecture on "Biomass technologies current scenario" at national chemical laboratory, Pune on 13th January 2014.
- Attended workshop on agri-biomass on 12th January 2014 at National Chemical Laboratory 2014, Pune.

PROFESSOR A. B. PANDIT

- Lecture and Departmental seminar at UCSB, 6th of March 2013
- 18 lecture course on Design of Multiphase reactors given to graduate student class of UCSB, 1st Feb 2013 to 15th of March 2013
- Lecture at Eastman Chemical co, Kingsport, Tennessee,USA on the 4th April 2013.
- Lecture at City University of New York, USA on the 22nd April 2013, Chemical engineering Department.
- Cavitationally induced physical Chemical and biological transformation. NIT-Suratkal, on 7th February 2014
- Design of heat transfer equipments at UPL PVT LTD, on 22nd February and 30th March 2014.
- Physics and chemistry of cavitationally based transformations, IIT-BHU 11 March 2014

PROFESSOR ANAND V. PATWARDHAN

***Presented in CHEMCON-2013 (66th Annual Session of IIChE), at ICT, Mumbai (27-30 December 2013)*:**

- Removal of Organic Acids using Supported Liquid Membrane Containing Tri-N-Octylamine as an Extractant. Vittal N. Shingate, Ashwin W. Patwardhan, Anand V. Patwardhan (oral presentation: AST018)
- Removal of Lead ions using Flat Sheet Supported Liquid Membrane containing D2EHPA as extractant. Swapnil R. Chaudhari, Shrikant S. Mete, Yogesh D. Jagdale, Vittal N. Shingate, Anand V. Patwardhan (oral presentation: AST022)
- Separation of Pt(II) ions from chloride solution using flat sheet supported liquid membrane. Shweta Kumbhaj, Anand V. Patwardhan (oral presentation: AST043)
- Removal of Lead (II) Ions using Supported Liquid Membrane Containing Tris(2-Methylhexyl) Phosphoric Acid as Extractant. Rituraj, Anand V. Patwardhan (oral presentation: AST072)
- Enhanced L-Ascorbic Acid Biosynthesis by Induced Oxidative Stress in Xanthomonas Campestris MTCC 2286: optimisation using response surface methodology. Dnyaneshwar V. Bhand, Anand V. Patwardhan (oral presentation: BE011)
- Single Phase Axial Dispersion Study of Pulsed Sieve Plate Column. Yogesh H. Mirage, Vishwanath H. Dalvi, Anand V. Patwardhan (oral presentation: FMC008)
- Stereoselective Reduction of Aryl Alkyl Ketones using Chiral (S)-Binal-H Reagent. Yogesh K. Choughule, Vibhuti A. Dukhande, Anand V. Patwardhan (oral presentation: GCE016)
- In-Situ Epoxidation of Grape Seed Oil (Vitis vinifera)

using Hydrogen Peroxide. Machhindra S. Bhalerao, Anand V. Patwardhan (oral presentation: GCE018)

- Dyeing of Silk using Pigment Extracted from Isolate Kocuria Flava sp. Vaishali M. Kulkarni, Prashant D. Gangawane, Anand V. Patwardhan (poster presentation: GCE071)
- Transport of Strontium using Pertraction Technique Containing N,N,N',N'-Tetraoctyl Diglycolamide as the Carrier. Yogesh D. Jagdale, Swapnil R. Chaudhari, Ashwin W. Patwardhan, Anand V. Patwardhan (oral presentation: WTR026)

Posters presented in SESTEC-2014 – DAE-BRNS Biennial Symposium on Emerging trends in Separation Science and Technology, Bhabha Atomic Research Centre, Mumbai, 25-28 February 2014

- Removal of lead ions using flat sheet supported liquid membrane. Swapnil Chaudhari, Anand V. Patwardhan
- Removal of organic acids using hollow fiber supported liquid membrane containing tri-n-octylamine as an extractant. Vittal Shingate, Anand V. Patwardhan
- Removal of lead ions supported liquid membrane. Rituraj, Swapnil Chaudhari, Anand V. Patwardhan

Presented in OYCE-2014 (Outstanding Young Chemical Engineers 2014) – national level conference, organised by IIChE, at Thadomal Sahani College, Mumbai, 08-09 March 2014.

- "Dyeing of fabric using natural pigment extracted from an isolated bacteria sp.", Vaishali M. Kulkarni, Anand V. Patwardhan (secured First Prize)

PROFESSOR B.N. THORAT

- Bhaskar N. Thorat (2012). The role of drying in the preparation of food and feed with special reference to lactic cultures. Keynote speaker at Indo-EU Program of PLANTY meeting on 6th February at International Centre, Dona Paula, Goa, India.
- Bhaskar N. Thorat (2012). Granulation and flow characteristics of solids. Keynote speaker at Powder and Bulk Solids India, Exhibition and conference, 13-15 March, Ahmadabad, Gujarat, India.
- Aware R. S., Thorat B. N. (2012), Effect of various pretreatments and drying techniques on Thompson seedless grapes. International Food Engineering and Technology (IFET, 2012), Bangkok, Thailand.
- Ramteke L. P., Deulgaonkar S.U., and Thorat B.N. (2012) Filtration of mycelium suspension from fermentation broth. Proceedings of 11th World Filtration Congress, 16-20 April, Graz, Austria.
- R. S. Aware and B. N. Thorat, Drying of Bitter Melon by Various Methods and its Evaluation, Proceedings of IFT Annual Meeting and Food Expo 2012, Las Vegas, USA, 25 Jun- 28 Jun 2012, pp. 193.
- S. Jose, T. J. Gaware, K. A. Patil, B. N. Thorat, R. D. Kokane (2012). Process development for dehydrated flavoured Chicken shreds from spent hen meat. 18th International Drying Symposium (IDS 2012) Xiamen, China, 11-15 November 2012.
- K. A. Patil, T. J. Gaware, S. Jose B. N. Thorat, R. D. Kokane (2012). Studies on Development of Dehydrated Shelf Stable Noodles From Spent Hen Meat. 18th International Drying Symposium (IDS 2012) Xiamen, China, 11-15 November 2012.
- S. R. Chavan, A. S. Shinde, and B. N. Thorat (2012).

Effect of Drying and Particle Size on Powder Flowability. 18th International Drying Symposium (IDS 2012) Xiamen, China, 11-15 November 2012.

- S. U. Deulgaonkar, A. Hakkinen, B. N. Thorat. (2012). Influence of mixing conditions applied during crystallization process on cake dewatering characteristics. 18th International Drying Symposium (IDS 2012) Xiamen, China, 11-15 November 2012.
- Dilip B. Jadhao and Bhaskar N. Thorat (2012). Purification and drying of steviol glycosides from stevia rebaudiana bertoni. 18th International Drying Symposium (IDS 2012) Xiamen, China, 11-15 November 2012.
- S. U. Deulgaonkar, A. Hakkinen and B. N. Thorat (2013). Effect of Mixing During Crystallization on Mechanical Dewatering of Salicylic Acid. Proceedings of Young Researchers conference, 11-13 January, Mumbai.
- S. U. Deulgaonkar, A. Hakkinen and B. N. Thorat (2013). Antisolvent crystallization and pressure filtration of Salicylic Acid: Influence of mixing conditions. Proceedings of Filtech 22-24 October, Wiesbaden, Germany.
- B. N. Thorat (2013) Sustainable Drying Technologies for Synergistic European and Indian Market, Key Note Lecture Delivered Nordic Drying Conference, at Copenhagen, DTI, Denmark, June 5-7.
- Vaibhav Tidke and B. N. Thorat (2013) Atmospheric Pre-drying and Role of Solar Drying for Food and Vegetables, Nordic Drying Conference, at Copenhagen, DTI, Denmark, June 5-7.
- A. Gada, V. Tidke, A. Mujumdar, B. N. Thorat (2014) Economic evaluation of Solar Cabinet Dryer System: a case study on onion drying, Oral Presentation at International Drying Symposium, Lyon, France, August 24-27.
- N. Nagwekar, V. Tidke, B. N. Thorat (2014) Microbial analysis of dried fish and comparative study using different drying methods, Oral Presentation at International Drying Symposium, Lyon, France, August 24-27.
- S. Konnur, B. N. Thorat (2014) Experimental investigation of Jaggery drying to produce granular jiggery, Poster Presentation at International Drying Symposium, Lyon, France, August 24-27.
- I. Sehgal, A. Gada, B. N. Thorat (2014) Socio-economic impact of Solar Dryer, Poster Presentation at International Drying Symposium, Lyon, France, August 24-27.
- A. Gaikwad, T. Gaware, V. Tidke, B. N. Thorat (2014) Solar Drying of Turmeric, Poster Presentation at International Drying Symposium, Lyon, France, August 24-27.
- S. Vanjiwale, V. Tidke, B. N. Thorat (2014) Drying kinetics of Indian Cardamom, Poster Presentation at International Drying Symposium, Lyon, France, August 24-27.
- S. Shimpi, V. Tidke, B. N. Thorat (2014) Experimental studies of Natural Convection Solar Drying of Cassava, Poster Presentation at International Drying Symposium, Lyon, France, August 24-27.

PROFESSOR ASHWIN W. PATWARDHAN

- Mathematical Modeling of Separations Using Supported Liquid Membranes, Theme Meeting on Membrane Separations for Fuel Cycle Applications, MEMSEP

2013, BARC, Sept 17, 2013

- Flow Reactors: Fundamentals, Intensifying and Upscaling of Continuous Processes, Dec 13 – 14, 2013, NCL
- Gas Entrainment at Liquid Surfaces, Chemcon, ICT, Mumbai, Dec. 2013
- Conducted Refresher course - Chemical Engineering for Plant Personnel, Series of 3 lectures given along with Dr. Pr. R. Gogate and Mr. O.P. Goyal organized by Indian Chemical Council, Oct 4 – 5, 2013, BATU, Lonere, Maharashtra
- Conducted Refresher Course - Fluid Flow, Series of 12 lectures at United Phosphorous Ltd., Ankleshwar, Feb - March 2014
- Conducted Refresher course - Two Phase Flow, Two day course on "Chemical Industry Fluid Flow Theory and Practice", Organized by Indian Chemical Council, at Mumbai, April 25 – 26, 2014
- Conducted Refresher course - Chemical Engineering for Plant Personnel, Series of 3 lectures given along with Dr. Pr. R. Gogate and Mr. O.P. Goyal organized by Indian Chemical Council, June 20 - 21, 2014, Mumbai
- Conducted 3 lectures at PI Industries, Udaipur, June 25 – 26, 2014

MRS. K.V. MARATHE

- Exergy analysis of Micellar Enhanced UltraFiltration, SESTEC-2014
- Modelling and Simulation of MEUF, SESTEC-2014

DR. P. R. GOGATE

Presentations at International Conferences:

- P. R. Gogate, D. McGuire, S. Mededovic Thagard, R. Cathey, J. Blackmon, G. Chapas, Application of Ozonix Technology for Treatment of Wastewater and Intensified Processing in Coal Mining, Presentation at 19th Advanced oxidation technologies conference, San Diego, California, USA, November 2013

Details of invited lectures in conferences/Symposia (International)

- P.R. Gogate, "Hydrodynamic Cavitation for Wastewater Treatment", Invited lecture at Indo-Mexican Workshop on Sustainable Water and Wastewater Management, Nagpur, July 2013
- P.R. Gogate, Cavitational Reactors: Design and Scale up Aspects, Invited Lecture at Workshop on Applications of Cavitational Reactors for Process Intensification, Belgium, November 2013
- P.R. Gogate, "Process intensification of physical and chemical processing using cavitational reactors: design, scale up and applications", Invited Lecture at the 79th SCEJ Annual Meeting, Gifu, Japan, March, 2014

Details of invited lectures in conferences Symposia (National)

- P.R. Gogate, "Intensified Biodiesel synthesis from sustainable raw materials: Some Recent trends", Invited lecture at Workshop on ROLE OF BIO-ENERGY IN SUSTAINABLE GROWTH held at MIT-Academy of Engineering, Pune, August 2013
- P.R. Gogate, "Material and Energy Balance Calculations, Separation Processes and Chemical Reaction Engineering", Invited Faculty in Refresher course on Chemical Engineering organized by Indian Chemical Council, Lonere, Maharashtra, October, 2013
- P.R. Gogate, "Hybrid Technologies based on Cavitation for Wastewater Treatment", Invited lecture as Recipient of Hindustan Lever award for Most Outstanding Chemical Engineer of the

year at Chemcon 2013, Mumbai, December, 2013

- P.R. Gogate, "Material and Energy Balance Calculations, Separation Processes and Chemical Reaction Engineering", Invited Faculty in Refresher course on Chemical Engineering organized by Indian Chemical Council, Mumbai, Maharashtra, June 2014

DR. P. D. VAIDYA

FDP on "CFD in Engineering Domain Using Computing Softwares" at VJTI, Mumbai, 08-12 July, 2013, Sponsored by TEQIP Phase 2

Industry Certification Training Program on "Catalysis - Practical Approach" at Bangalore, 11-15 Nov., 2013, Sponsored by TEQIP Phase 2

S. M. SONTAKKE

- Attended 8th Summer School on "Petroleum Refining & Petrochemicals" at IIPM, Delhi (June, 2013)
- Attended a 3rd Industry Academia workshop on "A-Z of Natural Gas and LPG" organized by Petrofed and Lovraj Kumar Memorial Trust at LNG Terminal, Dahej (Mar., 2014)

DR. R.D. JAIN

- GauravKapadnis, Prajakta Dandekar and Ratnesh Jain (2013), Pepsin catalyzed hydrolysis of Chitosan to synthesize Chitosan Oligosaccharides (COS) with improved water solubility Poster Presentation at ICT NanoBio 2013, Institute of Chemical Technology, Mumbai, India, November 2013.
- Krishnan Harini, BachhavBhagyashree, Jain Ratnesh, Dandekar Jain Prajakta (2013): Cationic PLGA Nanoparticles for nucleic acid delivery. ICT Nano-Bio - Workshop on Advances in Biomaterials and Nanobiotechnology, India, November 2013.
- Krishnan Akhil, Dandekar Jain Prajakta, Jain Ratnesh (2013): A Novel Ultrasound assisted route for the synthesis of Low Molecular Weight Chitosan (LMWC). ICT Nano-Bio - Workshop on Advances in Biomaterials and Nanobiotechnology, India, November 2013.
- Anomitra Dey, Vishwanath Dalvi, Prajakta Dandekar, Ratnesh Jain (2013): In-silico based study of Chitosan-Sodium tripolyphosphate (Ch-TPP) Nanoparticles: A mechanistic approach towards their interaction. Workshop on Advances in Biomaterials and Nanobiotechnology, India, November 2013.
- Pofali Prasad, Dandekar Jain Prajakta, Jain Ratnesh (2013): Dual Benefit of Preservative free action and antimicrobial activity in silver nanoparticle vanishing cream. Workshop on Advances in Biomaterials and Nanobiotechnology, India, November, 2013.
- Ratnesh Jain, Prajakta Dandekar, BrigittaLoretz, Gerhard Wenz, and Claus-Michael Lehr (2013): Cationic Polymethacrylate Nanoparticles downregulate Bfl-1/A1 Gene: Anew approach for intracellular infection. 40th Annual Meeting and Exposition of the Controlled Release Society, Honolulu, Hawaii, July, 2013.
- ERS (European Respiratory Society) Annual Congress, Valencia, Spain, September 5-10, 2013

DR. D.V. PINJARI

- D. V. Pinjari and A. B. Pandit, Invited lecture presented on, "Cavitation Technology: An Energy Efficient Technology for Production of Nanoparticles" in Three days National Workshop on Nanomaterials and Nanotechnology, organized by Maharashtra Instiutte of Technology, Aurangabad on 15-17th February 2013.
- D. V. Pinjari, Invited lecture presented on, "Synthesis of

Nanomaterials: A Greener Approaches" in two week workshop on Nanomaterials under TEQUIP program, organized by Mechanical Engineering Department, Babasaheb Ambedkar Technological University, Lonere on 16th June 2013.

- D. V. Pinjari and A. B. Pandit, Invited lecture presented on, "Inorganic particle production through Sonoprocess Engineering" in two day workshop on Sono Process Engineering and Reactors for Nanomaterials under TEQUIP program, organized by Chemical Engineering Department, National Institute of Technology, Warangal on 23-24th February 2013.
- S. E. Karekar, A. J. Jadhav, A. B. Pandit, and D. V. Pinjari, Poster presented on "A study of sonochemical synthesis of Zinc Phosphate and its anticorrosive performance in carrier resin such as epoxy at its various concentrations" in 11th international symposium on Surface Protective Coatings and Paint Expo 2014, organized by The Society for Surface Protective Coatings, India during 19-21st January 2014.
- A. J. Jadhav, S. E. Karekar, A. B. Pandit, and D. V. Pinjari, Paper presented on "Ultrasound assisted synthesis of core and shell assembly of Zinc phosphate based nanocontainers and its study of release of inhibitor at varying pH" in 11th international symposium on Surface Protective Coatings and Paint Expo 2014, organized by The Society for Surface Protective Coatings, India during 19-21st January 2014.

DR. S. S. JOGWAR

- Oral presentation at the 10th International Symposium on Dynamics and Control of Process Systems, Mumbai.
- Poster presentation at the 8th International Conference on Foundations of Computer-Aided Process Design, Cle Elum, USA.
- Attended International Workshop on Perspectives in Dynamical Systems and Control, Mumbai.

VISITS TO OTHER INSTITUTES AND ABROAD:

- Cincinnati University, Ohio, US. For EPS organized workshop. Lecture was delivered on Municipal solid waste management. August 2013
- Ohio State University, August 2013

EVENTS ORGANIZED AND RESPONSIBILITY (CONVEROR /SECRETARY/ MEMBER):

PROFESSOR S.S. BHAGWAT

- Hon Secretary Chemcon 2013 ICT Mumbai Dec 2013

PROFESSOR V.G. GAIKAR

- TEQIP – INNOVATION MEET, 25-26th September. 2013, Institute of Chemical Technology

PROFESSOR A.M. LALI

- Science Day Celebration on 20th February 2014
- BBSRC-DBT Kick off meeting project entitled "Translational approaches to resolving biological bottlenecks in macroalgal biofuel production" was held on 24th and 25th February 2014.

PROFESSOR ANAND V. PATWARDHAN

- Member of Coordination Committee of CHEMCON-2013 (Coordinator of Cultural Events)

PROFESSOR B.N. THORAT

- 8th World Forum for Crystallization, Filtration and Drying; Theme – Modern filtration in the process industry, ICT, Mumbai.

DR. V.K. RATHOD

- Chemcon 2013

DR. P.R. GOGATE

- Local Organizing Secretary, Chemcon 2013

DR. S. M. SONTAKKE

- Organized a workshop on advances in biomaterials and nanobiotechnology (ICT Nano-Bio 2013) sponsored by TEQIP and other private companies (Nov, 2013)
- Organized a workshop and training course on "Nanomaterials: Science and Technology" (NST-2013) sponsored by UGC-NRC (June, 2013)

DR. R.D. JAIN

- ICT-NanoBio Workshop, Nov 23-24, 2013

PLACEMENT

B.CHEM. ENGG

Company's name	Selected Student's
Dr. Reddy's Laboratories	Mr. Ajit P. Walke
Alfa Laval	-
Alkyl Amines	Mr. Datta S. Lahane
Alkyl Amines	Mr. Rakesh A. Kondekar
Balmer-Lawrie	-
BPCL	Mr. Gaurang V. Patankar
BPCL	Mr. Nitesh Sonone
BPCL	Mr. Ramawatar P. Asawa
BPCL	Mr. Vrishank P. Pal
Dr. Reddy's Laboratories	Mr. Krishan B. Shetty
Exxon-Mobil	Mr. Madhav Kapur
Exxon-Mobil	Miss Dhanshri R. Tijare
Godrej	Mr. Kalpesh K. Khedekar
Hospira	Miss Vinaya Venkatesh
Hospira	Miss Pranali N. Kuber
Hospira	Mr. Parth S. Deokate
L & T	Mr. Keshav Kabra
L & T	Mr. Nikhil Nayak
L & T	Mr. Rishi Kapoor
L & T	Miss Bhagyesha S. Patil
Pyramid Engineering Solutions	Miss Shabdiki Chaurasia
Pyramid Engineering Solutions	Miss Kanchan S. Chavan
Reliance Industried Limited	Mr. Parikshit S. Sarda
Reliance Industried Limited	Mr. Sachin S. Gutte
Reliance Industried Limited	Miss Kruti A. Shah
Reliance Industried Limited	Miss Supriya Singhal
Sulzer	Mr. Kshitij Agarwal
Tata Consulting Engineers	Mr. Kunal Mehta
Technip	Miss Nandini R. Chiluka
Technip	Mr. Nikhil R. Nayak
United Phosphorus Limited	Mr. Nandkishor A. Battinwar
UOP-Honeywell	Mr. Amit S. Udata
UOP-Honeywell	Mr. Harsh Thakkar
UOP-Honeywell	Mr. Soumitra Bhoyar

M.CHEM, ENGG.

Company's name	Selected Student's
Alfa Laval	Mr. Vaibhav K. Deshpande
GSP Crop Science	Mr. Vittal N. Shingate
Hospira	Rituraj
L & T	Mr. Srivats Gopalan
L & T	Miss Rinkey Pandey
SOLVAY	Mr. Ankit J. Gada
SOLVAY	Mr. Sandeep S. Kendre
SOLVAY	Mr. Hrushikesh M. Gade
Tata Consulting Engineers	Rituraj
Tata Consulting Engineers	Ravi Ranjan Singh
Technip	Miss Divya Raghunandanan
United Phosphorus Limited	Mr. Amod A. Kulkarni
UOP-Honeywell	Mr. Joyfree S. Mascarenhas
UOP-Honeywell	Mr. Kiran D. Kadam

INDUSTRIAL CONSULTANCY :

Company	Area of advice	Period	Faculty
Galaxy Surfactants	Surfactant Manufacturing & Application	1Year	S.S. Bhagwat
Marico Industries	Hair care Formulation	1Year	S.S. Bhagwat
Balmer Laurie	Leather Chemicals	1 Year	S.S. Bhagwat
HUL	Hand dish wash & Toothpaste Formulation	6 months	S.S. Bhagwat
GSK	Milk additive Formulation	6months	S.S. Bhagwat
Hindustan Unilever Limited	Product development	April 2013 - March 2014	V.G. Gaikar
Alkon Electronics Pvt. Ltd	Process and Product development	April 2013 - March 2014	V.G. Gaikar
Libox Chem India Pvt. Ltd. Goa.	Process and Product development	April 2013 - March 2014	V.G. Gaikar
Privi Organics Pvt Ltd, Navi Mumbai	Enzymatic and microbial biotransformation and bio-based chemicals	2013-2014	A.M. Lali
India Glycols Ltd. Kashipur	Lignocellulosic ethanol	2013-2014	A.M. Lali
Camlin Fine Sciences Ltd.	Enzymatic production of ascorbyl plamitate	2013-2014	A.M. Lali
Strides-acrolabs, Bangalore	Purification of antibiotics	2013-2014	A.M. Lali
Acme synthetic chemicals	Biotransformation and purifications of fatty acids	2013-2014	A.M. Lali
Kanoria Chemicals and Industries	Soy protein pilot plant	2013-2014	A.M. Lali
SRF ltd, New Delhi, Design of mixing equipments			A. B. Pandit
Unilever ltd, Bangalore, India			A. B. Pandit
Eastman Chemical Co. Ltd., USA.			A. B. Pandit
Bharat Petroleum Corporation limited (BPCL)			A. B. Pandit

United Phosphorus Limited	Chemical Reaction Engineering" for Mechanical Engineers, Electrical Engineers, and Chemists	Short-term course (17th, 18th, 24th, 25th May 2014)	Anand V. Patwardhan
Jubilant Lifesciences, India			B. N. Thorat
Asian Paints Ltd, Cuddalore, Chennai, India			B. N. Thorat
Lauras Lab, Hyderabad			B. N. Thorat
NOCIL Ltd.	Process Development, Process Design, Process Improvements	One year	A. W. Patwardhan
M/s Ecosphere Technologies, USA	Wastewater treatment for oil and gas industries	One Year	P. R. Gogate
M/s Unilever Ltd.	Wastewater treatment for surfactant removal	One Year	P. R. Gogate
M/s SRF Ltd	Cavitation intensified processing	6 months	P. R. Gogate
GAIL (India) Ltd.	CO_2 capture	2013-2014	P. D. Vaidya
United Phosphorus Ltd	CFD	1 year	C. S. Mathpati
The Coca Cola Company	Process Calculations	3 months	C. S. Mathpati
Coca Cola Company	Refrigeration	1 year	V. H. Dalvi
Maharashtra State Power Generation Company	Environmental Studies		P. R. Nemade
Crown Chemicals	Pollution Studies		P. R. Nemade
Famy Care Limited	Tablets	Arpil-May 2014	R. D. Jain
Piramal Healthcare Limited	Nanoparticle preparation	June –Sep 2014	R. D. Jain

PASSED OUT STUDENTS

MASTERS STUDENTS

No.	Name	Title of project	Faculty
M. Chem. Engg.			
1	Amogha Vijaydhwaja	Kinetics of cooking	A.B. Pandit
2	Rahul Patil	Optimization of Solid Biomass burning cook stove	A.B. Pandit
3	Aditya Pandey	Anaerobic Biogas Generation	A.B. Pandit
4	Ashish Yadav	Thermal pyrolysis of dry napier grass: Characterization and Applications	A.B. Pandit
5	Srivats Gopalan	Studies in membrane bioreactor	K.V. Marathe
6	Subodh Gautam	Studies in membrane separation processes	K.V. Marathe
7	Pradhumna Sapkal	Treatment of Textile Wastewater using Membrane Bioreactor	K.V. Marathe
8	Mousiq Wasi		K.V. Marathe
9	Patil Yuvraj		P. D. Vaidya
10	Salvi Anuj		P. D. Vaidya
11	Kiran Kadam	Desalination by Directed Solvent Extraction	V. H. Dalvi
12	Wagh Adhirath	Biomass deconstruction and conversion technology	A. M. Lali
13	Belgi Nitesh	Scale up of chromatographic separation	A. M. Lali
14	Gade Hrushikesh	Manufacture of Ceramic membranes and its applications	A. W. Patwardhan

15	Kulkarni Amod	Separation of pyridine from Aqueous solution using hollow fibre supported liquid membranes	A.W. Patwardhan
16	Thorat Sachin	Studies in liquid liquid extraction equipment	V. K. Rathod
17	Pandey Rinky	Equilibrium and thermodynamic studies in iquid liquid extraction of tri-butyl phosphate from aqueous solutions	V. K. Rathod
18	Ankit J. Gada	Economic Evaluation of Solar Assisted Dryer: A case study on Solar Cabinet Dryer and Solar Conduction Dryer.	B.N. Thorat
19	Sandeep S. Kendre	Classification and selection of industrial filtration systems for various applications	B.N. Thorat
20	Gaikwad Namrata D.	Intensification in Liquid-Liquid reaction using Sonochemical reactors	P. R. Gogate
21	Rituraj	Separation using supported liquid membranes Guru Gobind Singh Indraprastha University, New Delhi	Anand V. Patwardhan
22	Vittal N. Shingate	Removal of organic acids using supported liquid membrane containing tri-n-octylamine as an extractant Karnataka Lingaraj Education Society's College of Engineering and Technology, Belgaum, Karnataka	Anand V. Patwardhan
M.Tech. (Bioprocess Technology)			
23	Kapanis Gaurav	Conversion of chitosan into its soluble derivatives with improved properties	R. D. Jain
M. Tech. Green Tech.			
24	Rajput Shailendra		P. D. Vaidya
25	Margi Nikhil		P. D. Vaidya
26	Khan Azam		P. D. Vaidya
27	Mrs. Joseph Elizabeth		P. D. Vaidya
28	Khode Pranjali	Catalytic wet air oxidation of tannery waste	V.K. Rathod
29	Sutar Rahul	Studies in waste water treatment	V. K. Rathod
30	Nivekar Girish	Preparation and characterization of combi magnetic crossed linked enzyme aggregates of lipase and cellulase	V. K. Rathod
31	Nadar Shyamraja	Studies in enzyme immobilization	V. K. Rathod
32	Bharambe Bhavna	Synthesis of nanoparticles using novel techniques	V. K. Rathod
M Tech (Perfumery)			
33	Tomke Prerna	Green synthesis of flavours	V. K. Rathod
34	Deshmukh Ashwini	Studies in enzyme catalyzed synthesis of flavours	V. K. Rathod
M Tech (BPT)			
35	Kulkarni Hrishkesh	Production and purification of biomolecule	V. K. Rathod
36	More Amol	Process intensification of downstream processing of biomolecule	V. K. Rathod
37	Dhage Avinash	Fermentative production of B-glucosidase from A. niger	V. K. Rathod
38	Anil M. Sardhara	Extraction, Purification and formulation development of Rebaudioside-A from Stevia Rebaudinna bertoni leaves.	B. N. Thorat
39	Sushant J. Konnur	Drying and Granulation of Jaggery : Optimisation and up-scaling	B. N. Thorat

40	Nadar Sathish G.	Novel cell Disruption approaches	P. R. Gogate
41	Kaur Paramjeet	Sonochemical Reactors for Food Sterilization	P. R. Gogate
42	Tripathi Puneet	Waste water treatment using biological and oxidation methods	P. R. Gogate
M.Tech			
43	Parmar Hemant	Fermentative production of lactic acid by LAB	A. M. Lali

Ph.D. STUDENTS

No.	Name	Title	
Ph.D. (Tech)			
1	Karan Chavan	Process Development in Membrane Separations	K. V. Marathe
2	Amar Vibhandik	Studies in Environmental Engineering for the treatment of aqueous industrial waste	K. V. Marathe
3	Sutar Parag N.	Studies in gas purification	P. D. Vaidya
4	Gujarathi Swapnali	Purification & Recovery of inclusion boby proteins	A. M. Lali
5	Valte Rajeshwar	Development of system for the production of essential amino acid (s)	A. M. Lali
6	Kadam Sandip	Dovetailing of unit processes for downstream processing of carbohydrates	A. M. Lali
7	Wadekar Prathamesh	Recovery and downstream chemistry of lignocellulosic lignin	A. M. Lali
8	Birhade Sachinkumar	Reaction engineering of enzymatic hydrolysis of holocellulose	A. M. Lali
9	Rathi Abhijit	Design and scale-up of enzymatic biotransformations	A. M. Lali
10	Kulkarni Ajit	Experimental and Computational Investigation of Gas Entrainment	A.W. Patwardhan
11	Charpe Trupti	Studies in Extraction and Purification of Natural Ingredients	V.K. Rathod
12	Lade Vikesh	Hydrodynamics and Mass transfer Studies in Pulsed Sieve-plate Extraction Column and Mixer-settler	V.K. Rathod
13	Avhad Devchand	Studies in production and purification of a proteolytic enzyme	V.K. Rathod
14	Vetal Mangesh	Studies in extraction and and purification of biomolecules from natural products	V.K. Rathod
15	Yogesh H. Mirage	Studies in computational fluid dynamics: pulsed sieve plate column ICT, Mumbai	Anand V. Patwardhan
Ph.D. (Sci.)			
16	Pradipta Kumar	Synthesis of extractants for metal ions and environmentally hazardous compounds	V. G. Gaikar
17	Chabukswar Deepak	Studies on preparation of oleochemicals derivatives	V. G. Gaikar
18	Dubey Vinita R.	Study of catalytic steam reforming of model bio-oil compounds	P. D. Vaidya
19	Sundari Ravi	A study of hydrogen production by steam reforming	P. D. Vaidya
20	Khatri Rachana	Strategies for downstream processing of natural products	
21	Saharan Virendra	Degradation of bio refractory pollutants using hydrodynamic cavitation	A.B. Pandit

22	Parekh Vishal	Fermentative production of sophorolipids from natural lipids	A.B. Pandit
23	Pandit Ninad	Biotransformation and downstream processing of Industrially useful compounds from natural sources	A.B. Pandit
24	Aditi Rathod	Modeling and experimental validation of sodium cold trap	A.B. Pandit
25	Rekha B. N.	Process intensification of anaerobic digestion	A.B. Pandit
26	Sawdekar Parikshit	Improved process designs for fermentative production of lactic acid/acetic acids	A. M. Lali
27	Vadgama Rajesh	Designing lipases for hydrolysis and synthesis	A. M. Lali
28	Galge Revanappa V.	Process Development of Biologically active compound and their Intermediates	B.N. Thorat
29	Maddekari Ganesh L.	Oleochemicals from waste vegetable oil	P. D. Vaidya
30	Ramisetty Kiran kumar	Intensification of physical processes by ultrasound: atomization, crystallization, emulsification	P. D. Vaidya
PhD (Tech) BPT			
31	Jangle Rahul D.	Downstream Processing of Biopharmaceutical Products	B.N. Thorat
32	Chokashi Kalpesh P.	Advanced Drying Techniques for Biological Products	B.N. Thorat
PG			
33	Kulkarni Parag	Microwave assisted homogeneous and heterogenous reactions; simulation of physical systems	V. G. Gaikar
34	Kumar Sanjeev	Microwave assisted homogeneous and heterogenous reactions	V. G. Gaikar

MAJOR ACCOMPLISHMENTS :

PROFESSOR A.M. LALI

- Established India's first and leading centre of energy biosciences
- Developed and translated novel lignocellulosic sugar and biofuel technologies from laboratory to semi commercial scale.
- Assisted a large number of Indian and foreign pharma and biopharma companies in their bio-purification and bio-processing problems
- Established ICT as one of the unique industrial biotech R & D facility in India with state of the art infrastructure

PROFESSOR ANAND V. PATWARDHAN –

- Separation of various metal ions and organic acids from aqueous streams using supported liquid membrane. This is relevant for recovery of metals as well as in industrial pollution control. Scale-up from laboratory scale to industrial scale equipment is in progress.
- Separation of racemic aldehydes using vicinal diamines as chiral auxiliary has been successfully demonstrated at laboratory scale.
- Friedel-Crafts alkylation of phenols using ionic liquids as catalysts has been successfully demonstrated at laboratory scale.
- In-situ epoxidation of non-edible oil using hydrogen peroxide has been achieved. This epoxidised oil is found suitable for making plasticisers.
- An innovative bio-technological approach for the production of L-ascorbic acid (vitamin C) has been successfully developed.
- Production of natural colorants using microbes

has been accomplished, and the application of the same has been successfully tried for dyeing of natural fibres.

- Development of axial dispersion model by using CFD studies for efficient operation in pulsed-sieve plate extraction column.

DR. ASHWIN PATWARDHAN

- Mathematical modeling of Supported Liquid Membrane processes for a variety of applications such as recovery of metals, recovery of acids, recovery of pharmaceutically active components from dilute aqueous streams
- Process Development for recovery of valuable materials from dilute aqueous streams using supported liquid membranes
- Measurement of Kinetics of polyphenol infusion, elucidating effect of particle size, characterization of infusion for different teas
- Development of Computational Fluid Dynamic models for gas entrainment processes, elucidating the momentum transfer process and effect of physic-chemical properties of the liquid

MRS. K.V. MARATHE

- Participation in New INDIGO NPP_2 Project – Greentech
- Talks delivered during the Co-Operation Days:
- Technologies in Water Treatment (University of Cantabria, Spain)
- Water treatment Management (University of Oulu, Finland)
- Completion of Research Project as Principal Investigator sponsored by Department of Science and Technology - DST, India
- Completion of Research Project as Principal Investigator sponsored by All India Council for Technical Education - AICTE, India

DR. P.R. GOGATE

The degradation of alachlor has been investigated using sonolysis (US), photocatalysis (UV) and sonophotocatalysis (US/UV) using three photocatalyst viz. TiO_2 (mixture of anatase and rutile), TiO_2 (anatase) and ZnO. The effect of photocatalyst loading on the extent of degradation of alachlor has been investigated by varying TiO_2 (both types) loading over the range of 0.01g/L to 0.1 g/L and ZnO loading over the range of 0.05g/L to 0.2 g/L. The optimum loading of the catalyst was found to be dependent on the type of operation i.e. photocatalysis alone or the combined operation of sonolysis and photocatalysis. All the combined processes gave complete degradation of alachlor with maximum rate of degradation being obtained in the case of sonophotocatalytic process also showing synergistic effect at optimized loading of photocatalyst. About 50 % to 60 % reduction in TOC has been obtained using the combined process of sonophotocatalysis depending on the operating conditions. The alachlor degradation fitted first order kinetics for all the processes under investigation. It has been observed that the TiO2 (mixtrure of anatase and rutile) is the most active photocatalyst among the three photocatalysts studied in the current work. The effect of addition of radical enhancers and scavengers on sonophotocatalytic degradation of alachlor has been investigated in order to decipher the controlling mechanism. The alachlor degradation products have been identified using LC-MS method.

Intensification of the interesterification reaction of waste cooking oil with methyl acetate using potassium methoxide as a catalyst

has been carried out using ultrasonic horn (frequency of irradiation of 22 kHz and rated power of 750 W). Experiments have been performed at different operating parameters viz. reaction temperature (30, 40 and 50^{o}C), oil to methyl acetate molar ratio (over the range of 1:4 to 1:14), catalyst concentration (0.5, 1.0 and 1.5 % by weight of oil) and amplitude of ultrasound (40, 50, 60 and 70%) with an objective of understanding the effect of important operating parameters on the extent of conversion of waste cooking oil to the ester. It has been observed that maximum yield (90%) of biodiesel from waste cooking oil using sonochemical reactors was observed at a molar ratio of 1:12, catalyst concentration of 1.0 % and temperature of 40^{o}C. It is also observed that higher conversion was obtained in the presence of ultrasound as compared to the conventional method. Kinetic studies have been carried out to determine the rate constant by fitting the obtained experimental data to a second order rate equation. It has been observed that rate constant increases with an increase in temperature and the activation energy is found to be 56.97 kJ/mol.

Glycerolysis can be a useful alternative for the removal of free fatty acid content present in the sustainable feedstock but has limitation in terms of requirement of higher temperatures and higher processing time. In the present work, intensification of glycerolysis has been attempted using microwave irradiations with comparative studies based on the use of the conventional heating approach. Effect of reaction parameters such as molar ratio (oil to glycerol), catalyst concentration and reaction temperature have been investigated. It has been observed that the optimum molar ratio of oil to glycerol as 1:2 and catalyst concentration of 0.1% for both approaches is similar but there is a significant decrease in the reaction time and optimum temperature. Reaction time was reduced from 240 to 25 min while the optimum temperature for maximum benefits reduced from 200 to 105^{o}C for the microwave based approach. Comparison based on kinetic analysis confirmed that the rate constant obtained for microwave assisted glycerolysis was six times higher than that obtained in the conventional approach. Energy consumption analysis also revealed the superiority of microwave based synthesis approach with much lower energy requirement for microwave (35.3 kJ/g) as compared to the conventional method (203.6 kJ/g).

Application of ultrasound for improving the antisolvent crystallization of benzoic acid has been investigated. The main objective of applying ultrasound is to enhance the crystal productivity and modify the morphology as compared to the conventional stirred crystallizer. Effect of the sonication on the crystal size distribution and supersaturation ratio has been investigated. Effect of initial concentration of solvent and antisolvent addition rate on the crystal size and supersaturation ratio has also been studied under conventional mixing and ultrasound for effective comparison. Concentration of the solute in the liquid has been determined using HPLC at 228nm wavelength for the benzoic acid so as to determine the supersaturation levels of solute. Dynamic growth kinetics of the crystallization process has been established by measuring the crystal size with respect to time. Dynamic metastable zone width was found by observing the formation of the crystal nuclei indicated by the liquid turning from transparent to slightly turbid. Decrease in the metastable zone width has been observed due to the application

of ultrasound. The study of conventional crystallization has been conducted over varying impeller speed of 400, 500, 600rpm and ultrasonic crystallization has been studied over different amplitude of 40, 50, 60% amp using 750Watt and 20kHz frequency horn. Crystal size distribution has been observed to be wider in stirred crystallization process as compared to the ultrasound assisted operation. Modelling of the process of antisolvent crystallization has been carried out using gProms PSE environment and the comparison of the simulated results with the experimental results has been presented.

The effect of low intensity ultrasonic irradiation on the cellulase activity has been investigated. The effect on the kinetic and thermodynamic parameters as well as the molecular structure of cellulase enzyme was evaluated with the help of the chemical reaction kinetics model, Arrhenius equation, Eyring transition state theory, Michaelis-Menten equation, fluorescence spectroscopy and circular dichroism (CD) spectroscopy. It has been established that ultrasound had a positive effect on the activity of cellulase enzyme, though the selection of operating conditions played a crucial role in deciding the intensification. The maximum cellulase activity was observed at 17.33 W/cm2 intensity and ultrasonic treatment time of 30 min, under which the enzyme activity was increased by about 25% over the untreated enzyme. After the ultrasonic treatment, thermodynamic parameters Ea, ΔH, ΔS and ΔG were reduced by 64.7%, 68%, 37.3% and 1.3%, respectively. In addition, fluorescence and CD spectra revealed that the ultrasonic treatment had increased the number of tryptophan on cellulase surface, and changed the molecular structure of cellulase enzyme favourably to provide more access to the active sites.

Sonochemical reactors have a significant potential for intensification of physical as well as chemical processes due to the effects of hotspots, intense turbulence and generation of free radicals. Investigations related to the intensification of cavitational activity based on the use of different gaseous additives has been performed which is novel as the results being equally applicable for all gas-liquid applications of sonochemical reactors. Model reactions of oxidation of potassium iodide and salicylic acid degradation have been used for quantification of cavitational activity. Initially, effect of different operating parameters such as temperature, power, duty cycle and initial concentration has been investigated. The different gaseous additives used in the work include air, oxygen, nitrogen and carbon dioxide. Effect of air flow rate on the cavitational activity has also been examined. Theoretical modeling studies based on the use of COMSOL have also been performed to explain the alteration of pressure field distributions due to the presence of gaseous additives. Overall it can be said that presence of gases enhances the cavitational activity and the effect is dependent on the nature of the gas and its physicochemical properties as well as the operating conditions in terms of the flow rate of the introduced gas. The work presents new design related information helpful for effective scale up and operation of sonochemical reactors.

DR. R. D. JAIN

- N. R. Kamath Book Award for book entitled 'Nanoparticulate Drug Delivery: Perspectives on the Transition from Laboratory to Market', (Woodhead Publishing Series in Biomedicine), Woodhead Publishing, 2014

ABSTRACT OF THE STUDENT

Name of Student:
Mr. Manish Shah

Research Supervisor:
Professor J. B. Joshi

Degree: Ph.D. (Tech.)

Thesis Title: Transport Phenomena in Gas Jet Reactor: Flow Visualization and CFD Modelling

Abstract:

Higher rate of mass, momentum and heat transfer, associated with jets, have allured the selection of gas jet reactors into several industrial applications such as direct contact steam condensation (DCSC) in nuclear industry, dissolution of ammonia into water, compact thermal energy sources in which oxidizer gas is injected into liquid metal fuel. Present efforts are made to understand the effect of several process parameters on the performance of gas jet reactor and to explore its applications in other industries.

To understand the flow pattern around the jet, CFD simulations have been carried out for the flow through an orifice meter. Profiles of velocity and pressure, predicted by CFD simulations, have been validated with experimental data. Gradual development of velocity, turbulent kinetic energy and turbulent dissipation rate in the upstream and downstream of orifice have been explained. Discharge coefficient predicted from CFD simulation were found to be in excellent agreement with the experimental data.

Experiments and CFD simulations have been carried out for condensing (DCSC) and reacting (SF6 gas into molten Li) jets. Heat transfer coefficient at vapour-liquid and solid-liquid interface have been calculated using various theories of heat transfer. Effect of bath volume on centerline axial velocity and temperature has been studied for DCSC. Temperature at various locations in reacting gas jet, predicted by CFD simulation, was found to be in good agreement with the experimental data. Effect of bath temperature and pressure on plume length has been studied for various systems (Cl2 - molten Na, F2 - molten Li and SF6 - molten Li) using CFD simulations and results have been discussed. Generalized operating regime maps have been derived for direct contact vapour condensation and reacting jets with the help of experimental and CFD data. Key design parameters for the gas jet reactor have been identified and recommendations have been made for the quantitative selection of the design parameters.

Flow and temperature pattern have been investigated (1) in shell side of submerged helical coils and (2) for the case of continuous mixing of two liquids (H2SO4 and water) as an alternate applications of submerged jet reactor. The continuous jet mixing has been shown to be advantageous as compared with batch mixing operations which are being used in practice.

Name of Student: Ms. Varsha G Kankani

Research Supervisor:
Professor J. B. Joshi

Degree: Ph.D. (Sci.) in Chemistry

Thesis Title: Mathematical Modeling of NOx Absorption and Optimisation of Absorption Systems.

Abstract:

Absorption column occupies a dominant place in the manufacturing of nitric acid. A mathematical model has been developed for the absorption of NOx gases using air and enriched oxygen in packed and plate columns. The model has been studied for the following cases: 1) Instantaneous decomposition

of nitrous acid, 2) The kinetics of decomposition and oxidation of nitrous acid. 3) The kinetics of decomposition and oxidation of nitrous acid with enriched oxygen. 4) Complete conversion of nitrous to nitric acid by complete liquid phase oxidation. The overall absorption model consists of the following steps: (a) Oxidation of nitric oxide, (b) Gas phase reactions and equilibria, (c) Interface and heterogeneous gas-liquid equilibria (d) Rates of gas phase mass transfer of seven components, (e) Absorptions accompanied by reactions, desorption preceded by reactions, (f) Dependence of rates on the [HNO_3]. (g) Two interphase mass balance equations. This results in solving of number of nonlinear equations simultaneously with equal number of unknowns for each of the above cases. The kinetics of HNO_2 oxidation and decomposition of HNO_2, have also been included in the present work.Enriched oxygen results in substantial reduction in column volume and/or the operating pressure. The enriched oxidation enhances the rate of HNO2 oxidation (to HNO3) and hence the HNO2 available for decomposition reduces throughout the column. This implied that lesser quantity of nitric oxide gets desorbed to the gas phase. This feature has crucial implication because the need for gas phase oxidation of NO reduces and hence the absorption column becomes compact. Thus, it was observed that the enriched oxygen plays a significant role in process intensification. In particular, the liquid phase oxidation of NO_2 carried out in a suitable oxidizer, was found to give substantial reduction in column height. In both the column types (packed and plate), the effects of column diameter, pressure, temperature, heights and design of internals such as effect of packing size in packed column and plate design have been quantified over a wide range.

RESEARCH ABSTRACTS

PDV STUDENTS

Name: Parag Sutar

Degree: Ph.D (Tech) in Chemical Engineering

Thesis title: Studies in Gas Purification

Abstract:

N, N-Diethyl monoethanolamine (DEMEA) can be considered as a promisingabsorbent producible from renewable resources. In this study, the equilibrium and kinetic characteristics of the reactions between CO2 and aqueous solutions containing blends of DEMEA and promoter mixtures were investigated using a stirred-cell reactor. The acceleration of the CO_2 reaction with DEMEA in aqueous solutions by the primary amines (monoethanolamine, MEA and diglycolamine, DGA) and the secondary amines (diethanolamine, DEA and N-ethyl monoethanolamine, EMEA) was studied at 298, 303 and 308 K. The enhancement of CO_2 reaction with DEMEA was in the following order of promoters: EMEA > MEA > DGA > DEA. Also, the efficacy of three diamines, i.e. piperazine (PZ), N-(2-aminoethyl) ethanolamine(AEEA) and 1,6-hexamethyl diamine (HMDA) as promoters in aqueous DEMEA solutions was investigated at 303 K. The kinetics of CO_2 reaction with the DEMEA/HMDA blend was studied. The second order reaction rate constant for CO_2 reaction with HMDA was found to be 4.2×104 m3/(kmol s). Moreover, CO2 absorption into aqueous blends of chemical (DEMEA+PZ) and physical (Sulfolane) solvents was investigated. The performance

of this formulated solvent as a CO_2 absorbent appears promising. The equilibrium solubility of CO_2 in DEMEA and in the blend (DEMEA+PZ) was measured at 303 K for low CO_2 partial pressures. Based on these measurements, the dependence of the CO_2 partial pressure on the loading was determined using simple mathematical correlations. Besides, a comparison of the efficacy of three secondary amines, i.e. EMEA, DEA and diisopropanolamine(DIPA), for CO_2 absorption, was performed. Finally, kinetics of the reaction between CO_2 and EMEA was investigated. It was deduced that the absorption process occurs in the fast reaction regime with second-order kinetics for EMEA.

Name: Vinita Dubey

Degree: Ph.D (Science) in Chemistry

Thesis title: Study of Catalytic Steam Reforming of Model Bio-oil Compounds

Abstract:

Kinetics of acetol steam reforming was studied over wide ranges in temperature, 623-773 K, acetol concentration, 5-20 wt.%, and W/FO ratio, 0.93-4.66 g h/mol, using 5% Pt/C catalyst. It was found that high temperature; S/C ratio and space time facilitates H2 production from acetol. Maximum liquid feed conversion (81%) and H2 yield (0.66 mol/mol) were achieved at 773 K at a W/FO ratio equal to 4.66 g h/mol. The investigated reaction belonged to the kinetically controlled reaction regime systems. Analysis of the experimental data using a power law model suggested that the reaction order with respect to acetol was equal to 0.85, 0.82, 0.78 and 0.88 at 623, 673, 723 and 773 K. A single-site heterogeneous kinetic model was proposed to gain further insight into reaction mechanism and kinetics. This model assumed that the surface reaction between adsorbed acetol and water in the gas phase is rate-controlling. Reaction rates predicted by this model were in good agreement with the experimental rates. The efficacy of Ni/Al2O3, Ru/Al2O3, Ru/C and Pd/C for the catalytic processing of acetol was investigated at 773 K, W/FO =4.66 g h/mol and S/C=12.3 mol/mol. Several byproducts such as acetone, acetaldehyde and 2-propanol were formed during reaction. Catalyst coking was largely due to the formation of acetone, which is a major coke precursor. The plausible reactions involved in the reforming process were highlighted and a comprehensive reaction pathway was described. Catalytic transformation of PG into H_2 at low temperature 773 K was investigated using several commercial catalysts (such as Ni/Al2O3, Ru/Al2O3, Ru/C, Pt/C and Pd/C). Ni/Al2O3 and Ru/Al2O3 showed stable conversion for at least 6 h. Among the C supported catalysts, both Ru/C and Pd/C demonstrated stable operation; however, the Pt/C catalyst exhibited deactivation during time-on-stream. It was found that H2 selectivity decreases in the order Ru>Pt>Pd, when C-supported catalysts are used. The efficacies of the catalysts were presented as H_2, CO, CO_2 and CH4 selectivity, and PG conversion into gas-phase. Wide ranges of temperature (573-773 K), W/FO (18.6-92.9 gh/mol) and S/C ratio (5.6-12.7 mol/mol) were examined using Ni/Al2O3. The increase in temperature and W/FO ratio facilitated H_2 production. The performance of Ni/Al_2O_3 was enhanced at high S/C ratio. At 773 K, H_2 selectivity (66.2%) and PG conversion (73.7%)were maximized using W/FO=18.6 g h/mol and S/C=12.7 (i.e. 10wt% PG solution). Using alumina- and carbon-supported catalysts, steam reforming of ethyl acetate was investigated over the ranges

of temperature, 573-773 K, W/FO ratio, 49.1-196.5 g h/moland ethyl acetate concentration, 1-5 wt.%. A comparison of the efficacy of the investigated catalysts was presented at T=773 K and W/FO=49.1 g h/mol after 1 h of time-on-stream. Conversion to gas phase products was 76.3%, whereas H_2 selectivity was 70.8% when Ni/Al_2O_3 was used. Contrarily, H_2 selectivity was low (49.2%) when Ru/Al2O3 was used; gas phase conversion was equal to 69.1 %. The reactivity and H2 selectivity of carbon-supported catalysts decreased in the order Ru>Pt> Pd. Using Ru/C, conversion and H2 selectivity values were 61.1 and 36.4%, respectively. From analysis of the reaction products, the formation of ethanol and acetaldehyde was ascertained. Steam reforming of glyoxal is being investigated over Ru/Al2O3 catalyst. The reaction temperature is being varied from 623-773 K, whereas glyoxal concentration is being varied from 1-5 wt %. The effects of these reaction variables on the efficacy of the catalyst are being considered. The importance of diffusion limitations is being examined and reaction kinetics is being studied.

Name: Ravi Sundari

Degree: Ph.D (Science) in Chemistry

Thesis title: A study on hydrogen production by steam reforming

Abstract:

Hydrogen (H2) is extensively used in the chemical, petroleum refining,energy, metallurgical, glass and electronics industry. It can beproduced from non-renewable fossil sources, such as natural gas,naphtha, and coal, and renewable sources, such as biomass, biogas, andbio-oil. Because of concerns about the future supply of petroleum,extensive research on renewable H_2 generation technologies iscurrently underway. Biomass-derived oxygenated compounds such asglycerol, ethylene glycol, butanol and ethanol represent furthercandidate renewable sources of H_2; in the present work, theircatalytic steam reforming reactions were investigated.

Name: Devendra Pisal

Degree: M. Tech (Green Technology)

Thesis title: Catalytic hydrogenation of non-edible vegetable oil to produce renewable diesel

Abstract:

Hydrotreatment of non-edible vegetable oil is a candidate choice for producing renewable diesel or green diesel. In this work, hydrotreatment of Karanja oil and Jatropha oil over 0.5% Pt/γ-Al2O3 catalyst was carried out using continuous flow fixed bed reactor. Experiments were carried out over a temperature range of 583 K to 643 K, hydrogen pressure of 2-3.5 MPa, and reaction time of 4 h. For Karanja oil hydrotreatment other reaction parameter WHSV and H/O were varied in the range of 5.6-11.2 h-1 and 300-800 v/v correspondingly. For Jatropha oil it was 1-4 h-1 and 300-700 v/v. Liquid hydrocarbon product were analyzed and it was found that both oils were converted to nC15-nC18 n-paraffins during hydrotreatment. The conversion for Karanja oil at values at 3 MPa pressure at 583 K and 643 K were 44.3 and 90.5 %. The highest yield obtained was 95% at 623 K with relatively lesser conversion 84.2%. While increasing the contact time and temperature of Jatropha oil revels highest conversion 94.2% at 3 MPa and 643 K. The GC analysis of gaseous product revealed the presence of mainly CH_4, CO_2, propane and water. The oil deoxygenation occurs via decarboxylation, decarbonylation, and

hydrodeoxygenation, thereby resulting in the formation of CO_2, CO and water. It was observed that reaction parameters like temperature, pressure and space velocity plays important role in transforming triglycerides to hydrocarbons.

Name:Vaibhav Deshpande

Degree: M. Chem. Engg.

Thesis title:Catalytic hydrodechlorination of chlorinated organic compounds

Abstract:

Catalytic hydrodechlorination reactions of p-chloro-m-xylenol (PCMX) and p-chloro-m-cresol (PCMC) were investigated in a slurry reactor using a commercial heterogeneous Ru/C catalyst. The organic reaction intermediates, m-xylenol and m-cresol, were further converted into 3,5-dimethylcyclohexanol and 3-methylcyclohexanol respectively. Kinetics of PCMX hydrogenation was studied over the ranges in temperature, 323-343 K, H2 partial pressure, 0.69-2.07 MPa, initial PCMX concentration, 0.97-1.6 mM with catalyst loading, 0.1-0.3 kg/m3. Whereas kinetics of PCMC hydrogenation was investigated over the ranges in temperature 323-353 K, H2 partial pressure, 0.69-2.07 MPa, for initial PCMC concentration, 10.3-17.7 mM with catalyst loading 0.3-0.7 kg/m3. To establish the prevalence of the kinetically controlled reaction regime, the possible influence of mass transfer processes on the rates of reaction was investigated. The chemical control regime prevailed for both PCMX and PCMC. To deduce the mechanistic features of reaction kinetics, Langmuir-Hinshelwood-Hougen-Watson (LHHW) type models were considered. From the temperature dependence of the reaction rate constant, the activation energies were found to be 36.6 kJ/mol and 55.2 kJ/mol, for PCMX and PCMC respectively.

Placement details:

Company name: Alfa Laval

Package:4.5 lacs/annum

RDJ

Name of Student: Gaurav Deepak Kapadnis

Title: Conversion of Chitosan Into its Soluble Derivatives with Improved Properties

Abstract

Chitosan is an N-deacetylation product of chitin. It is proven to be a valuable biopolymer because of its widespread applications in biomedical, food and chemical industries. The chitosan oligosaccharide (COS) is a hydrolytic product of chitosan, owing to its low molecular weight, high water solubility and reduced viscosity, it can be conveniently applied for the mentioned applications. The chemical method are used commonly for hydrolysis of chitosan but shows various drawbacks such as reaction control, controlling molecular weight of oligomers, harsh reaction conditions and usage of various solvents. However, enzymatic process of obtaining COS from chitosan has proven advantages. In the given study various proteolytic enzymes are explored for hydrolysis of chitosan including pepsin, papain, α- amylase and bromelain, the optimization of process parameters such as enzyme: substrate ratio, pH and temperature was carried out using one factor at a time approach. The enzymes pepsin and papain were found to be most active in reduction of % relative viscosity of chitosan. The characterization of product was conducted using FTIR, GPC and SEM analysis. The initial molecular weight of chitosan was also decreased from ~438±4 kDa to ~22 kDa and ~36 kDa after pepsin and papain catalyzed hydrolysis respectively.

VKR

Student's Name: Devchand N. Avhad

Degree: Ph. D. in Bioprocess Technology

Thesis Title: Studies in production and purification of a proteolytic enzyme

Brief Abstract:

In the recent era, biomolecules have got remarkable attention due to their enormous applicability and biocompatibility. Therapeutic enzymes have got prime importance due to their versatile medical applications. Microorganisms represent an excellent source of many therapeutic enzymes owing to their broad biochemical diversity and their susceptibility to genetic manipulation. Also purity of therapeutic enzyme is a prominent step and challenging sector in the development of product.

Fibrinolytic enzyme is a promising therapy to treat cardiovascular disease. Bacillus genus is a well-known producer of potent fibrinolytic enzyme. In present research work, two different Bacillus strain; Bacillus sphaericus MTCC 3672 and Bacillus sphaericus NCIM 2498 were screened for fibrinolytic enzyme production. Fermentative production was optimized using one factor at a time method yielding 9.98 U/mL of activity and crucial nutrient parameters were screened by Plackett-burman design. Novel ultrasound stimulated protocol was developed for enhancement of fibrinolytic enzyme production from Bacillus sphaericus MTCC 3672. Low energy ultrasound irradiation has significantly increases the productivity of fibrinolytic enzyme by 1.82 fold maintaining the integrity of bacterial cell wall. Decrease in glucose concentration in irradiated culture affirms enhanced substrate uptake by bacterial cell. Production of novel fibrinolytic enzyme was optimized on 1 L laboratory bioreactor. Various process parameters such as agitation speed (300-500) and aeration rates (0.5-1 VVM) were optimized by one factor at a time method. Optimized protocol had shown 2.2 fold increase in productivity at lower production time. Ultrasonication irradiation to bioreactor scale was also optimized by response surface methodology.

In purification protocol, three different technologies were explored for the purification of produced enzyme. Conventional ammonium sulphate precipitation, ultrafiltration and ion exchange chromatography protocol has delivered 10 fold purity of the fibrinolytic enzyme. Three phase partitioning; newer bioseparation process wasexplored for the purification of fibrinolytic enzyme from Bacillus sphaericus MTCC 3672. TPP was performed in presence of ultrasound and effect of various ultrasonication process parameters were evaluated on three phase partitioning of fibrinolytic enzyme. Third approach of purification involves use of mixed modal resin. Batch study and column studies were performed to design an efficient purification protocol. Purified enzyme was characterized by various techniques such as, fibrin plate assay, in vitro blood clot degradation, SDS PAGE, enzyme kinetics, pH and temperature stability. Purified enzyme has shown potent fibrinolytic enzyme comparable to marketed nattokinase formulation and can be symbolize as an attractive therapeutic protein to treat CVDs.

Student's Name: Mangesh D. Vetal

Degree: Ph. D. in Bioprocess Technology

Thesis Title: Studies in extraction and purification of bioactive molecule from natural source

Abstract:

Diversified use of bioactive has gained scientific and industrial importance for their production and also led to the identification of new bio-resources.Thus, there is a need to develop novel extraction techniques which will shorten extraction time, enhance extraction rate with reduced organic solvent consumption.

The present work is divided into 2 parts:

1 ***Extraction and purification of ursolic and oleanolic acid (UA and OA) from Ocimum sanctum.***

Holy basil (OSLinn.) or 'Tulsi' possesses wide spectrum of medicinal uses (Dharmani., 2004). UA is a triterpenoid compound found in many plants like (apple, basil, bilberries) and displayed diverse pharmacological activities. The objective of this work is the extraction and purification of important phytoconstituents using novel extraction techniques. Ocimum sanctum (Tulsi) is explored for extraction and purification of ursolic and oleanolic acid (UA and OA). The conventional extraction of UA/OA from Ocimum sanctum using batch extraction and by novel method i.e. ultrasound assisted extraction (UAE), three phase partioning (TPP) and microwave assisted extraction (MAE) have been carried out. Kinetic study and model fitting has been carried out for the experimental data obtained by batch and UAE. Further, separation of UA/OA from has been carried out by adsorption. All the techniques are compared in terms of yield and extraction time

2 ***Extraction and purification of peroxidase enzyme from orange peel (Citrus sinenses)***

Ultrasound assisted three phase partitioning (UATPP) was used to purify peroxidase enzyme from orange peel (Citrus sinenses). Under optimized conditions i.e. 50% ammonium sulphate saturation, pH 6, temperature 30°C, broth to t-butanol ratio 1:1.5 (v/v), at 25 kHz frequency and 150 W ultrasonication power with 40% duty cycle for 6 min irradiation time; 24.28 fold purity of peroxidase with 91.84 % recovery have been obtained. Enhanced mass transfer in UATPP has been resulted in higher purification fold of peroxidase with reduced operation time from 80 min to 6 min as compared to conventional TPP. UATPP was compared with TPP in terms of purification fold and activity recovery.

Student's Name: Shamraja S. Nadar

Degree: Masters of Technology in Green Technology

Thesis Title: Magnetic macromolecular cross linked enzyme aggregates of glucoamylase

Abstract:

Immobilization of enzyme improves activity and stability under optimal process conditions. Magnetic macromolecule cross linked enzyme aggregates (m-MCLEAs) of glucoamylase is prepared by precipitation and subsequent cross-linking. Different precipitants and macromolecular cross-linkers were developed and screened to get improved activity in immobilized enzymes. Among these macromolecular cross-linkers, pectin showed better results as it provides better thermal and pH stability. So glucoamylase was precipitated by 80% ammonium sulfate and subsequently cross-linked with oxidized pectin onto magnetic nanoparticles. The XRD pattern of a standard Fe_2O_3 crystal with rhombohedral structure has characteristic peak at 2θ=

35.64° which is attributed to the (1 1 0) plane of Fe2O3. The immobilization of glucoamylase on MNPs cross linked by pectin is confirmed by characteristic absorption peaks (2906, 1631, 1060, 678 and 556 cm−1) from Fourier transform infrared (FT-IR) spectroscopy. The half-life of m-MCLEAs of glucoamylase was 62.43 min, 39.82 min and 19.52 min at 50°C, 60°C and 70°C respectively which is higher than free enzymes. Vmax of m-MCLEAs was found to be higher than the free and m-CLEAs. Km value for m-MCLEA is nearer to free enzyme which indicates that there were no changes in affinity of immobilized enzyme towards substrate. The activation energy value of m-MCLEAs was lower than that of m-CLEAs, which might be attributed to the porous structure of m-MCLEAs. m-MCLEAs retained 71% activity after 10th cycle without leaching of enzyme which is 20% higher than that of m-CLEAs.

RESEARCH GROUP

PROFESSOR S. S. BHAGWAT RESEARCH GROUP

From Left to Right: (First Row) Swapnil P., Kunal P., Dhruv R., Manisha A., Rajsee P., Shobha D., Pallavi P. **(Second Row)** Prashant K., Mayur W., Sudarshan K., Vaibhav K., Indrani S., Kumudini L., Kalpana M. **(Third Row)** Abhishek J., Suhas K., Farhan S. **(Not in Photo)** Rahul P.

PROFESSOR V.G. GAIKAR RESEARCH GROUP

Left to Right: (First Row) Ms. Jyotsna Arora, Ms. Yogita Labrath, Professor V.G. Gaikar, Ms.Vaishali Thaore, Ms. Meena Singh, **(Second Row)** Ms. Vanita Nimje, Ms. Tasneem Dabir, Ms. Noopur Rathi, Ms. Parminder Heer Kaur, Ms. Suvarna Hiware, **(Third Row)** Mr. Mahesh Kadam, Mr. Aditya Koli, Mr. Lalit Patil, Mr. Amogh Joshi, Mr. Vishal Sawant **(Forth Row)** Mr. Yogeshwar Dubhashe, Mr. Praveen Bote, Mr. Sanjeev Kumar, Mr. Parag Kulkarni, Mr. Kalpesh Khot, **(Fifth Row)** Mr. Deepak Chabukswar, Mr. Pradeepta Kumar, Mr. Khursheed Ansari

PROFESSOR G.D.YADAV RESEARCH GROUP

Left to Right: (First Row) Kalpesh Bhavsar, Ajinkya Waghmare, Suresh Doke, Shivaji Bhanawase, Jyoti Sontakke, Ashwini Nirukhe, Professor G. D. Yadav, Shivani Vedula, Pooja Tambe, Akhilesh Yadav, Bapu Gawade, Suraj Katole **(Second Row)** Kalidas Rasal, Godfree Fernandes, Akhil Nakhate, Moreshwar Hude, Sonal Ayakar, Pravin Patil, Prakash Parhad, Deepali Magadum, Jeetendra Salunkhe, Abhilash Sukhdeve, Jayaram Molletti, Vikas Patil **(Third Row)** Dhiraj Katole, Gajanan Kunde, Saurabh Patankar, Rahul Kumbhar, Manish Tiwari, Mandar Kulkarni, Vinod Shirke

PROFESSOR A. B. PANDIT RESEARCH GROUP

From Left to Right: Amruta Badnore, Karuna Nagula, Prasad Mandade, Abha Sahu, Ganesh Maddikeri, Bhagwat Patil, Sachin Jadhao, Amol Waghmode, Professor A. B. Pandit, Shirish Manchalwar, Mandar Badve, Yogesh Shinde, Navin Agarwal , Dharmaraj Patil, Chandrakant Holkar, Aanad Jadhao, Vijay Yadav

DR. ASHWIN W. PATWARDHAN RESEARCH GROUP

From Left to Right: (Front Row) Pinaki Ranadive, Ashish Yewale, Amod Kulkarni, Bhushan Joshi **(Second Row)** Hrishikesh Gade, Nivarutti Patil, Ajay Sharma, Dr. Ashwin W. Patwardhan, Sanket Kadam, Raosaheb Farakte, Sarojini Natesan, Geeta Yadav

PROFESSOR (DR.) ANAND V. PATWARDHAN RESEARCH GROUP

From Left to Right: (Back Row) Swapnil Rajput, Dnyaneshwar V. Bhand, Macchindra S. Bhalerao, Yogesh K. Choughule, Swapnil R. Chaudhari **(Front-Row)** Vaishali M. Kulkarni, Shweta Kumbhaj, Professor Anand V. Patwardhan, Vandana Prabhu, Rituraj

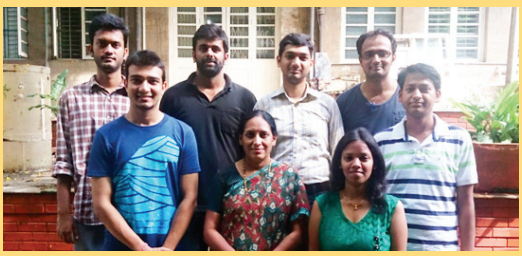
PROFESSOR B. N. THORAT RESEARCH GROUP

From Left to Right: (Back Row) Nupur Nagwekar, Ganesh Bhere, Vaibhav Tidke, Swapnil Kokate, Rajan Mishra, Sandeep Shukla, Professor B. N. Thorat, Manoj Gor, Ankit Gada, Sushant Konnur, Dr. Tushar Gaware, Sandeep Kendre and Shailendra Rajput **(Front Row)** Isha Sehgal, Shital Kasat, Swapnali Vanjiwale, Swati Shimpi and Ashwini Gaikwad

DR. VIRENDRA K RATHOD RESEARCH GROUP

From Left to Right: (First Row) from Top - Bhavna Bharambe, Revati Chauhan, Dhanashree Pandhare, Nilima, Sachin Jadhav, Rahul Sutar, Vikas Kardam, Sachin Thorat, Wadilal Rathod, Suraj Yadav, Shyamraja Nadar **(Second Row)** Manjeshwari Sonar, Kavita Lanjekar, Priyanka Rao, Manoj Manke, Amol More **(Third Row)** Sonali Niphadkar, Swetha Pawar, Ankita Galgali, Vrushali Kulkarni, Mansi Gandhi, Ashwini Deshmukh, Sarita Gawas, Girish, Sagar Gadalkar, Zulkif Shaikh, Anil Gupta, Keyur Moradia **(Forth Row)** Saili Indurkar, Archana, Prerna Tomke, Sneha Bansode, Dr. Virendra K Rathod, Govind Waghmare, Hrishikesh, Chandrakanth Gadipelly **(Bottom Row)** Ranjana, Pranjali Khode, Avinash Dhage

MRS. K.V. MARATHE RESEARCH GROUP



Left to Right: (First Row) Mr. Praduman sapkal, Mrs. K.V. Marathe, Ms. Shalaka Kale, Mr. Subhodh Gautam, Srivats Gopalan, Karan Chavan, Mosik Wasi, Amar Vibhandik

DR. PARAG GOGATE RESEARCH GROUP

From Left to Right: Avinash Mhetre, Amrut Prajapat, Ganesh Maddikeri, Lokesh Ramteke, Dr. Parag Gogate, Tosif Chamanshaikh, Harsh Gupta, Vijay Patil, Pankaj Patil, Arati Barik.

DR. P.D. VAIDYA THORAT RESEARCH GROUP

From Left to Right: (Front Row) Loukik Dhonde, Shrinivas Gharote, Shailesh Patil, Dr. P.D. Vaidya (in chair), Ms. Harini Dadia, Ms. Tanmayee Vedak, Ms. Munmi Bhattacharya, Ms. Chetana Baviskar, Ms. Nilam Pachupate, Devendra Pisal **(Second Row)** Ms. Aditti Barge, Shrikant Vemula, Sachin Bhandare, Ms. Neha Budhwani, Anandkumar Jain, Mayurkumar Patil, Dipak Payal, Ashvin Karemore, Ravindra Kanawade, Mahesh Nimkarde, Abhimanyu Yadav, Ankush Bindwal, Parag Sutar, Karan Dewoolkar

DR. PARAG NEMADE RESEARCH GROUP

From Left to Right: Payal Bhutada, Kirti Datir, Priyanka Sane, Mohini Sable, Kiran Dhopte, Khushboo Tahilyani, Sushil Choudhari, Bharat Honmane, Parag Nemade **(Sitting)**, Rohit Shinde, Amol Waghmode, Amit Mishra, Rahul Zambare.

DR. RATNESH JAIN RESEARCH GROUP

From Left to Right: (Front Row) Gaurav Kapadnis, Ratnesh Jain, Akhil Krishnan **(Back Row)** Mayur Shitole, Manasi Inamdar, Anomitra Dey, Prasad Profali

DR. C. S. MATHPATI RESEARCH GROUP

From Left to Right: (First Row) Harshawardhan, Anand, Achyut, Rishi, Shekhar, Sandeep, Hrushikesh **(Second Row)** Anjali, Bhavesh, Dr. C. S. Mathpati, Shashank, Aniket

DR. SHARAD SONTAKKE RESEARCH GROUP

From Left to Right: Mr. Prashant Katke, Mr. Vedraj Awate, Mr. Swapnil Chaudhari, Dr. Sharad Sontakke, Miss. Priyanka Sane, Miss Sneha Tambat, Miss Sanjivani Umale

DR. NEETU JHA RESEARCH GROUP

From Left to Right: Mahesh, Omkar, Dr. Neetu Jha, Sukruta, Kireeti, Yogesh, Shakeel, Mohanpriya, Parag, Girish

DR. SUJIT JOGWAR RESEARCH GROUP

From Left to Right: Parikshit Shahane, Shrikant Mete, Madhuri Vibhute, Dr. Sujit Jogwar, Bhavya Trivedi and Sharad Patil

PREFACE

PROFESSOR N. SEKAR
B.Sc (Hon), B.Sc (Tech), Ph.D (Tech), B. A (Music), M.A (German)
Head of the Department

Department of Dyestuff Technology was established in 1944 under the stewardship of Professor K. Venkataraman, the then director of Institute of Chemical Technology (ICT, formerly known as UDCT), University of Mumbai. The quality of training in chemistry and engineering imparted to the students is reflected in the progress they make in their individual careers in industry or academia, locally or globally. The Department not only pursues high quality research but also maintains a healthy academia industry interaction by organizing an international conference "Convention on Colorants" (COC) along with Dyestuff Manufacturers Association of India (DMAI) every alternate year. The Department of Dyestuff Technology at Institute of Chemical Technology is a unique department providing Bachelor's, Master's and Doctoral degree in Dyestuff Technology.

The Department participates in interdisciplinary M. Tech. as well as Doctoral programs in Perfumery & Flavor Technology and Bioprocess Technology. The Department also offers a Doctoral degree programme in Science. Currently there are 3 recognized guides for doctoral programs. As many as 72 research fellows, significantly more than the number (47) last year are currently working on various projects – colorants for hi-tech applications, fluorescent dyes, lasers, ink jet printing, optical recording devices, solar cells, high performance pigments, green technology, carbohydrate chemistry, synthesis of natural products, etc.

The Department is energetically participating for the welfare of the society by organizing various programmes like "Workshop on Science Awareness" for school children. Research students of the Department also deliver lectures every year in collaboration with Marathi Vidyan Parishad in various rural part of Maharashtra for popularizing science.

Under the successive leadership of highly experienced, talented and hard-working scientists and scholars such as Professors B. D. Tilak, S. V. Sunthankar, S. Seshadri, D. W. Rangnekar and V R Kanetkar the Department

DEPARTMENT OF DYESTUFF TECHNOLOGY

"To build world class programmes of excellence in education and research in specialized areas of Dyestuff Chemistry and Technology for the benefit of society through problem solving competencies"

has trained more than 1000 undergraduate students and over 450 postgraduate students.

MISSION

"To build world class programmes of excellence in education and research in specialized areas of Dyestuff Chemistry and Technology for the benefit of society through problem solving competencies"

VISION 2020

The Department aspires to be one of the world's top ten colour chemistry departments by 2020. It will do so by:

Providing knowledge and skill based training at the undergraduate level by designing, teaching and periodically upgrading a colour chemistry and technology syllabus in line with current and anticipated trends in industry and academia Pursuing world-class research in the colourants and related areas – basic textile and leather coloration,functional colourants, organic process technology and specialty chemicals Proactively developing and maintaining close interaction with national and international research laboratories, universities and chemical industries

ACHIEVEMENTS:

1. One of the post doc fellow got JSPS fellowship, Japan; Fast track fellowship, DST.
2. 90 % M.Tech students got job in the campus placements in the year 2012-2013.
3. 33 % of the M.Tech student got placements till date for the following year 2013-2014.
4. 100 % placement for Ph. D student.
5. 2 of the Ph.D students got selected for the Post Doc in University of Padova, Italy and Technische Universitaet München (TU Munich), Germany.
6. One of the Ph.D students got selected in L'Oreal as a principal scientist.

PROGRAMS MY OFFERED:

1. B.Tech (Dyes)
2. M.Tech (Dyes)
3. M.Tech (Perfumery and Flavour Technology)
4. M.Tech (Green Technology)
5. Ph.D (Tech)
6. Ph.D (Sci)

CURRENT STUDENTS :

Course	No. of Students		
	2012-13	2013-14	% increase
Masters (both years)	17	10	
Ph.D. (Tech) (all)	2	3	33
Ph.D. (Sci) (all)	51	56	9.8
PGDCTM (all)	3	1	

DEGREES AWARDED DURING 2013-14

Name of Degree	No. of Students		
	2012-13	2013-14	% increase
B.Chem Eng./ B.Tech/ B. Pharm	16	16	0
M. Chem. Eng./ M.Tech./ M.Pharm	10	17	70
Ph.D. (Tech)	0	0	0
Ph.D. (Sci)	8	3	
PGDCTM	0	3	100

RESEARCH OUTPUT

		2012-13	2013-14	% increase
Research Project	Govt.	8	3	
	Private	1		
Consultation Assignments		3	3	
Patents	Applied	04	04	
	Obtained	00	00	
No of Paper Published	National	00	01	
	International	20	25	
No. of Conference Presentations	National	03	06	
	International	14	00	
Citations		50	12	

PROFESSOR N. SEKAR

Head of the Department, Assistant Professor in Tinctorial Chemistry (Associate Professor in CAS

B.Sc, B.Sc (Tech), Ph.D (Tech), B. A (Music), M.A. (German)

GENERAL RESEARCH INTEREST AND EXPERTISE :

Synthesis of multistep heterocyclic and fused heterocyclic compounds, process development of intermediates, fluorescent compounds for bio-sensors, medical diagnostics and security sensing, laser dyes, NIR absorbing, fluorescing and reflecting colorants, tinctorially strong disperse dyes, extended styryl dyes, metal complex dyes for photovoltaics, greener methods for fluorescent compounds,

Synthesis and formulation of perfumes and flavors, computational color chemistry.

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING: FELLOW OF MAHARASHTRA ACADEMY OF SCIENCES

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES : FELLOW OF SOCIETY OF DYERS AND COLOURISTS, (UK)

a. Publications (peer reviewed) so far : 84
b. Patents : 05 Filed
c. Conference proceedings/ papers : 110
d. Seminars/Lectures/Orations delivered : 21
e. Ph.D.s Awarded as single/ Co-Guide : 08
f. Masters Awarded as single/ Co-Guide : 18
g. Post Doctoral Fellows supervised : 02
h-Index : 9.1
No. of Citations : 08

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.) :

The present research activities include synthesis of multistep heterocyclic fluorescent compounds for biosensor, medicinal diagnostics and sensor for security applications. Process development of commercially important intermediates. The synthesis involves molecular design of fused heterocyclic compounds with the features of extended Styryl system giving NIR absorption and Fluorescence. We are also working on synthesis of nanomaterials for high-tech application and dyes for solar cell. Working on greener methods for heterocyclic systems, perfumes and flavors technology. Computational study for synthesized molecules.

SUBJECTS TAUGHT :

Ph. D./M. Tech. (Course Work):

- Fluorescent Colorants in Bio-imaging
- Chemistry and Technology of Agrochemicals
- Chemistry and Technology of High Performance Pigments
- Chemistry and Technology of Functional Dyes
- Chemistry of fluorescent Dyes

B. Tech.:

- Chemistry and Technology of Agrochemicals
- Chemistry of Fluorescent Dyes
- Color Chemistry: an Introduction
- Chemistry and Technology of Pigments
- Chemistry and Technology of Direct, Acid, and Sulphur Dyes
- Chemistry of Intermediates and Dyes (for Textiles)

RESEARCH INTERESTS :

Synthesis of multistep Heterocyclic and Fused Heterocyclic compounds, Process development of intermediates, Fluorescent compounds for bio- sensors, medical diagnostics and security sensing, Laser Dyes, NIR absorbing, fluorescing and reflecting colorants, Tinctorially strong disperse dyes, Extended Styryl dyes, Metal complex dyes for photovoltaics, Greener Methods for fluorescent compounds, Synthesis and formulation of perfumes and flavors, Computational Chemistry.

RESEARCH STUDENTS :

P.D.F. - 01
RA - 03
Ph.D. (Tech.) - 01
Ph.D.(Sc) - 33
M.Tech. - 08

RESEARCH PUBLICATIONS :

International -29
(Peer-reviewed) - 29
Conference proceeding - 21

PATENTS :

Indian – 05 filed

SPONSORED PROJECTS :

Government - 06
Private - 01

PROFESSIONAL ACTIVITIES:

(Membership of Important Committees):

i. Co-ordinator for the Centre for Physico-Chemical Aspects in Textiles, Fibres, Dyes and Polymers (UGC-SAP).

ii. Expert member of a team of delegates from India for "Joint Indo-Russia Workshop on Immunoassay for clinical/environmental monitoring" held at Russia in September 2009.

iii. Appointed as an expert committee member by DST, Govt. of India to look into the pollution problems of colorants Industry in Ankleshwar.

iv. Member, peer reviewing Committee, Dyes & Pigments (Elsevier)

v. Member, Editorial Board, Current Chemistry Letter.

vi. Editorial Advisor to Colourage, Colour Publications

vii. Life member – UDCT Alumni Association

viii. Fellow of Society of Dyers and Colourists, (UK)

ix. Fellow of Association of Chemical Technologists, India

x. Associate member of Institution of Chemical Engineers

xi. Fellow of Indian Chemical Society

xii. Fellow of Society for the Advancement of Electrochemical Science and Technology

xiii. Fellow of Indian Membrane Society

xiv. Fellow of Indian Mathematical Society

xv. Member of Board of Studies PG Department of Chemistry AVVMSP college (Bharathidasan University)

xvi. Examiner For Ph.D. in Industrial Chemistry (Industrial chemistry Department, Alagappa University) (3 Thesis examined)

xvii. Examiner (Paper Setter) for M.Tech. (Textile Technology) on Advanced Dyestuff Chemistry (Textile Technology Department, Anna University).

xviii. Examiner for Ph.D. Thesis for Bio-Technology in CFTRI, Mysore, CSIR Laboratory. (one Thesis examined)

xix. Examiner for Ph. D. Thesis for Physical Chemistry in Madras University.

xx. Examiner for Ph. D. Thesis for Organic Chemistry in Amritsar University.

xxi. Examiner for Ph. D. Thesis for Inorganic Chemistry in Bharidasan University.

xxii. Reviewer: Dyes and Pigments, Journal of Fluorescence, Journal of Saudi Chemical Society, Coloration Technology, Pigment and Resin Technology.

xxiii. Expert Member from AICTE for accreditation of Engineering Colleges with in India.

xxiv. Appointed as Expert member on UGC-CAS in JNDU University, Amritsar (March 2011 onwords)

SPECIAL AWARDS/ HONOURS / ACCOLADES:

1. Appointed as Expert member on UGC-CAS in JNDU University, Amritsar(March 2011 onwords)
2. Expert member of a team of delegates from India for "Joint Indo-Russia Workshop on Immunoassay for clinical/ environmental monitoring" held at Russia in September 2009.
3. Admitted as a Chartered Colourist and Fellow of Society of Dyers and Colourists, UK.
4. Appointed as an expert committee member, DST, Govt. of India to look into the pollution problems of colorants Industry in Ankleshwar.

5. Dr. Vikas Padalkar selected and atively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.
6. Mr.Vinod Gupta selected and actively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.
7. "Shri G. M. Abhayankar Research Presentation Award" was awarded to Mr. Vikas Padalkar and Mr. Vinod Gupta for the year 2009-10 by ICT, Mumbai.
8. Shri G. M. Abhayankar Research Presentation Award" was awarded to Mr. Kiran R. Phatangare for the year 2010-11 by ICT, Mumbai.
9. Young Researcher Award was awared to Dr. Vikas Padalkar 5th Young Researchers Conference Organized by Institute of Chemical Technology, Mumbai, 13-14th Jan. 2011.
10. Best Paper Presentation Award, was awared to Dr. Vikas Padalkar National Conference on Health and Disease, Organised by Indian Chemical Society, Mumbai Branch at Mithibai College Mumbai.17-18 Jan. 2011
11. Best Poster Presentation Award, was awared to Dr. Vikas Padalkar National Conferences on Green Chemistry organized by DAV College Amritsar, Punjab, India, Sept 2011.
12. Mr. Kiran Phatangare selected and actively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.
13. Best Paper Presentation Award, was awared to Dr. Vikas Padalkar National Conference on rescent trends in Nanotechnolgy, organized by Birala College, Kalyan, Mumbai, March 1-2, 2012.
14. Best Thesis Award, was awared to Dr. Vikas Padalkar (2010-2011) by Institute of Chemical Technology. 3 March 2012.
15. Mr. Vinod D. Gupta selected and visited to University of Mauritius under UGC-TEC Consortium 2011-2012 fro the period of 3 months during 28th November 2011 to 23rd February 2012.
16. Professor N. Sekar selected and visited to University of Mauritius under UGC-TEC Consortium 2011-2012 fro the period of 1 months during 4th Jan 2012 to 31st Jan 2012.
17. Dr. Vikas Padalkar awareded Best poster presentation award in National symposium on functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
18. Mr. Vinod Gupta awareded Best poster presentation award in National symposium on functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
19. Mr. Amol Choudhary awareded Best poster presentation award in National symposium on functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
20. "Shri G. M. Abhayankar Research Presentation Award" was awarded to Dr. Vikas Padalkar and Mr. Abhinav Tathe for the year 2012-13 by ICT, Mumbai.

PROFESSOR PRAKASH M . BHATE

Professor of Dyestuff Technology

B.Sc. (Tech.), Ph.D.

GENERAL RESEARCH INTEREST AND EXPERTISE :

Synthetic organic chemistry

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

Fellow, Society of Dyers and Colourists, UK; Member, American Chemical Society

a. Total No. of Publications (peer reviewed) so far: 9

b. Total No. of Patents: 2 (applied)

c. Total No. Conference proceedings/papers : 8

d. Total No. of Seminars/ Lectures/Orations delivered: 11

f. Total No. of Masters Awarded as single/ Co-Guide: 2

h-Index : 4

No. of Citations : 106

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS:

Over half of the cotton produced worldwide is dyed with reactive dyes, so called because these become covalently bound to cellulose. Reactive dyes consist of two parts – a chromophore that imparts colour to but cannot react with cellulose and a colourless reactive system that can react with hydroxyl groups present in cellulose. Developing a dyestuff capable of reacting with cellulose without having a reactive system attached to it will, therefore, be a major advance in colouration technology. The new reactive system that we have developed achieves this objective. It is based on the reaction of aryl diazonium salts with alcohols to give alkyl aryl ethers, a reaction that is known for more than a century but which has hardly been applied to cellulose to afford O-aryl cellulose. The primary aromatic amino group, an essential ingredient for making diazonium salts, is present in an overwhelming majority of commercial azo dyes. All such azo dyes, in principle, can now become reactive dyes by application of our methodology.

SUBJECTS TAUGHT :

- Chemistry and Technology of Naphthalene Intermediates
- Chemistry and Technology of Anthraquinone Intermediates
- Chemistry and Technology of Disperse Dyes and Optical Brighteners
- Technology of Organic Processes
- Career Options and Literature Survey
- Statistical Design of Experiments
- Elective II: Mechanism of Organic Reactions
- Mechanism of Organic Reactions

RESEARCH INTERESTS :

Carbohydrate chemistry, Colour chemistry,

RESEARCH STUDENTS:

Undergraduate Summer Fellows: 10

Ph.D.(Sc): 7

RESEARCH PUBLICATIONS:

Conference proceeding - 6

PATENTS :

Indian - 1 (applied)

SPONSORED PROJECTS :

Government - 1

DR. GANAPATI SUBRAY SHANKARLING

B. Sc. (Hon), B. Sc (Tech), M. Sc. (Tech), Ph.D. (Tech).
Associate Professor of Dyestuff Technology

SUBJECTS TAUGHT :

- Chemistry of Intermediates and Colorants -1,
- Technology of Intermediates and Colorants-1,
- Analysis of Intermediates and Dyes,
- Technology of Intermediates and Colorants-III,
- Technology of Intermediates and Colorants-IV,
- Chemistry of Intermediates and Colorants-V,
- Chemistry and technology of Natural dyes,
- Chemistry of Perfumes and Flavours,
- Advanced Dyestuff Chemistry II,
- Synthetic Perfume and Flavour Chemistry.

RESEARCH INTERESTS :

- Functional colorants for Dye Sensitized Solar Cell
- (DSSC),Colorants for Non-Linear Optics (NLO),
- Colorants for Thermochromic and photochromic, Laser
- Security application, for biological and medicinal fields,
- Synthesis of Fluorescent Dyes and Process Chemistry,
- Flavor and Perfumery Chemistry, Green Chemistry
- Technology, High Performance Pigments Preparation
- Application of ionic liquids for organic synthesis
- Carbon dioxide fixation into valuable chemicals

RESEARCH STUDENTS:

Ph.D. (Tech.) - 2
Ph.D. (Sci) -16
M.Tech. - 02

RESEARCH PUBLICATIONS:

International- 42
National- 03
Peer-reviewed - 25

PATENTS :

International - 12
Indian – 09

SPONSORED PROJECTS :

Government- 04
Private- 01

PROFESSIONAL ACTIVITIES :

Administrative Co-ordinator for Perfumery and Flavours Trustee, National Kannada Education Society, Wadala (West) Trustee, Society of Dyers and Colourists, India. Secretary, International Convention on Colorants 2011 Life Member, Association of Colour Chemists and Technologists Life member, IIChE Life Member -UDCT Alumni Association

SPECIAL AWARDS/ HONOURS :

Mrs. Sunanda B. Phadtare, was awarded with Dr. S.R.Purao Endowment Best Research Publication Prize for the publication in Dyes and Pigment, 2013, Vol 97, 105-112.

Mrs. Anita Sanap and Yogesh sonawane won first prize in poster competition in 5th International Conventional of Colorants conference-2013 held at Gandhinagar, Gujrat on 8th -9th January.

SUPPORT STAFF

H. R. Fegade
Instrument Mechanic

S. B. Sonawane
Senior Lab Assistant

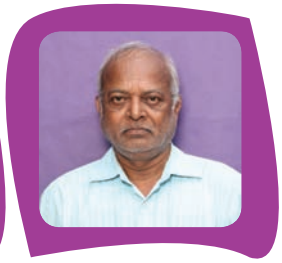
A. M. Patil
Lab Assistant

A. R. Rawool
Lab Assistant

S. B. Magdum
Lab Assistant

Y. S. Chandiwade
Lab Attendent

P. B. Rana
Lab Attendent



P. R. Dalvi
Lab Attendent

UNDERGRADUATE STUDENTS' SEMINARS/PROJECTS/HOME PAPERS

B.CHEM. ENG./ B.PHARM/ B.TECH. - SEMINARS

No.	Name of the Student	Topic
1	Agarwal Aakash	Thickeners For Textile Printing
2	Taware Sohan	Colourants Based on Azulene
3	Rebecca Gomes	Basic Dyes for Acylic Fibres
4	Joshi Madhura	Nitration And Diazotization Using NOx
5	Borle Saurabh	
6	Chilveri Pratamesh	Naphthoquinonoid Dyes and Pigments
7	Bhide Amogh	DNA Intercalating Dyes
8	Mishra Pushpinder	Developments In Reactive Dyes Post 2002
9	Shewale Chinmay	Manganese (IV) Oxide: Sources,Manufacturing and Applications in Chemical Industry
10	Shewade Pushkaraj	Functional applications of tri-aryl methane dyes
11	Shah Nikhil	Ink Jet Colourants
12	Hande Pratik	Red Food Colorants
13	Samant Prachi	Colour And Constitution of Anthraquinone Colourants
14	Karve Vikram	Packing Materials For Fractional Distillation
15	Desai Nishant	Dispersant Free Disperse Dyes

B.CHEM. ENG./ B.PHARM/ B.TECH. – PROJECT / HOME PAPER

No.	Name of the Student	Topics
1	Agarwal Aakash	3-Aminobenzoic acid
2	Taware Sohan	7-(N,N-Diethylamino)-2-naphthol
3	Rebecca Gomes	4-Amino azobenzene-4'-sulphonic acid
4	Joshi Madhura	Bis aminomethyl benzene
5	Borle Saurabh	2-Amino-4-nitro phenol
6	Chilveri Pratamesh	6-Acetylamino-2-aminophenol-4-sulphonic acid
7	Bhide Amogh	2-Acetyl-1,4-dihydroxy naphthalene
8	Mishra Pushpinder	1-Hydroxy naphthalene-8-sulphonic acid
9	Shewale Chinmay	4-Methoxy phenylacetonitrile
10	Shewade Pushkaraj	2-(4-aminophenyl)amino benzothiazole
11	Shah Nikhil	1-Naphthylamine-4,8-disulphonic acid
12	Hande Pratik	Indole-2-carboxylic acid
13	Samant Prachi	4-Amino-3-nitro toluene
14	Karve Vikram	Salicylyl anthranilic acid
15	Desai Nishant	1,3-Indandione

M.CHEM. ENG./ M.PHARM. / M.TECH./ M.SC. – SEMINAR

No.	Name of the Student	Previous Institute	Topic	Supervisor
1	Ms. Pallavi Jalkote	Synthesis of Musk odorants	Marathwada Agricultural University, Parbhani	Professor N. Sekar
2	Mr. R. V. Khandekar	Greener methods for the preparation of fluorescent dyes	UDCT, Mumbai.	Professor N. Sekar
3	Ankush Chinchane	Studies in Perfumery compounds	Marathwada Agricultural University, Parbhani	Professor N. Sekar
4	Yogita Bhatiya	Synthesis of Fluorescent Dyesand their applications	Mumbai University	Professor N. Sekar
5	Supriya Patil	Greener ways of making fluorescent colorants	UDCT, Jalagaon	Professor N. Sekar
6	Ashwin Wasnik	NIR Active Colorants and their Synthesis	Swami Ramanand Teerth Marathwada University	Professor N. Sekar

RESEARCH TOPICS (THESIS WORK) :

Ph.D. (TECH)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Mande Prashant	Institute of Chemical Technology	To be Decided	Professor N. Sekar

Ph.D. (SCIENCE)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Choudhary Amol	Vidyabharti Mahavidyalaya, Amravati.	Synthesis and Powder Handling of Pigments	Professor N. Sekar
2	Margar Sachin	Abasaheb Garware College, Pune.	Synthesis o Novel Coumarin Derivatives and Colorants Based on Fulvenes	Professor N. Sekar
3	Deshmukh Mininath	New Art's, Commerce & Science College, Ahmednagar.	Synthesis of Fluorescent Colorants for Functional Applications	Professor N. Sekar
4	Tathe Abhinav	New Art's, Commerce & Science College, Ahmednagar.	Synthesis of red emitting luoresc colorants	Professor N. Sekar
5	Thorat Kishor	Abasaheb Garware College, Pune.	Synthesis of Novel Fluorescent Organo-Boron and Acridine Derivatives for Biological Applications	Professor N. Sekar
6	Telore Rahul	Department of Chemistry, University of Pune.	Synthesis of Near Infrared Absorbing and Emitting Colorants for Biological Applications	Professor N. Sekar
7	Jadhav Manoj	KET's V. G. Vaze College. Mulund, Mumbai.	Synthesis of Novel Colorants for Dyes Sensitized Solar Cells	Professor N. Sekar
8	Lanke Sandip	B. J. S. College, Wagholi, Pune.	Synthesis of Near-Infrared active fluorescent Colorants for Biological applications	Professor N. Sekar
9	Chemate Santosh	B. J. S. College, Wagholi, Pune.	Synthesis of Fluorescent Fused Pyrrole Derivatives for Biological Applications	Professor N. Sekar
10	Tayade Rajratna	Shri Shivaji Science College, Amravati	Synthesis and Application of Fluorescent Colorants Containing Phosphonic Acid Residue	Professor N. Sekar
11	Patil Sharad	North Maharashtra University, Jalgaon.	Greener Routes for Heterocyclic Intermediate in synthesis of Fluorescent Colorants.	Professor N. Sekar
12	Kothavale Shantaram	Abasaheb Garware College, Pune.	Synthesis of Fluorescent Colorants for their Biological Applications	Professor N. Sekar
13	Shreykar Milind	KET's V. G. Vaze College. Mulund, Mumbai.	Synthesis of novel red emitting coumarins and ESIPT dyes for functional applications.	Professor N. Sekar

14	Thakare Shrikant	Vidyabharti Mahavidyalaya Amaravati	Synthesis of High Performance Fluorescent Colorants with Enhanced Photo physical properties	Professor N. Sekar
15	Ghorpade Seema	Shivaji University Kolhapur	Synthesis high performance fluorescent colorants and their biological applications	Professor N. Sekar
16	More Ankush	S.S.G.M. College, Kopargon	Design and synthesis of efficient fluorescent dyes with enhanced photophysical properties	Professor N. Sekar
17	Kataria Santosh	Ahmednagar College	Synthesis of fused heterocycles with high hyperpolarisability	Professor N. Sekar
18	Jadhav Siddheshwar	Shivaji University	Synthesis of fused heterocyclic fluorophores with non linear optical properties	Professor N. Sekar
19	Warde Umesh	Ahmednagar College	Synthesis of Novel High Performances Functional Colorants	Professor N. Sekar
20	Mallah Ramnath	Birala College Kalyan	Synthesis of Highly Fluorescent Fused Heterocyclic Compounds	Professor N. Sekar
21	Gawale Yogesh	B.N.N College, Bhiwindi, Thane	Synthesis and photophysical properties of functional molecules	Professor N. Sekar
22	Earande Yogesh	S.S.G.M. College, Kopargon	Greener Methods for Synthesis of Heterocyclic Compounds	Professor N. Sekar
23	Archana Bhagwat	New Arts, Science and Commerce College Ahmednagar	Synthesis and Photophysical Properties of Polycyclic Fluorescent Compounds	Professor N. Sekar
24	Amol Jadhav	Department of Chemistry Shivaji University	Synthesis of High Performance Fluorescent Fused Heterocyclic Systems	Professor N. Sekar
25	Kiran Ahavad	Ahmednagar College, Ahmednagar	To Be Decided	Professor N. Sekar
26	Dhanraj Mobiya	Department of Chemistry, Mumbai University	Synthesis of novel fluorescent dyes and their applications	Professor N. Sekar
27	Manali Rajashirake	M .S. University, Badoda	To Be Decided	Professor N. Sekar
28	Mayuri Kadam	Department of Chemistry, Mumbai University	To Be Decided	Professor N. Sekar
29	Prarena Lokhande	Department of Chemistry, ICT, Mumbai	To Be Decided	Professor N. Sekar

30	Dinesh Patil	North Maharashtra University, Jalgaon.	To Be Decided	Professor N. Sekar
31	Sulochana Bhalekar	Ahmednagar college, Ahmednagar	Synthesis of fluorescent colourants	Professor N. Sekar
32	Manish Raikwar	The D.G. Ruparel College	Synthesis of highly fluorescent heterocyclic compounds	Professor N. Sekar
33	Suvidha Shinde	Department of Textiles and fibre processing and technology department, ICT, Mumbai	Application of fluorescent dyes on textile and leather substrate	Professor N. Sekar & R.V. Professor Adivarekar (Co-guide)

M.CHEM. ENG. / M. PHARMA / M. TECH.

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Bhide Rohit	ICT Mumbai	Synthesis of mono azo dyes with enhanced light fastness	Professor N. Sekar
2	Kulkarni Sayali	ICT Mumbai	Synthesis of fluorescent colourants for biological applications	Professor N. Sekar

M. TECH. M. TECH. (PERFUMERY & FLAVOUR TECHNOLOGY)

No.	Research Scholar	Previous Institution	Thesis Title	Supervisor
1	Ahmed shaikh	Institute of Chemical technology, Mumbai	Studies in carbonyl compounds and their application in fragrances	Dr. G.S. Shankarling
2	Rohan Kuchekar	College of food technology, Rajmachi, Karad	Synthesis and applications of various aldehydes, nitriles, and esters in perfumery.	Dr. G.S. Shankarling

M. TECH. (GREEN TECHNOLOGY)

No.	Research Scholar	Previous Institution	Thesis Title	Supervisor
3	Sujata Patil	K.I.T., Kolhapur	Enzyme catalysed synthesis of speciality molecules.	Dr. G.S. Shankarling
4.	Pooja Thanekar	K.I.T., Kolhapur	Enzyme catalysed synthesis of dyes and intermediates.	Dr. G.S. Shankarling
5	Sachin Balip	Bharti Vidyapeeth college of engg., Navi Mumbai.	Application of green technology in oxidation reaction	Dr. G.S. Shankarling

6	Rajesh jagdale	D.Y. Patil college of engg., Kolhapur.	Sonochemical approach in organic synthesis.	Dr. G.S. Shankarling
7	Rishikant K Sonune	Principal KMK college of Pharmacy	-	Dr. G.S. Shankarling

M. TECH. (DYES)

No.	Research Scholar	Previous Institution	Thesis Title	Supervisor
1	Amruta Joglekar	Institute of Chemical technology, Mumbai	Synthesis of phthalocyanine using green method and study of use of formic acid as reducing agent in reactions.	Dr. G.S. Shankarling

POST DOCTORAL FELLOWS RESEARCH PROJECTS :

No.	Post Doctoral Fellow	Previous Institution	Thesis Title	Supervisor
1	Dr. Padalkar Vikas Sudam	Institute of Chemical Technology	Stand-off detection of explosives based on Immunochemical techniques	Project Co-ordinator: Professor G.D. Yadav Principal Investigator: Professor N. Sekar

Ph.D. (SCIENCE)

No.	Research Scholar	Previous Institution	Thesis Title	Supervisor
1	Preetam Moolya	RPG Life Sciences	Synthesis of High performance colorants	Dr. G. S. Shankarling
2	Urmiladevi Yadav	University department Chemistry, Mumbai.	Design and synthesis of novel colorants	Dr. G. S. Shankarling
3	Shailesh Vajekar	Ruparel College, Mumbai	Study and synthesis of novel colorant for High-tech application	Dr. G. S. Shankarling
4	Anita Ghuge	Syngenta Biosciences Pvt. Ltd.	Environmentally benign methods for synthesis of colorants & heterocycles for High-Tech applications	Dr. G.S. Shankarling
5	Vilas Patil	Technova Imaging System Pvt. Ltd.	Synthesis of Novel Hair colorants and Synthetic Utility of Ionic Liquid.	Dr. G.S. Shankarling
6	Haribhau Kumbhar	Arch Pharma Labs.	Synthesis of novel heterocyclic colorants for functional applications.	Dr. G.S Shankarling

7	Pranila Thale	Ruia college Mumbai.	Carbon dioxide Feedstock and Green methods for organic synthesis.	Dr. G.S. Shankarling
8	Balu Gadilohar	Acoris Research Ltd. Pune.	Synthetic Utility of Micro emulsions and Green Media	Dr. G.S. Shankarling
9	Deepak Boraste	Acoris Research Ltd. Pune	Studies in synthesis and application of pyromethene derivative and cucurbitol host molecules	Dr. G.S. Shankarling
10	Prashant Ghorpade			Dr. G.S. Shankarling
11	Saurabh Despande	USV Ltd .	Design and synthesis of novel heterocycles for high tech applications.	Dr. G.S. Shankarling
12	Pravin Borase	Aditya Birla science and Tech comp Ltd. Mumbai	Synthesis of novel heterocyclic colorants and supramolecular host for high tech applications.	Dr. G.S. Shankarling
13	Eknath Gayakwad	Vidyabharti College Amaravati	Green methodologies for synthesis of novel heterocyclic colorants.	Dr. G.S. Shankarling
14	Sujit Kamble	Evotec India Ltd., India	Green approach in synthesis of heterocyclic compounds and synthesis of novel colorants.	Dr. G.S. Shankarling
15	Preeti Pant	V,G. Vaze College, Mumbai.	Synthesis of colourants for functional applications and implementation of green principles in organic reactions.	Dr. G.S. Shankarling
16	Jyoti Rathi	Vidyabharti College Amaravati	-	Dr. G.S. Shankarling
17	Sushil Khopkar	University department Chemistry, Mumbai.		Dr. G.S. Shankarling

Ph.D. TECH. (GREEN TECHNOLOGY)

No.	Research Scholar	Previous Institution	Project	Supervisor
1	Priyanka More	Institute of Chemical technology, Mumbai.		Dr. G.S. Shankarling
2	Yogesh Patil	Institute of Technology,Nirma University, Ahmedabad		Dr. G.S. Shankarling

DETAILS OF SPONSORED PROJECTS :

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Total amount (Rs.)	Principal Investigator	Research Fellows
Principal Scientific Advisor to GOI	Stand-off detection of explosives based on immunochemical Techniques	3 year	3,73,26,000	Professor N. Sekar	Dr. Vikas S. Padalkar (Post Doctoral Fellow) Mr. Santosh B. Chemate (Junior Research Fellow)
BRNS	Advanced laser dyes with high quantum yield and high photostability	3 Year	21, 00,000	Professor N. Sekar	Mr. Ankush More (Junior Research Fellow)
DST	Colored fluorescent conducting polymers for photovoltaic applications – feasibility phase	2 Year	10, 94,400	Professor N. Sekar	Mr. Manoj Jadhav (Junior Research Fellow)
AICTE	NIR Fluorescent Colorants for Biological Imaging in biomedical diagnostics	1 Year	19,70,000	Professor N. Sekar	----
UGC	Synthesis of red emitting coumarin laser colorants	3 Year	9, 00,000	Professor N. Sekar	Mr. Abhinav Tathe (Project Assistant)
CSIR	Study of intramolecular Diels-Alder reactions of carbohydrate derived trienes	3 years	Rs 18.3 lacs	Prakash Bhate	Name and degree (if registered)

INDUSTRIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Research Fellows
Cavincare	Synthesis of Hair Dyes	1 Year	5,00,000	Professor N. Sekar	Mr. Prashant Mande

1.Title: Synthesis of Pyrromethene 567, 597 and Cucurbit [7] Urils

Personal / Depart-mental	Principle Investig ator / Co-Investig ator	sponsor– Govt./ Private	Name of sponsor	Date of sanction	Title	Duration	Amount sancti oned, in Rs.	Name of research fellow
Personal	PI	Govern ment	DAE-BRNS	13/10/ 2010	Synthesis of Pyrromethene 567, 597 and Cucurbit [7] Uril	07/03/ 2011 to 06/03/ 2013	17,22, 600/-	Deepak borste
2. Photochromic and Thermochromic colorants for functional application								
Personal	PI	Govern ment	UGC	2/02/ 2011	Photochr-omic and Thermoch-romic colorants for functional application	16/01/ 2012to 15/01/ 2014	9,50, 000/-	Saurabh Deshpande
3. Basic properties of Ionic liquid catalyst and its recovery								
Personal	PI	Private	Reliance Industries Pvt. Ltd.	2/02/ 2013	Basic properties of Ionic liquid catalyst and its recovery	One year	5,00,000/-	

PROJECTS ONGOING

1. Synthesis of novel perimidine and quinaldine based NIR absorbing squarine dyes and study of their thermal and photophysical properties

Personal/ Depart-mental	Principle Investigator / Co-Investigator	sponsor – Govt./ Private	Name of sponsor	Date of sanction	Title	Duration	Amount sanctioned, in Rs.	Name of research fellow
Personal	PI	Govern-ment	AICTE-RPS	04/02/ 2013	Synthesis of novel perimidine and quinaldine based NIR absorbing squarine dyes and study of their thermal and photophysical properties	Three Years	750000/-	Sushil khopkar

2. High temperature spectrally selective solar coating synthesis from a development and testing

Personal	CI	Govern-ment	DAE-BRNS		High temperature spectrally selective solar coating synthesis from a development and testing	Three Years	1,25,00,000/-	

PUBLICATIONS (PEER REVIEWED) :

No.	Title and Authors	Journal	Vol. No.	Pages	Year	Impact Factor
1	Vikas S. Padalkar, Vinod D. Gupta, Kiran R. Phatangare, Vikas S. Patil,Prashant G. Umape, N. Sekar, Synthesis of novel dipodal-benzimidazole, benzoxazole and benzothiazole from cyanuric chloride: Structural, photophysical and antimicrobial studies	Journal of Saudi Chemical Society	18	262-268	2014	2.266
2	Manjaree A. Satam, Rahul D. Telore, Nagaiyan Sekar, Photophysical properties of Schiff's bases from 3-(1,3-benzothiazol-2-yl)-2-hydroxy naphthalene-1-carbaldehyde	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy	132	678–686	2014	2.0
3	Kiran R. Phatangare, Sandip K. Lanke, Nagaiyan Sekar, Fluorescent Coumarin Derivatives with Viscosity Sensitive Emission - Synthesis, Photophysical Properties and Computational Studies,	J Fluorescence	24	1263–1274	2014	1.79
4	Vikas S.Padalkar,Nagaiyan Sekar, Excited-state intramolecular proton transfer(ESIPT) inspired azole-quinoline based fluorophores: Synthesisandphotophysical propertiesstudy	J Luminescence	155	58-64	2014	1.847
5	Vikas S. Patil, Vikas S. Padalkar, Kiran R. Phatangare, Prashant G. Umape, Bhushan N. Borase and N. Sekar, Synthesis, Characterization, and Antibacterial Activity of Novel (1H-Benzo[d]imidazole-2-yl)-6-(diethylamino)-3H-one-xanthene, Phenoxazine, and Oxazine:	J. Heterocyclic Chem, DOI 10.1002/jhet.1998 (accepted)				1.224

6	Abhinav B. Tathe, Vinod D. Gupta, Milind R. Shreykar, Ponnadurai Ramasami, Nagaiyan Sekar, Excited State Intramolecular Proton Transfer of 2-(2′,6′)-Dihydroxyphenyl) Benzoxazole: Insights using Computational Methods	J Luminescence	154	267–273	2014	1.847
7	Vikas S. Patil, Vikas S. Padalkar and Nagaiyan Sekar, 2-Methyl-4-oxo-N-(4-oxo-2-phenyl substituted-1,3-thiazolidin-3-yl)-3,4-dihydroquinazoline-5-carboxamides—A New Range of Fluorescent Whiteners: Synthesis and Photophysical Characterization, (2014) 24:1077–1086; DOI 10.1007/s10895-014-1387-y	J Fluoresce	24	1077-86	2014	1.79
8	Prashant G. Umape, Yogesh Gawale, Nagaiyan Sekar, Fluorescent Styryl Dyes Based on Novel 4-Methoxy-9-Methyi-9H-Carbazole-3-Carbaldehyde—Synthesis, Photophysical Properties and DFT Computations,.	J Fluorescence	24(4)	1087-98	2014	1.79
9	A combined theoretical and experimental investigation on the solvatochromism of ESIPT3-(1,3-benzothiazol-2-yl)-2-hydroxynaphthalene-1-carbaldehyde, Manjaree A. Satam, Rahul D. Telore, Abhinav B. Tathe, Vinod D. Gupta, Nagaiyan Sekar	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy	127	16-24	2014	2.00

10	Synthesis of novel styryl derivatives from 4-chloro-2-(morpholin-4-yl)-1,3-thiazole-5-carbaldehyde, study of their photophysical properties and TD-DFT computations, Nagaiyan Sekar, Prashant G.Umape, Vikas S.Padalkar, Rajratna P.Tayade, and Ponnadurai Ramasami. 150(2014)8–18;	J Luminescence	150	8-18	2014	1.847
11	A comprehensive spectroscopic and computational investigation of intramolecular proton transfer in the excited states of 2-(2′-hydroxyphenyl) benzoxazoleandits-derivatives, Vikas S.Padalkar, Ponnadurai Ramasami, and Nagaiyan Sekar	J Luminescence	146	5 2 7 - 538	2014	1.847
12	A combined experimental and TD-DFT investigation of three disperse azo dyes having the nitroterephthalate skeleton, Mininath S. Deshmukh, Nagaiyan Sekar,	Dyes and Pigments	103	25-33	2014	3.433
13	Amol S. Choudhary, Manoj K. Malik, Sharad R. Patil, K. H. Prabhu, Rajendra R. Deshmukh, and Nagaiyan Sekar, Phenazines and Thiazine: Green Synthesis, Photophysical Properties and Dichroic Behavior in Nematic Host	Canadian Chemical Transactions	2(4)	365-380	2014	--
14	Vikas S. Padalkar, Kiran R. Phatangare, and N. Sekar, Synthesis of Novel Fluorescent 2-{4-[1-(Pyridine-2-yl)-1H-pyrazol-3-yl] phenyl}-2H-naphtho [1,2-d] [1,2,3] triazolyl Derivatives and Evaluation of Their Thermal and Photophysical Properties	J. Heterocyclic Chem.	50	809	2013	1.224

15	Mininath S. Deshmukh and Nethi N. Sekar, A Combined Experimental and TD-DFT Investigation of Mono Azo Disperse Dyes	Canadian Chemical Transactions	1(4)	305-325	2013	--
16	Prashant G. Umape, Vikas S. Patil, Vikas S. Padalkar, Kiran R. Phatangare, Vinod D. Gupta,Abhinav B. Thate, Nagaiyan Sekar, Synthesis and characterization of novel yellow azo dyes from 2-morpholin-4-yl-1,3-thiazol-4(5H)-one and study of their azoe hydrazone tautomerism	Dyes and Pigments	99	291-298	2013	3.433
17	Vikas Padalkar, Ponnadurai Ramasami, Nagaiyan Sekar, TD-DFT Study of excited-state intramolecular proton transfer (ESIPT) of 2-(1,3-benzothiazol-2-yl)-5-(N,N-diethylamino)phenol with benzoxazole and benzimidazole analogues	Procedia Computer Science	Accepted (in press)		2013	
18	Vikas S. Patil, Vikas S. Padalkar, Abhinav B. Tathe, N. Sekar, ESIPT-inspired benzothiazole fluorescein: Photophysics of microenvironment pH and viscosity	Dyes and Pigments	98	507-517	2013	3.433
19	C.R.Meena, Girendra, R.V.Adivarekar, N.Sekar, Synthesis and Application of Vinylsulphone Disperse Reactive Dyes for PolyesterInternational ,	Journal of ChemTech Research	5(2)	585-591	2013	--
20	C. R. Meena, Abhinav Nathany, R.V. Adivarekar and N. Sekar, One-bath Dyeing Process for Polyester/ Cotton Blend using Physical Mixtures of Disperse/ Reactive Dyes	European International Journal of Science and Technology	2(2)	. 6-16	2013	--

21	Vinod D. Gupta & Abhinav B. Tathe & Vikas S. Padalkar & Vikas S. Patil & Kiran R. Phatangare & Prashant G. Umape & Ponnadurai Ramasami & Nagaiyan Sekar, TDDFT Investigation of the Electronic Structures and Photophysical Properties of Fluorescent Extended Styryl Push-Pull Chromophores Containing Carbazole Unit	J Fluorescence	23(6)	1121-38	2013	1.79
22	Vikas S. Patil & Vikas S. Padalkar & Abhinav B. Tathe & Vinod D. Gupta & N. Sekar, Synthesis, Photo-physical and DFT Studies of ESIPT Inspired Novel 2-(2′,4′-Dihydroxyphenyl) Benzimidazole, Benzoxazole and Benzothiazole	J Fluorescnce	23(5)	1019-29	2013	1.79
23	Vikas S. Padalkar & Ponnadurai Ramasami & Nagaiyan Sekar, A Combined Experimental and DFT-TDDFT Study of the Excited-State Intramolecular Proton Transfer (ESIPT) of 2-(2′-Hydroxyphenyl) Imidazole Derivatives	J Fluoresc.	23(5)	839-51	2013	1.79
24	Vinod D. Gupta, Abhinav B. Tathe, Vikas S. Padalkar, Prashant G. Umape, Nagaiyan Sekar, Red emitting solid state fluorescent triphenylamine dyes: Synthesis, photo-physical property and DFT study	Dyes and Pigments	97	429-439	2013	3.433

25	Kiran R. Phatangare, Vinod D. Gupta, Abhinav B. Tathe, Vikas S. Padalkar, Vikas S. Patil, Ponnadurai Ramasami, Nagaiyan Sekar, ESIPT inspired fluorescent 2-(4 benzo[d]oxazol-2-yl) naphtho[1,2-d] oxazol-2-yl) phenol: experimental and DFT based approach to photophysical properties	Tetrahedron	69	1767-1777	2013	2.899
26	Manjaree A. Satam, Rajesh K. Raut1 Vishal Y. Gehlot, and N. Sekar, Preparation of Color Filters Using Azo and Nitroso Colorants	Fibers and Polymers	14(1)	1-7	2013	0.531
27	Kiran R Phatangare, Bhushan N Borse, Vikas S Padalkar, Vikas S Patil, Vinod D Gupta, Prashant G Umape, and N Sekar, Synthesis, photophysical property study of novel fluorescent 4-(1,3-benzoxazol-2-yl)-2-phenylnaphtho[1,2-d][1,3] oxazole derivatives and their antimicrobial activity	J. Chem. Sci	125	1 4 1 – 151	2013	1.298
28	Manjaree A. Satam, Rajesh K. Raut, Rahul D. Telore, N. Sekar, Fluorescent azo disperse dyes from 3-(1,3-benzothiazol-2-yl)naphthalen-2-ol and comparison with 2-naphthol analogs	Dyes and Pigments	96	92-103	2013	3.433
29	Manjaree A. Satam, Rajesh K. Raut, Rahul D. Telore, N. Sekar, Fluorescent acid azo dyes from 3-(1,3-benzothiazol-2-yl) naphthalen-2-ol and comparison with 2-naphthol analogs	Dyes and Pigments	97	32-42	2013	3.433

30	Extensive Reduction in Back Electron Transfer in Twisted Intramolecular Charge-Transfer (TICT) Coumarin-Dye-Sensitized TiO2Nanoparticles/Film: A Femtosecond Transient Absorption Study. Hyacintha Lobo, Balvant Singh, Ganapati S. Shankarling#	Chemistry-A European Journal	20	3510	2014	5.831
31	Room temperature ionic liquid choline chloride–oxalic acid: A versatile catalyst for acid-catalyzed transformation in organic reactions`Urmiladevi Narad Yadav, Ganapati Subray Shankarling*	Journal ofmolecular Liquids	191	137	2014	1.684
32	Eco-friendly and recyclable media for rapid synthesis of tricyanovinylated aromatics using biocatalyst and deep eutectic solventAnita Kailas Sanap, Ganapati Subray Shankarling*	Catalysis Communications	49	58	2014	3.328
33	Spectroscopy and laser characterization of synthesized supramolecular host cucurbit[7]uril using aqueous Rhodamine B dyeDeepak Boraste, Ganapati Subray Shankarling*	Pramana-Journal of Physics	8	271	2014	0.562
34	Synergistic effect of ultrasound and deep eutectic solvent choline chloride–urea as versatile catalyst for rapid synthesis ofB-functionalized ketonic derivativesUrmalidevi yadav, Ganapati Subray Shankarling*	Journal of Molecular Liquids	195	188	2014	1.684

35	Quinoline-based chemosensor for fluoride and acetate: A combined experimental and DFT study.Urmiladevi Yadav, Preeti Pant, Ganapati Subray Shankarling*	Sensors and Actuators B: Chemical	197	73	2014	3.535
36	Nonanebis(peroxoic acid): a stable peracid for oxidative bromination of aminoanthracene-9,10-dioneVilas Patil, Ganapati Subray Shankarling*	Beilstein journal of organic chemistry	10	921	2014	2.801
37	In Situ Generated Cetyltrimethylammonium Bisulphate in Choline Chloride–Urea Deep Eutectic Solvent: A Novel Catalytic System for One Pot Synthesis of 1,3,4-Oxadiazole. DOI 10.1007/s10562-014-1288-3	Catalysis Letters	manuscript accepted	-	-	-

PATENTS : APPLIED

No.	Inventors	Title	Country	Funding agency
1	Prakash Bhate, Lisan Shaikh, Samiksha Vaidya, Shruti Masand, Vijilata Rajkumari, Rajaram Dugane	Novel reactive dye system based on diazonium salts	India	TEQIP
	G. S. Shankarling, Yogesh A. Sonawane, Krishna J. Jarag, Poonam M. Pawar, Sunanda Phadtare, Rishad Bumgara, Hyacinta R. Lobo, Balvant S. Singh, Urmila Yadav,	A class of quaternary ammonium catalysts	India	Application no. 1129/ MUM/2011.
	G. S. Shankarling, Krishna J. Jarag	Styryl molecules based on substituted-1,4-diphenethyl-1,2,3,4-tetrahydroquinoxaline-6-carbaldehyde.	India	Application no. 1503/ MUM/2011.
	G. S. Shankarling, Krishna J. Jarag, Dipak V. Pinjari, Aniruddha B. Pandit,	Ultrasound assisted process for synthesis of chalcone	India	Application no. 1504/ MUM/2011.

GENERAL PUBLICATIONS

Recent developments in textile dyes, pigments and pollution abatement, G. S. Shankarling, Urmila yadav, Glen Gonsalves, Recent Patents on Materials Science, Vol 6, 120-139 (2013)

MEMBERSHIP OF IN-HOUSE COMMITTEES

PROFESSOR N. SEKAR

- Co-ordinator for the Centre for Physico-Chemical Aspects in Textiles, Fibres, Dyes and Polymers (UGC-SAP).
- Deputy Coordinator , COSIST Programme
- Departmental Representative, CAS Programme
- Coordinator, In-plant Training for T.Y. B. Tech students
- Coordinator, TEQUIP Seminar (Services to Society)
- Member, Student's Feedback committee
- Member, AICTE – Accreditation (of all Courses) Committee
- Member, Teachers Evaluation Committee
- Member, RC Committee Ph.D Chemistry
- Member, RC Committee, Ph.D Green Technology
- Member, RC Committee, Dyes Technology
- Seminars /Lectures / Conferences /Symposia / Workshops /Summer or Winter Training Schools attended/Oral OR Poster Presentations

PROFESSOR P. M. BHATE

PGPC, UGPC

DR. G. S. SHANKARLING

- Administrative Coordinator of M.Tech. Perfumery & Flavor Technology.
- Member, ICT Annual Report.
- Member, ICT Handbook.
- Member, ICT Diary.
- Placement Officer of Perfumery & Flavor Technology
- Department coordinator of TEQUIP
- Member of Merit cum Scholarship Certificate

SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/ WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS

- Thermal and Lewis acid catalysed study of intramolecular Diels-Alder reactions of carbohydrate derived trienes. Hanuman Kalmode and Prakash M. Bhate*. 14th Tetrahedron Symposium on Challenges in Organic & Bioorganic Chemistry, 25-28 July 2013, Vienna, Austria.
- Preparation of novel achiral and chiral azo dyes from cyclic enol ethers. Kamlesh S. Vadagaonkar, Sunil M. Rokade and Prakash M. Bhate*. 14th Tetrahedron Symposium on Challenges in Organic & Bioorganic Chemistry, 25-28 July 2013, Vienna, Austria.
- A novel reactive dye system and its action on cellulose. Lisan Shaikh, Shruti Masand, Samiksha Vaidya and Prakash M. Bhate*. Chemcon 2013, 27-28 December 2013, Mumbai.
- Acetic acid catalysed Ferrier reaction under aqueous conditions. Sunil M. Rokade, Kamlesh S. Vadagaonkar, Hanuman Kalmode and Prakash M. Bhate*. 27th International Carbohydrate Symposium, 12-17 January 2014, Bangalore.
- Preparation of novel chiral azo dyes from glycals. Kamlesh S. Vadagaonkar, Sunil M. Rokade and Prakash M. Bhate*. 27th International Carbohydrate Symposium, 12-17 January 2014, Bangalore.
- Thermal and Lewis acid catalysed study of intramolecular Diels-Alder reactions of carbohydrate derived trienes. Hanuman Kalmode and Prakash M. Bhate*. 27th International Carbohydrate Symposium, 12-17 January 2014, Bangalore.

- Has participated in the workshop held from 17th to 18th February 2014 called 'paints and Dyestuff Technology' and has given a lecture on the said topic conducted by Chemical engineering department held at Gandhinagar Institute of engineering and technology (GIET), Gunpur, Orissa.
- Has visited and given lecture on 'Cucurbit[n]urils: A challenging journey of chemists fron synthesis to application' for UGC national seminar on 'Novel drug delivery systems and recent trends in chemical sciences' organized by Department of chemistry and Department of pharmaceutical sciences held from 24th to 26th March 2014 at Sardar Patel University, Vallabh Vidyanagar (Anand), Gujarat.
- Oral presentation on "Eco-friendly and recyclable media for tricyanovinylation of Aromatics: Biocatalyst and Deep eutectic solvent assisted rapid, green synthesis" by Anita K. Sanap and G. S. Shankarling in National Conference on "National Symposium on Functional Applications of Colorants" (NSFAC-2013), at Mumbai, Institute of Chemical Technology, India during October 29th-30th, 2013.
- Oral presentation on "Mild approach for the Bromination of various amino Anthracene 9,10-dione" by Vilas V. Patil and G. S. Shankarling in National Conference on "National Symposium on Functional Applications of Colorants" (NSFAC-2013), at Mumbai, Institute of Chemical Technology, India during October 29th-30th, 2013.
- Presented poster on "Ultrasound promoted green synthesis of δ-ketonic nitrile and δ-ketonic nitro derivatives using room temperature ionic liquid of choline chloride" by Urmiladevi N. Yadav and G. S. Shankarling in National Conference on "National Symposium on Functional Applications of Colorants" (NSFAC-2013), at Mumbai, Institute of Chemical Technology, India during October 29th-30th, 2013.
- Presented poster on "Exploring supramolecular capabilities of water soluble Macrocycle Cucurbit [5] uril by Deepak Boraste, G. S. Shankarling, Alok k. Ray and Sandip K. Nayak in National Conference on "National Symposium on Functional Applications of Colorants" (NSFAC-2013), at Mumbai, Institute of Chemical Technology, India during October 29th -30th , 2013.

EVENTS ORGANIZED AND RESPONSIBILITY (Converor / Secretary / Member):

National Symposium on Functional Application Colorants. - Prakash M. Bhate

INDUSTRIAL CONSULTANCY

a. Metropolitan Eximchem
b. Sunbeam Monochem,
c. Mallak Speciality chemicals,
d. Megafine speciatlity chemicals Pvt. Ltd.

DETAILS OF POSTGRADUATE/Ph.D. STUDENTS WHO PASSED OUT

Name	Course	Title
Hyacintha Lobo	Ph.D. (Sci.)	Synthesis of Novel Colorants for High- Tech Applications
Sujata Patil	M.Tech.	Enzyme catalysed synthesis of speciality molecules.
Pooja Thanekar	M.Tech.	Enzyme catalysed synthesis of dyes and intermediates.
Sachin Balip	M.Tech.	Application of green technology in oxidation reaction
Amruta Joglekar	M.Tech.	Synthesis of phthalocyanine using green method and study of use of formic acid as reducing agent in reactions.
Rajesh jagdale	M.Tech.	Sonochemical approach in organic synthesis.
Ahmed sheikh	M.Tech	Studies in carbonyl compounds and their application in fragrances

SHORT ABSTRACT ON SALIENT FEATURES OF RESEARCH WORK

Ms. Hycintha Lobo

Synthesis of novel colorants for hi-tech applications

In the recent years, the field of hi-technological applications has widened the scope of using colorants with novel structures and properties so as to suit the desired application. Functional colorants serve as key components in major high-tech applications such as dye sensitized solar cells, non-linear optics, photochromic and thermochromic applications, fluorescent probes, organic light emitting diodes, photodynamic therapy and many more. Our research endeavors to design and synthesize novel colorants for suitable applicability in Dye-sensitized solar cells (DSSCs). In chapter 1, we will discuss the recent trends in synthesis of organic molecules for DSSCs whereas chapters 2 and 3 will mainly focus on synthesis of novel organic sensitizers suitable for this application. Chapters 4 and 5 will cover synthesis of fluorescent styryl colorants with excellent stokes shift involving study of multi-photon absorption properties.

Apart from synthesis of functional colorants, our research also focuses on development of environmentally benign routes for synthesis of significant organic intermediates and derivatives. In this context, we have tried to explore various alternatives for traditional solvents and catalysts in heterocyclic synthesis so as to minimize the consumption of energy, reaction time, high temperature criteria along with improvement in yields and recyclability. All these aspects will be discussed in chapters 6-8. In addendum to optimizing reaction parameters, we also studied the improvement of material characteristics attained by use of sonochemical energy which will be discussed in chapter 9.

POST-GRADUATE DEGREE AWARDED

Ms. Aditi Barge

Organic Synthesis Using Functional Solvents and Microemulsions

The objective of our work is to study the use of microemulsions as a medium for organic synthesis and as an alternative to phase transfer catalysis. Microemulsions are used in organic synthesis for overcoming reactant compatibility, increasing the speed of reactions and inducing regiospecificity. In this work, the Reimer Tiemann reaction was carried out in microemulsion media. Conventionally, the Reimer Tiemann reaction gives low conversion and yield, and leads to formation of more of ortho product. The results of the reaction prove that there is a formation of a considerable amount of para product. When the surfactant is used, we might expect that the substrate molecule will find a fixed definite orientation and thus exposes only certain selective position/group for attack by the reagent, leading to selectivity in organic reaction. The effects of the parameters such as temperature, time, mode of addition and amount of surfactant were studied. Also, tetrahydropyrrole was synthesized using aniline and

its derivatives. This reaction has been reported using supported catalysts and metal complexes, and also green methods such as Deep Eutectic Solvents (DES) and Lipase enzyme. Here, the reaction is carried out in the presence of a mildly basic biodegradable surfactant. Though the role of surfactant in the present work is yet to be confirmed, we propose that the hydrogen bonding interactions between surfactant and aromatic amino group could be possibly responsible for increasing the nucleophilicity of the latter, thus leading to its faster attack on alkyl bromide. The use of the biodegradable surfactant and no use of solvent can be considered as an advantage in this reaction.

Mr. Glen Gonsalves

Enzyme Technology for Efficient Organic Synthesis

The aim of this work is to explore the synthetic utility of enzyme for preparation of dyes. Enzymes are highly active, selective (chemoselective, regioselective, and stereoselective) and they are functional at mild conditions. These factors have favored use of enzymes for synthesis of pure compounds in industry. Enzyme from hydrolases class is studied in this work. Lipase enzyme belonging to hydrolases class has shown its potential in weakly basic reactions. This mechanism of lipase enzyme is explored for the synthesis of dyes.

The synthesis of tricyano vinyl hydrazone compounds is studied. This reaction is carried out using lipase enzyme in the presence of absolute ethanol as solvent at ambient temperature and pressure condition. The reaction completes in 30 mins with formation of minimum byproducts. Using this protocol, a series of compounds were synthesized and characterized using mass spectrometry. The synthesized compounds have many applications in electro-optic devices, optical data storage and now it is used in Dye Sensitized Solar Cells (DSSC). In synthesis of tricyano vinyl hydrazone derivatives the effect of solvent was prominent. Dichloro methane showed formation of multiple byproducts while absolute ethanol favored formation of desired product. The yields varied from 4% to 92% depending on the functional group attached to the hydrazone moiety. The presence of electron donating group showed high yield, while the electron withdrawing group showed poor yield. Also the effect of halogen atom such as chlorine and bromine are studied. The presence of bromine atom showed higher yield as compared to chlorine atom. All the compounds synthesized showed solvatochromism.

Mr. Pratik Deshmukh

Process Intensification in Azo Dyes

The synthesis of azo dyes using conventional and sonochemical method were studied. Synthesized azo dyes were confirmed by checking their melting point and absorption maxima with the reported literature. The sonochemical method showed the advantages such as higher reaction rates, energy efficient method and better thermal stability of the dyes. Particle size of dyes obtained by sonochemical method is uniform hence better thermal stability was observed. Cavitation is the vital phenomenon for intensification of the process.The kinetic study of N, N-dimethyl-4-((4-nitrophenyl)diazenyl) aniline azo dye synthesized using sonochemical method is studied. The simple method is derived to study the kinetic of the reaction by isolation of dye at specific time intervals. The kinetic study is carried out at various temperature, pH and concentration of the reactant. The rate of the reaction depends on hydrogen ion activity, temperature and reactant concentration. The reaction shows a bimolecular second order reaction when both the initial components are present in equimolar concentrations and when coupler concentration is 10 times in excess. At 25oC, prominent variation in rate constant was seen in the pH range of 0.5 to 3.0. At pH 1.5 and 25oC, rate constant was found to be maximum. Activation energy of azo coupling reaction with equal initial concentration of diazonium salt and coupler (0.714M) is 61765.54J/mole and frequency factor is 3.362×10^9.

RESEARCH GROUP

PROFESSOR N. SEKAR RESEARCH GROUP

From Left to Right: Milind Shreykar, Kishor Thorat, Ramnath Mallah, Santosh Kataria, Manish Raikwar, Manoj Jadhav, Siddeshwar Jadhav, Sachin Margar, Santosh Chemate, Yogesh Erande, Rajratna Tayade, Rahul Telore, Sandip Lanke, Dhanraj Mohbiya, Umesh Warade, Dinesh Patil, Prashant Mande, Mininath Deshmukh, Shantaram Kothavale, Yogesh Gawale, Abhinav Tathe, Amol Jadhav, Kiran Avhad, Swapnesh Keni, Priyanka Patil, Archana Bhagwat, Supriya Patil, Suvidha Shinde, Professor N. Sekar, Mayuri Kadam, Manali Rajeshirke, Prerana Lokhande, Sulochana Bhalekar

PROFESSOR PRAKASH M . BHATE RESEARCH GROUP

From Left to Right: (First Row) Ashok Garande, Professor P. M. Bhate, Hanuman Kalmade, Vifilata Rajkumari **(Second Row)** Kamesh Vadogamkar, Sunil Rokade **(Third Row)** Nazim Ahmed, Rajaram Dugane

DR. G.S.SHANKARLING RESEARCH GROUP

From Left to Right: Eknath Gayakwad, Deepak Boraste, Priyanka More, Jyoti Rathi, Pranila Thale, Pravin Borase, Dr. G.S.Shankarling, Sujit Kamble, Vilas Patil, Sushil Khopkar, Rohan Kuchekar, Haribhau Kumbhar, Anita Sanap, Preeti Pant, Balasaheb Gadilohar.

PREFACE

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR
B.Sc., B.Sc. (Tech.),
M. Sc. (Tech.), Ph. D. (Tech)
Professor in Fibre Chemistry and
Head, Dept. of Fibres and
Textile Processing Technology,
ICT, Matunga, Mumbai

Department of Fibres and Textile Processing Technology (FTPT), formerly known as Textile Chemistry section has the unique distinction of being one of the two disciplines (other being Chemical Engineering), with which this institution- ICT (formerly UDCT) started in the year 1933. The Department conducts B.Tech. course with an intake capacity of 34, which is highest among all the B.Tech. courses of ICT. The department also offers post graduate courses in M. Tech., Ph.D. (Tech.) and recently, M.Sc. (Textile Chemistry) and Ph.D. (Textile Chemistry) which attracts a large number of students. So far more than 2400 graduates and 565 post graduates have passed out from this Department. The number of Ph.D. students has increased impressively this year to 42 all with full scholarship. The support for these students comes from University Grant Commission, TEQIP and several government & industrial projects. The faculty of the Department has good interaction with the industry.

A number of industries have been benefited by the technical advice given by the faculty. There have been a number of research projects, funded by either government agencies and also by different industries in which problems of mutual interest are investigated and the students as well as the Department have been benefitting by this interaction. The faculty is engaged in high quality fundamental as well as applied research and they have got over 1000 publications in Indian and International journals of repute. The faculty has also bagged coveted fellowships from the recognized institutions in the field, situated in India and abroad. On the occasion of Platinum Jubilee of Textile Association of India Professor M. D. Teli was honored with TAI RATNA award.

It has been a very productive year for us and it's a matter of pride to state that FTPT faculty members published 39 research articles in international and 23 in national refereed journals and 2 patents have been filed. To put on record, this year the department has signed the Twinning Agreement

DEPARTMENT OF FIBRES AND TEXTILE PROCESSING TECHNOLOGY

The faculty is engaged in high quality fundamental as well as applied research and they have got over 1000 publications in Indian and International journals of repute. The faculty has also bagged coveted fellowships from the recognized institutions in the field, situated in India and abroad.

(International collaboration) with Ethiopian Textile Industry Development Institute (ETIDI), Addis Ababa. This was signed by the Vice Chancellor; ICT with the Director General of ETIDI in presence of the State Minister, Ministry of Industries of Ethiopia. The objective of this agreement is to make Ethiopia internationally competitive in terms of manpower training, industrial trouble shooting and research in contemporary areas. Also a MoU has been signed with Addis Ababa Science & Technology University (AASTU), Addis Ababa, Ethiopia for undertaking collaborative research and learning programs.

The Department conducted several activities this year. The department organized a two-day workshop on Awareness of Sport Textiles with support from Wool Research Association, Thane on 27th& 28th Jan 2014. There was an overwhelming response to the workshop. The department also organized the yearly annual functions TEXQUEST (National level Technical Paper Presentation Competition) & TEXPRESSION (Cultural Festival) in the month of February 2014. Department conducted ten Endowment lectures/Invited lectures for the students of the Textile department and Alumni. Many of these activities were supported through TEQIP – Phase II programme of the institute.

As far as the new addition to the equipment is concerned, the Department has procured Fabric Conductivity meter, Fermenter and 3 Rota dyeing m/c's under the FIST – Phase II project funded by Department of Science & Technology, Govt. of India; and BOD/ COD analyzer, Contact angle analyzer, Incubator, Coating range, Loop ager, Vertical Gel Electrophoresis, UV-Vis Spectrophotometer under TEQIP - Phase II scheme. With these additions the Department is now much better equipped for its research activities. More machines are being procured in the coming period.

This year also saw a good placement for the graduates of the Department. As usual nearly 50% students opted for higher education in reputed international & national institutions and 40% of the

students have been placed in Industry through campus interviews. These placements are in industries providing exposure in manufacturing, marketing, and in R & D sectors of textile industry.

Indian textile industry is one of the largest and the most important sectors in the economy in terms of output, foreign exchange earnings and employment generation. The Indian Textile Industry, being one of the oldest and important sectors earns lot of foreign exchange and employs a considerable percentage of population from both urban and rural areas. It contributes by about 14 percent to the national industrial production and about 35 percent to the total national export earnings. India has also been a significant player in the global textile markets. It is the third largest producer of cotton, second largest producer of silk, the largest producer of jute and the fifth largest producer of man-made fibres and yarn. It has been assessed that in this sector domestic market and export jointly is expected to grow from the current Rs 3.27 lakh crore ($70 bn) to Rs 10.32 lakh ($220 bn) crore by 2020.Opportunities in textile sector are always increasing and will keep on growing with the upsurge in population of Middle Income Group families with increasing per capita consumption and spending capacity.

VISION

To be the world class centre of excellence in teaching and research in chemical processing of fibres, textiles, apparels and the key areas of technical textiles with ecological, social and ethical responsibility, meeting the crucial needs of trained man power and technological solutions of Indian textile industry.

MISSION

To be the leader in offering top class human resources by training them from bachelors to doctorate level degrees in core competence i.e. in chemical processing of fibres, textiles and apparels. To train the industrial technicians as per the demands of the industry, upgrading their skill to meet international quality standards. To conduct industrially relevant research and provide technical guidance aimed at offering technology solutions and enhancing competitive edge to the industry. To offer technological interventions to preserve our rich heritage of the artisans in rural areas in hand looms, khadi and village industry and to strengthen the rural economy by enhancing the use of rural fibres and natural dyes. To create awareness of the environment protection and social and ethical commitment through campaigns and relevant research programmes in pollution abatement and recycling of wastes. To undertake inter disciplinary collaborative work with Indian and foreign universities and industries in the field of technical textiles, with application of emerging technologies such as nanotechnology and biotechnology etc.

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR

B.Sc., B.Sc. (Tech.), M. Sc. (Tech.), Ph. D. (Tech)

Professor in Fibre Chemistry and Head, Dept. of Fibres and Textile Processing Technology, ICT, Matunga, Mumbai

RESEARCH INTEREST AND EXPERTISE :

Textile Colouration, Green Processing of Textiles, Medical Textiles, Enzyme Manufacturing and Application, Natural Dyes for Textiles and Cosmetics, Textile Composites, Novel Processing Techniques

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Life Member of Textile Association (India)
- Life Member of Indian Fibre Society
- Editor of Journal of Textile Association
- Indian Correspondent to "International Dyer"
- Visiting faculty for Sophia Polytechnic
- Member of selection committee, College of Home Science, Nirmala Niketan
- Member of technical/ Research advisory committee of Wool Research Association
- Member of Board of studies and faculties of The Maharaja Sayajirao University of Baroda in Textile chemistry
- Member of General Advisory Committee for Research and Liason of BTRA for the period 2011-2014
- Member of 'Core Group' to function as a Sub-committee of the Council for COE in Sportech at WRA
- Member as Expert in Department Research Committee at Textile Manufacturers Department, Veermata Jijabai Technological Institute
- Member of RRC, Department of Physics, ICT

PUBLICATIONS (PEER REVIEWED) SO FAR: 103

PATENTS: 02

CONFERENCE PROCEEDINGS/PAPERS/ POSTER: 42

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE: 03

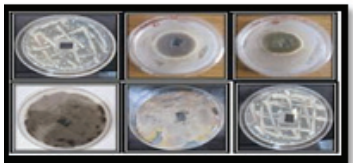
MASTERS AWARDED AS SINGLE/ CO-GUIDE: 25

H-INDEX : 04

CITATIONS : 50

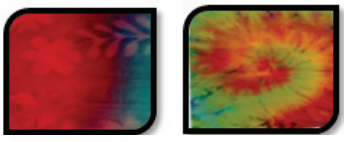
HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

Enzyme Manufacturing and Application - The two doctorate students have worked individually on screening of samples for desired enzyme producing micro-organisms. The work contains the production of Pectinase and Lipase enzyme and application in scouring of natural fibre fabrics, food industry. Another doctorate student is currently working on screening on protease enzyme.



Enzyme manufacturing

Textile coloration - In this doctorate work, the dispersant free disperse dyes and vinylsulphone reactive disperse dyes were synthesized using different coupling components. The synthesized dyes were successfully applied on polyester, cotton, polyester/ cotton blend with level dyeing, good build-up, desired colour yield and shade matching of dyes.



Dyeing and Printing of Textile

Medical textile - This is doctoral research work on banana fibre for use in medical textile product namely diaper by increasing its absorbency by grafting method. The superabsorbent polymer is synthesized by grafting the starch with acrylamide using two different initiators and their application in diapers was made. Nano titanium dioxide particles were synthesized and applied onto cotton to check their antimicrobial property and UV protection property.

The work of herbal finishes was done as a part of doctoral work. In order to analyze and explore the possibility of herbal medicine for bandages and wound dressing by extracts of the colouring / medicinal substances from the different herbals and study was done on the cotton fabric and evaluation for the antimicrobial property was done.

Absorbency mechanisms of diaper

Non-conventional natural fibres for composites - This is master's research work. Fibres were extracted from the Saccharum Munja grass and Oreodoxa Regia plant leaf stalk. The prepared polymer composite has good tensile, light weight and thermal properties. Additionally it can serve as extra income to agriculture industry with minimal investment cost.

Composite made from natural fibre

Natural Dyes for Textiles and Cosmetics - In this doctoral study an attempt was made to create a complete colour gamut with easily available natural dyes with one common extraction and application procedure. The extraction procedure and application on to the silk fabrics was same for the shade of all the various colours obtained. The fastness properties and colour strength values of all the shades obtained were determined.

Natural dyes

Green Processing of Textiles

For low salt consumption in reactive dyeing on cotton fabric

Two Master's students have worked individually for the reduction of electrolyte usage in reactive dyeing. They primarily focussed on the viability of eliminating the electrolyte completely from the dyeing bath and were successful with the use of two different mechanisms. Their work is described below.

The first work was done using cationising agents. Two cationising agents were used to modify cotton namely Lupasol G100 and Lupasol P and dyed with ME and HE brand of reactive dyes using various quantity of salt and results were compared with normal cotton dyed with standard dyeing procedure.

In second work cotton fabric was modified with PAMAM (polyamidoamine) dendrimer using exhaust and continuous method of application and dyed with reactive dyes without use of electrolyte and alkali. The dendrimers used for this application were synthesised in the laboratory and not procured. The commercial dendrimers contain solvent while the dendrimers synthesised in house were free from solvent.

Fabric conditioners

This was a consultancy project done under industry affiliation of Unilever Industries Ltd. It was done in two parts

Various types of actives (conditioners) supplied by Hindustan Unilever limited

were applied on 100% cotton and polyester fabric by exhaust method. The samples were evaluated for whiteness/ yellowness index, fabric feel (softness), water repellence, crease recovery test.

Application of active (SDBS, sodium dodecyl benzene sulphonate) on 100 % cotton and polyester woven fabric was carried out and their adsorption was measured.

Novel Processing Techniques

Encapsulation of silicone emulsions

In conventional softener finish application, the finish is applied using an emulsion of silicone oil in water. Hence keeping in mind the limitations involved in the use of emulsions the research work carried out for eliminating water from the emulsion. A successful attempt is done for producing solid form of softener. By doing so the shelf life of the softener product is increased to very large extent as compared with its conventional form of emulsion.

Layer-by-layer technique

In this work alternate deposition of (polydiallyl-dimethylammonium chloride) (POLYDADMAC) and reactive dye on cotton fabric is carried out at ambient temperature in absence of salt as exhausting agent. The LBL self-assembled deposition of polyelectrolytes on textile substrates introduces a novel processing method for textile functionalisation.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

No.	Authors	Journal	Vol. No	Pages	Year
Textile Colouration					
1.	P. Murugkar, Z. P. Bhathena, N. Kanoongo, R. Adivarekar	Asian Dyer	Vol. 3(4)	59-63	2006
Green Processing of Textiles					
2.	Rachana Harane, Ravindra Adivarekar	International Journal of Chemtech Research,	Vol. 5	671-675	Apr-June 2013
Medical Textiles					
3.	R. V. Adivarekar, Nilesh Kanoongo, Neha Khurana	Asian Textile Journal	Vol. 19	39-41	Feb. 2010
4.	Khurana N, Kanangoo N, Adivarekar R V.	European International journal of science and technology	Vol. 2 (1)	pg 153-160	Feb 2013
Enzyme manufacturing and application					
5.	P. Dalvi, P. Anthappan, N. Darade, N. Kanoongo, R. Adivarekar	Indian Journal of Fibres and Textile Research,	Vol. 32	459-465	Dec. 2007
6.	Madhura Nerukar, Manasi Joshi, Sujata Pariti, R. V. Adivarekar	Journal of surfactants and Detergents	online	1-9	11 January 2013.
Natural dyes for textiles and cosmetics					
7.	Priti B. Tayade, Ravindra Adivarekar	The journal of the Textile Institute	Vol. 104 (10)	1080-1088	March 2013
8.	Manasi Joshi, Madhura Nerurkar, Ravindra Adivarekar	Innovative Romanian Food BioTechnology		75-83	March 2013

Novel Processing Techniques					
9.	C. R. Meena, Abhinav Nathany, R V Adivarekar, N Sekar	European International Journal of Science and Technology	online	6-16	March 2013
Textile composites					
10.	Girendra Pal Singh, Pallavi Vishwas Madiwale, Ramanand N Jagtap, Ravindra V Adivarekar,	Journal of Applied Polymer Science	online		May 2014

PATENTS:

No.	Inventors	Title	Country	Funding agency
1.	Ravindra Vithal Adivarekar (from ICT), Nitin Siddheshwar Deshpande, Vamsi Krishna Manthena, Vibhav Ramrao Sanzgiri (all from HUL)	Demonstrating efficacy of cleansing products, Application no. 2158/ MUM/2012	India	HUL
2.	R. V. Adivarekar, Neha Khurana	Preparation of Nano Titanium oxide using dispersing agents, Application no. 473/ MUM/2013	India	TEQIP

SUBJECTS TAUGHT DURING 2013-14 :

Technology of Printing, Technology of Textile Colouration, Biotechnology in Textiles, Pretreatment of Textiles.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) - 9,
Ph.D.(Sc) - 6
M. Tech. -11,
M.Sc - 3,
Undergraduate Summer Fellows (if any) - 2,

RESEARCH PUBLICATIONS:

National - 8, International - 10, (Peer-reviewed) - 1, Conference proceeding - 4

PATENTS :

Indian – 02

SPONSORED PROJECTS :

Government - 03, Private - 04

PROFESSOR DR. MANGESH D. TELI

Professor of Textile Chemistry
Member of Board of Management, ICT
Ex-Dean, Student Affairs & HRD
Served earlier as Head of Dept. of Fibres and Textile Processing Technology, (10 years from 1999-2009)

B.Sc. (Hons.), (1973) Mumbai University
B.Sc. (Tech.), Textile Chemistry, University Topper: First Class First with Distinction (1976); M.Sc. Tech Part I (University Topper in both Semesters) 1978. Registration Converted to Ph.D.Tech
Ph.D. (Tech.), Modification of Synthetic Fibre, Mumbai University, (1981).

Undergone Sr. Management workshops for formulating Vision and Corporate Governance.
Certificate Course on "Education for Development" and Conceptual Frame work for Social Action" from FUNDAEC, Colombia.

RESEARCH INTEREST AND EXPERTISE:

Modification of Fibres, Modification of Biopolymers, Application of Nanotechnology in Textiles, Application of Natural Dyes on Textiles, Plasma Technology for Finishing of Textiles, Technical Textiles, etc.

RESEARCH INTERESTS:

Chemical Processing of all Natural and Synthetic Fibres. Natural and Synthetic Thickeners, Polymer Blend Fibres, Electro Kinetic Properties of Textile Fibres, Natural Dyes, Speciality Finishing Effects, Application of Nanotechnology and Biotechnology in Textiles, Technical Textiles, etc.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- F.T.A. (Hon. Fellow of Textile Association),
- F. M. A. Sc.(Fellow of Maharashtra Academy of Sciences)
- Fellowship for CSIR-CNRS (France) International Scientific Exchange Programme under which carried out research work on Plasma in France.(1993)
- German Democratic Republic (GDR) Academic Exchange Fellowship

PUBLICATIONS (PEER REVIEWED) SO FAR: 249

PATENTS: 1
CONFERENCE PROCEEDINGS/PAPERS: 106
SEMINARS/LECTURES/ ORATIONS DELIVERED : 49
Ph.D.S AWARDED AS SINGLE : 20
MASTERS AWARDED AS SINGLE : 93
NATIONAL : 7
H-INDEX : 8
CITATIONS : 361

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT :

- **Chemical Processing of all Natural and Synthetic Fibres and their modifications:**
  - It involves all types of fibres: Cotton, wool, silk , bamboo, modal, viscose, polyester, PP and mainly the modification of various natural and synthetic fibres by graft copolymerization in order to impart them enhanced dye ability, water absorption or oil absorption characteristics, increased electrical conductivity as well as changes in electro kinetic properties such as zeta potential etc.
- Immobilization of nano materials for antibacterial properties is also studied.
- Melt blending and polymer alloy formation is used to produce fibres like Polypropylene as well as polyester with enhanced Dyeability, flame retardancy, mosquito repellence, aroma etc. These properties including antibacterial properties in case of nano composites fibres making use of nano silica, nano clay and nano silver etc. were also studied.
- Modification of bio-polymers like various starches obtained from waste materials like germinated cereals – Jowar, Wheat, Bajra, Ragee and Amaranthus etc into textile printing thickeners to substitute the virgin biopolymers is being actively researched.
- Very effective superabsorbents of such biopolymers were also obtained and one such superabsorbent is filed for patent.
- Synthesis of acrylic based thickeners for substitution of kerosene or many other printing thickeners such as sodium alginate etc in order to make the operation more eco friendly and also economical has been carried out.
- Speciality finishing of textile fabrics of various origins making use of eco-friendly chemicals and finishes for enhanced performance, in terms of antibacterial

property, dyeability, water repellence, stain repellence, protection from UV rays, mosquito repellence etc is actively researched. These finishes are obtained by modifying the dyestuffs or by synthesis and application of nano materials or making use of micro encapsulation techniques.

- Simultaneously dyeing and antibacterial finishing concept was also pursued where in water and energy conservation is done and also the durable performance is achieved.
- Natural dye application for dyeing as well as printing of natural fibres mainly cotton, wool and silk is being investigated. Newer concept of using natural Mordants and natural medicinal herbs is also being tried to attain fully eco-friendly concept. Natural dyes on synthetic textiles are also being investigated.
- Technical Textiles where in work relating to medical and protective and sport textiles is undertaken. Hemostats, or slow release compounds using chitosan were attempted for band aids.
- Coated textiles having multiple finishing effects as well as material development as sound barriers/absorbers were also studied.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Title with authors	Journal	Volume	Pages	Impact factor
Acetylation of banana fibre for improved oil absorbency M.D.Teli and Sanket Valia	Carbohydrate Polymers	92 (1)	328-333	3.479
Extraction of chitosan from shrimp shells and application in durable antibacterial finishing of bamboo rayon Teli M.D., Sheikh J.	International Journal of Biological Macromolecules	50	1195-1200	2.596
Antibacterial and acid and cationic dyeable bamboo rayon on grafting M.D.Teli and Javed Sheikh	Carbohydrate Polymers	88	1281-1287	3.479
Effect of swelling and reactive dyeing on the accessibility of cotton to cellulase enzymes Paul R. and Teli M.D.	Journal of Applied Polymer Science	121 (4),	1946-1950	1.395
Synthesis of Superabsorbents from Amaranthus Starch M.D.Teli and Nilesh G Waghmare	Carbohydrate Polymers	81 (3)	695-699	3.479
Use of Amaranthus (Rajgeera) starch vis-à-vis wheat starch in printing of vat dyes Teli, M.D., Rohera, P., Sheikh, J., Singhal, R.	Carbohydrate Polymers	76 (3)	460-463	3.479
Application of germinated maize starch in textile printing M.D. Teli, pankaj Rohera, Javed Sheikh, Rekha Singhal	Carbohydrate Polymers	75 (4)	599-603	3.479
Synthesis of superabsorbent from carbohydrate waste M.D.Teli and Nilesh G Waghmare	Carbohydrate Polymers	78(3)	492-496	3.479
Electro kinetic studies of modified cellulosic fibres Teli, M.D., Ramesh Kumar, A.	Colloids and Surfaces A: Physicochemical and Engineering Aspects	301 (1-3)	462-468	2.108
Polyester nanocomposite fibres with improved flame retardancy and thermal stability M D Teli and R D Kale	Polymer engineering and science	52 (5)	1148-1154	1.243

SUBJECTS TAUGHT:

Technology of Fibres I and II, Advanced Textile Chemistry, Advanced Textile technology, Modification of Fibrous Polymers and Emerging Trends in Textile Processing technology, Seminars and Project work.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED:

Ph.D. (Tech.) - 6
M.Tech. - 8
M.Sc - 2
Undergraduate Summer Fellows (if any) - 9
Ph.D.(Sc) - 3

RESEARCH PUBLICATIONS:

National - 8
International - 15
(Peer-reviewed) - 23
Conference proceeding - 14
Book Chapters(if any) - 2

SPONSORED PROJECTS :

Government- 1,

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Chairman, Research Monitoring Committee of TIFAC -DST for Technical Textiles at DKTE Textile Institute, Ichalkaranji.
- Chairman, Research Monitoring Committee of TIFAC -DST for Technical Textiles at Kumarguru College, Coimbatore.
- Member, Research Advisory Committee, ATIRA (Ahmedabad), SASMIRA (Mumbai).
- Chairman Jury for Export Excellence awards, Indian Textile Machinery Manufacturers Association, Mumbai.
- Member Craft mark market excess Jury 2013, Market Excess for evaluation of rural craft producers readiness to meet contemporary demand. (Organised by All India Artisans and craft workers welfare associations (AIACA, New Delhi)
- Member of the Research advisory committee for the Seri Biotechnology, Dept of Biotechnology, Ministry of Science and Technology.
- Referee for projects submitted to Dept. Of Science and Technology and Dept. Of Seri Bio Technology. GOI-New Delhi
- Patron/Governing Council Member of Textile Association (India)
- Patron Member, Association of Chemical Technologists, India
- Life Member, Colour Group of India
- Member, Editorial Board, Rossera
- Member, Editorial Board, Colourage
- Member, Board of Studies in Textiles and Clothing, SNDT University
- Member, Academic Council, S.V.T College, SNDT University
- Referee for Ph.D. Thesis at IIT, MS University and Vishweshwarya University Belgaum, Bengalaru, Kolkata university etc.

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY :

- Chairman, Editorial Board, Journal of the Textile Association
- Referee, Egyptian Journal of Chemistry, Cairo University, Egypt
- Reviewer, Journal of Carbohydrate and Polymers, U.K.
- Reviewer for Textile Fibres and Research Journal, India
- Reviewer for Colouration Technology, UK etc.
- Reviewer for Journal of Fashion Technology and Textile Engineering, USA
- Reviewer for Cellulose Chemistry and Technology
- Reviewer for Pakistan textile Journal
- Reviewer for Fibers and Polymers Journal
- Reviewer for Starch/Starke Journal

AWARDS/HONOURS / ACCOLADES:

- Received TAI RATNA award on 9th April 2014 on the occasion of Platinum Jubilee of Textile Association of India.
- Key note speaker for SDC's annual conference Sustainable Innovation in Colouration on 6th June 2014.
- Served On the Elite Panel of SAC's (Sustainability Apparel Coalitions) (U.S.A)
- Served as a member of UGC sponsored curriculum design workshop, Agra.
- Chairman Jury for Export Excellence awards, Indian Textile Machinery Manufacturers Association, Mumbai.

PROFESSOR S. R. SHUKLA

B.Sc. (Hons.), B.Sc. (Tech.), Ph. D. (Tech.)
Professor of Technology of Dyeing & Printing and
Registrar, ICT

SUBJECTS TAUGHT :

Techniques and theory of textile coloration, Environmental problems in textile processing, Dyeing of natural fibres, Dyeing of man-made fibres, Green chemistry in textiles

RESEARCH INTERESTS :

Depolymerization of textile polymer waste and its Recycling, Decolorization of dyeing effluent, Effluent treatment and Waste minimization in textile wet processes, Enzyme technology in processing, Natural dye extraction and applications, Heavy metal removal and recovery, Use of ultrasonic in textile processing.

RESEARCH STUDENTS :

Ph.D. (Tech) – 05
Ph.D. (Sci) - 08
M.Tech - 07

RESEARCH PUBLICATIONS: 12

SPONSORED PROJECTS :

Government - 01

PROFESSIONAL ACTIVITIES:

- Member, Editorial Board, Indian Journal of Fibres & Textile Research
- Life Member, Indian Fibre Society
- Member, Polymer Society, India
- Life Member, Textile Association (India)
- Life Member, Colour Group of India
- Life Member, Marathi Vigyan Parishad
- Patron Member, Association of Chemical Technologists, India

PUBLICATIONS (PEER REVIEWED) SO FAR:
INTERNATIONAL: 117
NATIONAL: 94
PATENTS : 04

CONFERENCE PROCEEDINGS/PAPERS/ POSTER:

Papers: 46 Posters: 17

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 23

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 62

H-INDEX : 21

CITATIONS : 1644

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):

Depolymerization of textile polymer waste and its Recycling

- Chemical depolymerization of polyethylene terephthalate by using conventional and non conventional heating was carried out with simple chemicals to obtain valuable monomer for its reuse and other application. Chemical recycling of polyethylene terephthalate waste by using glycolysis, aminolysis, hydrolysis and methanolysis.

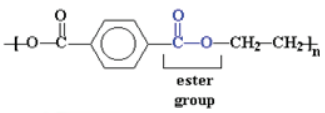


Fig.1 Depolymerization of textile polymer waste and its Recycling

Decolourization of dyeing effluents

- In this doctorate research, decolourization of dyeing effluents was carried out using ozone, UV/H2O2 and photocatalysts were synthesized based on ceria on the metal oxide support of alumina, titania and silica. Their synergistic effect was studied with ozonation.

Fig.2 Decolourization of dyeing effluent

Heavy Metal Adsorption

- Heavy metal ions are removed from their aqueous solutions using cheap agricultural products such as coir, jute, saw dust, peels etc. The adsorption levels are enhanced by chemical modification of adsorbents. Mechanisms have been established. Scale up is being tried to find the economic feasibility as well as continuous column adsorption/desorption capabilities.

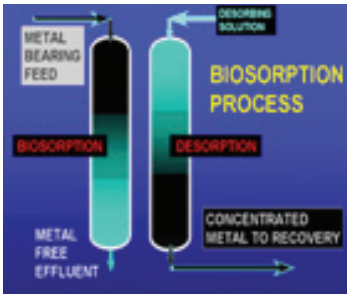


Fig.3 Heavy metal removal using biosorption

Ultrasound use in textile processing

- Studies using ultrasonic baths have been carried out on almost all textile-wet processes with a success in conservation of time, chemicals and energy at laboratory scale. A scale up model is being tried out.

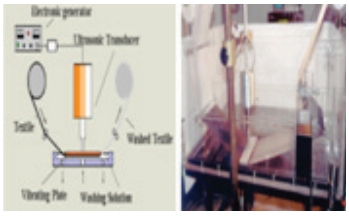


Fig.4 Application of ultrasound in textiles

Natural Dye Extraction and applications

- This study concerned with the maximum extraction of dye from pomegranate waste (rind) by using different solvents and extraction methods by changing extraction parameters. The optimisation of mordanting and dyeing parameters on wool fabric were carried out to achieve better fastness properties like washing fastness, light fastness etc. The colour gamut was produced by using different mordants and dyed fabrics were tested for their rubbing, washing and light fastness properties.

Fig.5 Natural dyess

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

No.	Authors	Journal	Vol. No	Pages	Year
1.	Glycolysis of Polyethylene Terephthalate Waste Fibres, Shukla S.R. and Ajay M. Harad.	J. Appl. Polymer Science	97(2)	513-517	2005
2.	Adsorption of Cu (II), Ni (II) and Zn (II) on Modified Jute Fibres, Shukla S.R. and Pai R.S.	Bioresource Technology	96 (3)	1430-1438	2005
3.	Aminolysis of Polyethylene terephthalate waste, S. R. Shukla and A. M. Harad	Polymer Degradation & Stability	91(8)	1850-1854	2006
4.	Depolymerisation of Nylon- 6 wsate fibres, S. R. Shukla and A. M. Harad	J. Appl. Polym. Science	100(1)	186-190	2006

5.	Adsorption of Ni(II), Zn(II, Fe(II)) on modified coir fibres, S. R. Shukla, R. S. Pai and A. S. Shendarkar S. R. Shukla, A. M. Harad and L. S. Jawale	Separation & Purification Technology	47(3)	141-147	2006
6.	Recycling of waste PET into useful textile auxiliaries	Waste Management	28(1)	51-56	2008
7.	Chemical recycling of PET waste into hydrophobic textile dyestuffs S. R. Shukla, A. M. Harad, L.S. Jawale	Polymer Degradation and Stability	94 (4)	604-609	2009
8.	Synthesis, spectral properties and application of novel disazo disperse dyes derived from polyester waste Vikrant S. Palekar, Navnath D. Pingale, S. R. Shukla	Coloration Technology	126 (2)	86-91	2010
9.	Ionic liquid catalyzed aminolysis of PET waste V. S. Palekar; R. V. ShahS R Shukla	Journal of Applied Polymer Science	126(3)	1174-1181	2012
10.	Synthesis of novel dihydropyrimidin-2(1H)-ones derivatives using lipase and their antimicrobial activity B. N. Borse, V. S. Borude, S. R. Shukla	Current chemistry letters	Vol. (1)	59-68	2012

AWARDS/HONORS :

Fellow of Maharashtra Academy of Sciences

DR. (MRS.) USHA SAYED
B.Sc., B.Sc. (Tech.), Ph. D. (Tech.)
Associates Professor

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Fibers society of America
- Member of Alumni Association
- Member of the Committee for Women's Welfare, Mumbai University.
- Member of board of studies Baroda university textile department.
- Member of AATCC
- Life member of Natural Fibre society, Culcutta

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

- Studies in Finishing
- Antibacterial garments and fabrics are in demand in the present scenario. Thus innovative methods products and machineries continue to dominate the textile market.
- The present work was undertaken to add functional value namely antibacterial property by tangentially different approach.
- Tetracycline hydrochloride was chosen for its cost effectiveness and it possesses a wide range of antibacterial property against Gram-positive and Gram-negative bacteria,

Tetracycline hydrochloride was applied on Silk, Wool and Nylon by the exhaust process and optimization was carried out. The performance properties of the above treated silk were very encouraging and a wide range of shades were simultaneously obtained along with the good fastness properties.

- This is a novel technique introduced for imparting antimicrobial property which is non- leaching type, easy to apply, compatible with existing dyeing process, cost effective and require less effluent treatment.
- Tetracycline Hydrochloride being a non-toxic in nature can be worn next to skin. The end-use can be in various sectors in apparels, kid's garments, technical textile, medical textile etc.
- Studies in synthesis of and formulations of speciality chemicals and their applications
- The process modification in manufacturing and synthesis of chitosan and its derivatives have been carried out. The purity of the products obtained by such modification of pH, ash contain, % insoluble and solubility are comparable with commercial chitosan. The reproducibility was successful and negligible variable from batch to batch. Water soluble chitosan has also been successfully prepared using acetic anhydride as a reagent.
- The water soluble derivative using succinic anhydride and the third derivative using benzyl amine have been confirmed by FTIR analysis and have very successful applications as metal scavengers. Thus by using this process, the energy and time consumption is very low, indicating that the developed process is highly efficient in terms of yield, quality, time saving and energy. By this, optimized process it was possible to manufacture chitosan which is comparable with that of commercial and economical with lower molecular weight which implies greater application in textiles and consumer care products.
- The wipes have been developed by treating with different chemicals for different end uses by simple and cost effective ways. The formulations and the synthesis of a variety of chemicals for the purpose of making antimicrobial, moisturizing and mosquito repellent wipes having good water absorbency and fragrance retention have been evaluated. This is done by incorporating effective ingredients and perfumes into products that suits consumer needs, especially for wipes that can be used during travel. Further wipes have been prepared using value added formulations such as plant extracts, moisturizers, and perfumes for the babies and general personal care markets. The result indicates that, retention of moisture for viscose was highest among all the four types of selected nonwovens. Whereas for polyester the Moisture regain is very negligible i.e. 0.04% which proves that the viscose is more suitable for retaining the wet formulated solution for longer period of time.
- Preparation of wet wipes using chitosan and its derivatives and others specialty chemicals for obtaining wipes such as antibacterial, antifungal moisturizing and mosquito repellent wipes has been successfully carried out.
- **Studies of Nano-Silicone**
  - Nano silicone emulsions, as we have seen can be easily applied in the diluted form. The chemicals required are easily available and the procedure is also less time consuming. These softeners can be used for denim washing that can replace the conventional method which requires a huge amount of water. Excellent softness can be achieved using a small amount of chemical and water with comparatively less wastage of energy

and resources. Thus, extensive research has to be carried out in this area keeping in mind the cost factor of nano silicone softeners.

- The future prospects of nano finishing which are Eco friendly are innumerable since it has many adventitious functional perspectives.

- **Processing of Denim Fabric:**
  - Nano ZnO particles synthesized by Sol-gel method and Precipitation method was applied on denim fabric for imparting antimicrobial property. The denim fabric used for this work showed significant increases in physical properties after treatment by the nano zinc oxide used along with the polyurethane, DMDHEU resin and Softener and also separately. These resulted in increased tensile strength and elongation. Bleaching and printing of Denim fabric by novel process was also carried out.

- **Pigment Dyeing and finishing of Textile substrate:**
  - Raw pigment was synthesized in laboratory and dying of various fabrics like cotton, khadi, jute wool, denim was carried out by using this pigment in a new modified process and compared with commercial pigment which made it economical in terms of thickener used and also efficient. Novel effect on printing was also obtained using the above pigment.

- **Synthesis and application of surfactants on textiles:**
  - Three cationic surfactants were synthesized and studied for their application on textile as antibacterial agents, coagulating agent and as a softener finish and imparting soil releasing properties.

- **Wet Wipes :**
  - Wet wipes were tested for tensile strength, wicking power, rate of evaporation and absorption by the stack test. Various formulations were used to prepare wet wipes.

- **Studies in superabsorbent:**
  - Successful preparation of superabsorbent from Jute, coir, newspaper waste and food waste have been carried out.

- **Processing of jute:**
  - Successful pretreatment of jute with laccase enzyme followed by bleaching. Flame retardancy was imparted to jute fabric by synthesizing two polymers which are non-halogen in nature. Simultaneous dyeing and finishing was also carried out successfully when synthesized products were used.
  - Testing of free formaldehyde on garments finished with resin finish have also been carried out in order to meet international standards for kid's garments and apparels.
  - Dyeing, printing and finishing of tent fabrics was also carried out for the first time.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Title with authors	Journal	Volume	Pages	Year	Impact factor
Innovative use of outdated tetracycline hydrochloride drug to dye Jute (HYPERLINK "http://tjprc.org/journals.php?jtype=2&id=51) Prashant Gangawane and Dr. Usha Sayed	International Journal of Medicine and Pharmaceutical Sciences	3(4)	23-28	Oct 2013	5.1064

Innovative use of unexploited doxycycline hydrochloride drug to dye Nylon (HYPERLINK "http://tjprc.org/journals.php?jtype=2&id=51) Prashant Gangawane and Dr. Usha Sayed	International Journal of Medicine and Pharmaceutical Sciences	4(1)	9-12	2014	5.1064
Innovative use of outdated Doxycycline hydrochloride drug to dye Wool (HYPERLINK "http://tjprc.org/journals.php?jtype=2&id=51) Prashant Gangawane and Dr. Usha Sayed	International Journal of Medicine and Pharmaceutical Sciences	4(2)	43-46	2014	5.1064
Dyeing of Nylon with discarded tetracycline hydrochloride drug Prashant Gangawane and Dr. Usha Sayed	International Journal of Textile and Fashion Technology	3(1)	49-54	2013	2.9594
Dyeing of Wool with discarded tetracycline hydrochloride drug Research Prashant Gangawane and Dr. Usha Sayed	Journal of Pharmacy and Technology	6(3)	244-246	2013	
Development of biodegradable polysaccharide by modified process from sea desecrates and its proximate analysis Asian Nikhil D. shirsat, Dr. S.A. Momin, Dr. Usha Sayed	Journal of Research in Chemistry	5(8)		2012	0.22
Synthesis of water soluble chitosan from marine waste and its application in wet wipes formulations Asian Nikhil D. Shirsat, Dr. S.A. Momin, Ashish A. bandekar, Dr. Usha Sayed	Journal of Research in Chemistry	5(11)		2012	0.22
Application of herbs on Fabric Dr. Usha Sayed, L.S. Jawale	Colourage	53(4)	129-133	2006	
Lyocell: Fiber of future Dr. Usha Sayed, M.R.Pratap, A.S.Singh, Y. N. Rane, A. L. Pawar	Colourage	49(10)	33-36	2002	
Jute and Jute Blends Dr.Usha Sayed, K. S. Joshi	Colourage	49(8	21-26	2002	

RESEARCH PUBLICATIONS SO FAR : 65

CONFERENCE PROCEEDINGS/PAPERS : 3

SEMINARS/LECTURES/ ORATIONS DELIVERED: 1

MASTERS AWARDED AS SINGLE GUIDE : 2

SUBJECTS TAUGHT :

Introduction to Technical Textiles, Chemistry & Application of Textile Chemicals, Technology of Dyeing & Printing, Technology of Wet Processing Machineries, Technical textile, Technology of Garment Processing, Chemistry of Textile Auxiliaries, Textile Machineries.

RESEARCH INTERESTS :

Textile Processing, Dyeing, printing, Bleaching, Finishing, Recycling and Reuse of Dyes & Chemicals, Surfactants, Synthesis of Specialty Chemicals, Laundry Chemicals, Enzyme technology, Polymers, fibre science, Technical textiles, natural dyes and polymers on

natural fibers, leather processing, super absorbent, processing of hosiery, garment processing, technical textile, processing of non-woven, processing of wipes, shoe technology, Nano silicon finishing.

RESEARCH STUDENTS :
Ph.D. (Tech.) - 1, Ph.D. (Sci.) - 1, M.Tech. - 3

RESEARCH PUBLICATIONS :
International - 06

PROFESSIONAL ACTIVITIES :
- Referee for Journal of polymer and Environment
- Member of Editorial Advisory Board of International Journal of Advanced Science and Engineering
- Chairperson of Adhoc Committee of Textile Technology (MU)
- Best Ph.D. Tech Thesis Committee,
- Referee- for Nirmala Niketan college for M. Sc. (Home Science).
- Referee- for SNDT.
- Examiner for Nirmala Niketan college for M. Sc. (Home Science).
- Student counselling,
- Trained and Lectured students of National Institute of Fashion Technology [NIFT

PROFESSOR RAVINDRA D. KALE

B. Sc., B.Sc. (Tech.), M.Tech., Ph. D.Tech.
Assistant Professor in Textile Chemistry

RESEARCH INTEREST AND EXPERTISE:
- Effluent treatment using nano particles
- Application of nano emulsions in Textiles
- Synthesis and application of nano particles
- Use of Polyelectrolytes Multilayers for imparting Novel Properties to Textile Polymers
- Green Composites
- Biodegradable packaging films and foams
- Functional Finishes for Natural & Synthetic Fibres,
- Use of Alternate sources of energy in Textile Processing,
- Processing of Polyester fibres at room temperature
- Modification of Synthetic Fibres by Melt Spinning,
- Application of Magnetic Field in Textile Processing

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:
- Member of Society of Dyers and Colorist
- Life Member of Indian Fibre Society
- Life Member of Indian Natural Fibre Society

PUBLICATIONS (PEER REVIEWED) SO FAR: 12
CONFERENCE PROCEEDINGS/PAPERS: 14
SEMINARS/LECTURES/ ORATIONS DELIVERED: 14
MASTERS AWARDED AS SINGLE/ CO-GUIDE: 05
H-INDEX : 1
CITATIONS : 3

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

A. Application of nanoparticles for Effluent treatment

The effluent discharged from textile process houses consist highly concentrated dyes wastewater. Most of the colorants are complex aromatic structures, which are difficult to dispose off by

natural methods. Azo dyes in particular are resistant to biodegradation. Reactive dyes are the most popular dyes used for dyeing cellulosic fibres and consequently their removal from wastewater is difficult due to their high solubility. At present different physical, chemical and biological methods are tried for dye removal or their decolorization but most of these methods have their own limitations. In our research work, we are investigating the efficacy of nanoparticles to decolorize coloured effluent obtained from textile wastewater.

B. Use of Nano emulsions in dyeing of synthetic fibres and its blends

Disperse dyes are non-ionic, having very limited solubility in water at room temperature and have substantivity for one or more hydrophobic fibres such as PET & PA. They are usually applied from a fine aqueous dispersion containing some dissolved dye. It is the aqueous solution from which dyeing takes place, despite the low water solubility of the dye. However for dyeing of substrate, size of disperse should be 1 micron or less & it should withstand temperature up to 140 deg C. Currently disperse dye size is reduced to such sizes with the help of milling process but is a time & energy consuming procedure.

In this project three types of nanodisperse dyes were prepared using oil in water nanoemulsions and applied on polyester and it's Blend.

Nanoemulsions were prepared by three methods: Ultrasonication,Phase inversion composition and Spontaneous emulsification process

Emulsion Characterization: Dynamic Light Scattering method for particle size determination

Part-I

Fabric : Micro denier polyester

The dyeing characteristics of micro denier polyester dyed with crude disperse dyes using these nanoemulsions and that dyed with commercial form of same dyes was compared at different temperatures.

Part-II

Fabric : Polyester/Wool Blends (55/45 and 70/30)

We have also dyed using nanodisperse dyes polyester-wool blend fabric to dye Polyester part. Wool portion was dyed with commercial Acid Dye.

Dyeing was done by one bath one step and two step process at boil at atmospheric pressure.

ADVANTAGES of nano emulsion technique

- The color values and strength of nanoemulsion assisted dyeing of fabric are higher than those of conventional dyeing process.
- Conventional process of dyeing polyester-wool blend, which is normally carried out in presence of carrier, have been replaced with dyeing using nanoemulsions with crude disperse dyes at 100°C without using any carrier or any other auxiliary by preserving its mechanical properties.
- Saves considerable amount of Energy, Time and Money
- Utilized in the conventional dyeing process, Eliminate milling process of disperse dyes to get finished dye,Eliminate chemicals used during conventional dyeing process like carrier, dispersing agent, leveling agent

So minimize the harm caused to the environment

C. Biodegradable foams

In this work, the conventional polystyrene foam products have been attempted to be replaced with promising biodegradable polymer based on carbohydrate compounds. The tensile strengths are almost comparable with the polystyrene foam. Also these sheets are completely biodegradable in soil. From the BOD tests, it was evident that it can be degraded by microbial action. Moreover by addition of hydrophobic formulation its water sensitivity is found to be reduced giving it requisite durability.

Hence such foams find promising applications in

packaging; the water sensitive ones could be used in medical fields for application in bandages with drug delivery actions. The packaging fields could be electronic packaging; food packaging etc. These foams can also be made stiff and used in geological applications as superabsorbent by introducing this property.

D. Biodegradable packaging films

Millions of tons of plastic waste, including refuse sacks, carrier bags and packaging, are buried in landfill sites around the world each year. Synthetic plastics are resistant to degradation, and consequently their disposal is fuelling an international drive for the development of biodegradable polymers. Starch is an inexpensive, annually renewable material derived from corn and other crops. Starch-based biodegradable polymers can be produced by blending or mixing them with synthetic polymers. By varying the synthetic blend component and its miscibility with starch, the morphology and hence the properties can be regulated easily and efficiently. These materials are mainly formed into films and sheets. The foams can be used as loose-fill in place of polystyrene.

The present work deals with the preparation of flexible films that have a diverse application in packaging sector. The work is divided into two parts; first is the preparation of films, i.e. Starch/PVA and CMC/PVA using plasticizers and second is modification of the prepared films to improve the properties like strength, moisture resistance and aesthetic appearance.

However the prepared films were found very water sensitive. Efforts were made to reduce water sensitivity of the film by adding different additives. We have also added certain reinforcements into the film to improve the tensile strength. The results with respect to tensile strength and elongation are adequate for the film to be used in packaging application. The biodegradability with respect to COD and BOD is measured and all the films are found biodegradable in nature. Studies to determine TG and moisture absorption of prepared films are in progress. Further studies are underway for aesthetic improvement of the film.

E. Nanotechnology using LBL Technique

Polyelectrolytes have been utilized in the formation of new types of functional materials through film formation of nanometric scale on the fibre surface. These thin films are constructed using layer-by-layer (LbL) technique. Polyelectrolytes, either cationic or anionic are adsorbed on the surface of the fibre and the surface charge is reversed, allowing the gradual and controlled build-up of electrostatic films of polycation-polyanion layers. The polyelectrolyte multilayer (PEM) film thus built by this method can be subjected to further modification to impart new functional properties to the fabrics onto which it is applied such as antimicrobial, super hydrophobic surface, mosquito repellant, optical anti-reflective coatings etc. In our research lab, we have been successful to incorporate ZnO nanoparticles on Nylon fabric by this method. The resultant fabric found to have antimicrobial properties. We are currently attempting to impart mosquito repellent properties to the fabrics by this technique using naturally occurring oils.

F. New Synthetic Fibre Processing technique through solvent crazing

Synthetic fibres can be modified at room temperature using solvent crazing technique. Solvent crazing permits us to add any additive into the yarn of synthetic fibres using so called active absorption media (AAM). The advantage of this method is, it combines the best of finishing method and the melt additive method which is normally used to incorporate any compound in the fiber without having any demerits of the above two methods. Process modifications are being carried out to dye and incorporate additives into the synthetic fibres at room temperature

on continuous production line without having to modify the process sequence or addition of any new machinery. This will avoid the processing of these fibres being done at higher temperature which require higher temperature and energy.

G. Application of Magnetic Field in Textile Processing

Reactive dyeing which is conventionally done at higher temperature for Vinyl Sulphone and H brand reactive dyes can be done at room temperature by magnetizing the water. Experiments performed on these classes of dyes showed good results with respect dyeing depth which is close to the conventionally dyed samples. Fastness property of magnetized dyeing of colour fastness to washing and light are also good and results are very similar to conventional dyed samples

As dyeing in presence of magnetic field is achieved at room temperature, energy saving is also achieved. Recently textile processing is focused on low salt or salt free reactive dyeing to reduce effluent load, which we are trying to achieve by carrying dyeing in magnetic environment.

H. Fibre Modification using nano additives

Application of nanoparticles such as naoclay, nano metals etc. during melt spinning of the synthetic fibres to modify its properties. The study of different types and concentration of nanoadditives during melt spinning of polymeric fibers vis-à-vis the improvement in number of properties throw light on structure property relationship.

I. Melt Blending

Melt blending of fibrous polymers has been reported to be a convenient tool. One of the area of my research is to study the changes in properties of the fibres like dyeability, moisture regain etc. brought about by melt blending of two components.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr.	TITLE AND AUTHORS	JOURNAL	VOL. NO.	PAGES	YEAR	Impact Factor
1.	Dyeing of Polyester and Polyamide at low temperature using solvent crazing technique- Part I R.D. Kale*, Gaurav Katre, Ashis Banerjee	Fibres and Polymers (ISSN: 1875-0052)	Accepted (Sept 2013)			
2.	Dyeing of Polyester-Wool Blend using Nanoemulsion Technique R. D. Kale, P. B. Kane, V. Gorade, A. Raybole	Conference proceeding in a book to be published by Wood head publication (Indo-Czech, International Conference on "Advancements in Specialty Textiles and their Applications in Material Engineering and Medical Sciences" - APRIL 2014)	--	--	April 2014	--

3.	Decolourization of C. I. Reactive Black 5 by PVP stabilized Nickel nanoparticles Dr. R. D. Kale, Prerana Kane, Namrata Phulaware	International Journal of Engineering Science and Innovative Technology (ISSN: 2319-5967)	3	2	2014	1.7
4.	Dyeing of Polyester using Crude Disperse Dyes by Nanoemulsion technique. R.D. Kale*, Prerana Kane, Kumud Arora, Siddesh Pradhan	International Journal of Scientific Engineering and Technology (ISSN: 2277-1581)	3(2)	133-138	2014	0.489
5.	Synthesis of Titanium dioxide Nanoparticles and Application on Nylon fabric using Layer by Layer technique for Antimicrobial Property R. D. Kale and Chet Ram Meena	Advances in Applied Science (ISSN: 0976-8610)	3 (5)	3073-3080	2012	
6.	Polyester Nanocomposite Fibers with Improved Flame Retardancy and Thermal Stability Teli M D; Kale Ravindra	Polymer Engineering and Science (ISSN: 1548-2634)	Published online	1148-1154	2012	1.302
7.	Polyester Nanocomposite fibers with Antibacterial Properties Mangesh D. Teli and Ravindra D. Kale	Advances in Applied Science (ISSN: 0976-8610)	2(4)	491-502	July 2011	
8.	Synthesis and application of zinc oxide nanoparticles on nylon fabric by layer by layer technique as antimicrobial property Ravindra D. Kale and Chet Ram Meena	International Journal of Basic and Applied Chemical Sciences -ISSN: 2277-2073 (Online)	1 (1) October-December	1-8	2011	
9.	Microfibre: Processing and Applications R D Kale	Journal of Textile Association (ISSN: 03684636)	70(5)	223-239	Jan-Feb 2010	
10.	Application of Polyelectrolyte Multilayers on Textile Polymers Chetram Meena , R D Kale	International Dyer (ISSN: 0020-658X)	--	26-29	Nov 2008	

SUBJECTS TAUGHT:

Technology of Textile Polymers, Polymer Chemistry, Testing & Analysis of Fibres, Testing of Textile Materials, High tech & Industrial Fibres, Technology of non-wovens, Dyeing of Natural and Synthetic fibres, Lab Testing of Textiles and Garments, Fastness Lab

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) - 01
M.Tech. - 06
M.Sc - 02
Undergraduate
Summer Fellows - 02
Ph.D.(Sc) - 02

RESEARCH PUBLICATIONS:

International - 04
(Peer-reviewed) - 04
Conference proceeding - 01

SPONSORED PROJECTS :

Government - 02

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- TEQIP coordinator of the dept
- Part of the Chief Conductor cum Senior Examiner for all the examinations conducted for UG and PG students
- Committee member of the MIS system of the Institute
- Placement coordinator the dept
- IPT in charge for T Y B Tech and M Sc Textile Chemistry students
- Coordinator of the dept for UGC-SAP programme
- Divisional Representative of the dept for IPC
- Member of the Cultural Activity Cell of the Institute
- Member of the Admission Committee of the Institute
- Member of the "Shri G.M. Abhyankar Students'Travel Assistance" of the Institute
- Examiner for Practical Exam in SASMIRA, Worli
- External Examiner for NMIMS(Deemed to be Univeristy), Shirpur
- Assisting NMIMS(Deemed to be Univeristy), Shirpur for designing the DTT course syllabus
- Expert on the committee formed by by Dept of Health Sciences, Maharashtra State that is tasked with preparing specification for different garments/items that is used in Govt. mental hospitals

MEMBERSHIP OF EDITORIAL BOARDS WITH NAME OF JOURNAL AND AGENCY :

- Referee, Clothing and Textiles Research Journal, Hongkong
- Referee, Journal of Textile Association, India
- Referee, Bombay Technologist, India

SUJATA SIVARAMAKUMAR PARITI

B.Sc., B.Sc. (Tech.), M. Sc. (Tech.), Ph. D. (Tech)
Adjunct Professor

SUBJECTS TAUGHT :

Technology of Textile Coloration, Technology of Wet Processing Machinery, Technology of Finishing – I, Technology of Finishing – II, Textile Process House Management, Dye house lab, Textile Pre-treatment Lab, Energy and Water Conservation in Processing Industries, Finishing and Evaluation of Textiles, Textile Finishing and Finishing Lab.

RESEARCH INTERESTS :

- Colour removal from effluents.
- Printing with naturally available substitutes, especially for black prints.
- Dyeing with ONLY natural

colorants and mordants.
- ❖ Substitute for wax in printing.
- ❖ Studies on cleaner technologies for sustainable textile practices.
- ❖ Study of Carbon fibre reinforced composites.
- ❖ Natural fibre composites.
- ❖ Synthesis of Bioethanol .
- ❖ Phase change materials.
- ❖ Ayurvastra

RESEARCH STUDENTS : 03

PROFESSIONAL ACTIVITIES:
Member, Society of Dyers and Colourists (SDC), London, for Mumbai Region from 2001.

AWARDS OF VARIOUS FELLOWSHIPS

Sr. No.	Name of Fellowship	Number of fellowships
1.	UGC-SAP	25
2.	UGC-JRF (M Tech-First and Second Year)	16
3.	TEQIP for M Tech and PhD	12
4.	Others (DBT/Tutorship/Industry sponsored)	6

SUPPORT STAFF

V. G. Phalke
Dye house Assistant

J. I. Rana
Lab Assistant

S. S. Chavan
Lab Assistant

S. B. Gaikwad
Lab Assistant

J. B. Mohite
Lab Attendant

V. N. Kamble
Lab Attendant

R. R. Nandvisakar
Lab Attendant

P. M. Khot
Lab Attendant

J. R. Singh
Lab Attendant

A. P. Ghadge
Lab Attendant

Bhagyashri Joshi
Jr. Typist Clerk

SPONSORED PROJECTS:

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Principal Investigator	Total Amount	Research Fellows
Teqip-II	Development of mosquito repellent textilesles	9 months (April to Dec 2014)	Professor Dr. M.D.Teli	13,14, 000/-	
UGC (UGC- Major)	Decolouris-ation & recycling of coloured waste water of textile processing & dyestuff industry	2012-2015	Professor S. R. Shukla	1st instalment: 7,80,000 / 2nd instalment : Nil	
FIST, DST, New Delhi		5 yrs	Professor R. V. Adivarekar	Rs.150 lakhs	
MODROBS, All India Council for Technical Education, New Delhi	Modification of Synthetic Fibres and their colouration	5 yrs	Professor R. V. Adivarekar	Rs.5 lakhs	
TEQIP II		2011 -14	Professor R. V. Adivarekar	Rs. 80,55, 730 /-	
Centre of Excellence - Process Intensification TEQIP-II (World Bank Sponsored)	Dyeing of Polyester and its blend using Nano emulsions	2013 -2014	Dr. R. D. Kale	Rs. 16, 40,000/-	Mr. Vikrant Gorade – Ph.D. (Textile Chemistry) & Ms Prerana Kane (Ph.D.Tech.)
Centre of Excellence -Process Intensification- TEQIP-II (World Bank Sponsored)	Development of Mosquito-repellent textiles	2013-2014	Dr. R. D. Kale	Rs. 13,14, 000/-	Latika Bhatt -Ph.D. (Textile Chemistry)

INDUSTRIES:

Sponsor	Title:	Duration	Total amount	Principal Investigator	Research Fellows:
Unilever Industries Pvt. Ltd.	Deposition of Actives	1 Year	6 Lakh	Professor(Dr.) R. V. Adivarekar	Ms. Rachana Harane
Unilever Industries Pvt. Ltd.	Dyeing of Fibres	1 Year	6.60 Lakh	Professor R. V. Adivarekar	Ms. Pallavi Madiwale

NATIONAL AND INTERNATIONAL COLLABORATIONS

NATIONAL

Memorandum of under-standing (MOU) is signed by the Dept with the following institutes;

- BTRA, Mumbai
- WRA, Thane
- CIRCOT, Mumbai and
- VJTI, Matunga(E), Mumbai
- Dystar India Private Limited, Navi Mumbai
- Addis Ababa Science & Technology University (AASTU),Addis Ababa, Ethiopia
- ETIDI, Ethiopia
- Royal Melbourne Institute of Chemical Technology(RMIT), Australia
- MoU with "School of Material Science, Manchester University" in UK is in process.
- MoU with "TEXTILE COMMITTEE, Govt of India" is in process.

INTERNATIONAL

Professor M. D. Teli

- Collaboration with University of Mauritius and one Student-cum-Faculty from that University, is being supervised by him as co-guide and her international supervisor.
- He assisted the same university in organizing International Conference on "Sustainability in Textiles" as a member of the advisory committee.
- He is having working relationship with the faculty from Educational Institutions in Israel, namely Shenker's College of Fashion and also delivered lecture in Technion University, Haifa, Israel.
- He is in process of forming link with University of Leeds, University of Manchester and University of Bolton.

PUBLICATIONS

PROFESSOR (DR.) R. V. ADIVAREKAR

No.	Title and authors	Journal	Vol. No	Pages	Year
1.	Effect of Dispersing Agents on Synthesis of Nano Titanium Oxide and its Application for Antimicrobial Property. Khurana N., Adivarekar R. V.	Fibres& Polymers	14(7)	1094-1100	July 2013
2.	One bath finishing of flame retardancy and water repellancy of PC blend fabric, Geetal Mahajan, Rohit Khare, Neha Mehra, R V Adivarekar	Man Made Textiles in India	Vol. 41 (8)	278-282	August 2013
3.	Use of sesame oil cake for lipase production from a newly isolated marine Bacillus sonorensis, Madhura Nerurkar, Manasi Joshi and R.V. Adivarekar	Innovative Romanian food Biotechnology	Vol. 13	11-17	September 2013

4.	Extraction of Fibres from Saccharum Munja Grass and its Application in Composites Girendra Pal Singh, Pallavi Vishwas Madiwale, Ramanand N Jagtap, Ravindra V Adivarekar	Journal of Applied Polymer Science	Online		2 may 2014
5.	Cationisation of Cotton for low salt dyeing using HE reactive Dyes part – I. Anindya Chandra, Chet Ram Meena, Abhinav Nathany, R V Adivarekar	Asian Dyer	Vol. 10 (5)	35-41	Oct-Nov 2013
6.	Cationisation of Cotton for low salt dyeing using HE reactive Dyes part – II. Anindya Chandra, Chet Ram Meena, Abhinav Nathany, R V Adivarekar	Asian Dyer	Vol. 10 (6)	39-43	Dec13-Jan 2014
7.	Synthesis and application of vinyl sulphone disperse reactive dyes for polyester. Chet Ram Meena, Girendra Pal Singh, R V Adivarekar, N. Sekar	International Journal of Chemtech Research	Vol. 5	585-591	June 2013
8.	Use of natural dye from serratia marcescrns subspeices marcescens in Dyeing of textile fabrics. Madhura Nerurkar, Jyoti Vaidyanathan, R V Adivarekar, Zarine Bhathena Langdana	Octa Journal of Environ-mental Research	Vol. 1(2)	129-135	June 2013
9.	Use of sesame oil cake for lipase production from a newly isolated marine Bacillus sonorensis.Madhura Nerurkar, Manasi Joshi, R V Adivarekar	Innovative Romanian Food Biotechnology	Vol. 13	11-17	Sept 2013
10.	Scouring of cotton using marine pectinase. Manasi Joshi, Madhura Nerurkar, Pallavi Badhe, R V Adivarekar	Journal of Mole-cular Catalysis B: Enzymatic	Vol. 98	106-113	Oct 2013
11.	Adsorption kinetic study of Cuminum Cymnium L dyeing on silk. Priti B. Tayade, R. V. Adivarekar	Journal of Envi-ronmental Chemical Engineering	Vol. 1(4)	1336-1340	Oct 2013
12.	Ecofriendly flame retardant for cotton. Satish Dasaewar, Che t Ram Meena, Neha Khurana, RV Adivarekar	Melliand International	Vol. 19 (3)	180-183	2013

13.	Reactive Dyeing of Cotton with LBL Technique. S.D Phadke, S. Maiti, P.V Madiwale, R V Adivarekar	Journal of Textile Association	Vol. 74 (3)	122-125	Sept-Oct 2013
14.	Optimisation of concentration of ngredients for simultaneous dyeing and finishing using response surface methodology	The Journal of Textile Institute	Article in press	-	-
15.	Cationising of Cotton for reduced electrolyte consumption in dyeing with ME reactive dyes, Anindya Chandra, ChetRam Meena, Girendra Singh, R V Adivarekar	Colourage		30-40	May-2013
16.	Dyeing of silk fabric with Cuminum Cyminum L as a source of natural dye	International Journal of Chemtech Research	Vol. 5 (2)	699-706	June 2013
17.	A series of papers on biotechnology and its application in textiles, Damle, M.A., Nerurkar, M.P., Adivarekar, R.V.	Journalof Textile Association	Volume 74, Issue 6	Pages 373-379	March/ April 2014

PROFESSOR M.D. TELI

Sr. No.	Title and authors	Journal	Vol. No.	Pages	Year
18.	Polypropylene / Poly (Trimethylene Terephthalate) Meltblend Fibres With Enhanced Dyeability. M.D.Teliand P.V. Desai	International Journal of Engineering Research & Technology	Vol. 2	Issue 7 pp.24 -29	July 2013
19.	Microwave assisted Extraction of Natural Dyes and Natural Mordants vis a vis Dyeing, Teli M.D. and Sheikh J., Jagtap P. S.	Asian Dyer	Vol 10	Isue 4 32-38	Aug 2013
20.	Functional Modification of Bamboo Rayon (Cellulose) fabric to render it Antibacterial and UV protectiveTeli M.D.and Sheikh J.,	Advanced Material Research-+ Multi-Functional Materials and structures IV	Vol 747	pp 509 -513	Aug 2013
21.	Exploratory investigation of chitosan as mordant for eco-friendly antibacterial printing of cotton with natural dyes. Teli M.D.,Sheikh J., Pragti shastrakar	Journal of Textiles	-	6 pages	Aug 2013
22.	Modified Bamboo rayon copper composite fabric as antibacterial textiles Teli M.D., Sheikh J.,	International journal of Biological macromolecules	Vol 61	302-307	Oct 2013

23.	Wool, naturally dyed but also hygienic Teli M.D.,Sheikh J., Chandni Pradhan	Asian dyer	Vol 10 No 2	48-51	Oct 2013
24.	Combined antibacterial and flame-retardant finishing of denim fabric using chitosan formulation. M.D. Teli, J. Sheikh, L. Gomathi	Melliand International	Vol 19/4	229-231	Nov 2013
25.	Application of modified coir Fiber as Eco-friendly oil sorbent M.D.Teli & Sanket Valia	Journal of fashion technology & textil engineering	1(1)	1-5	Nov 2013
26.	Temple waste Marigold\Dyeingand Antibacterial finishing of Bamboo rayon using Natural Mordants.Teli M.D. and Sheikh J., Kamble M. and Trivedi R.,	International Dyer	Vol 199/1	28-32	Jan 2014
27.	Bamboorayon-copper nanoparticles composites as durable antibacterial textile material. M.D.Teli & Javed Sheikh	Composite Interfaces	21:2	161-171	2014
28.	Eco-friendly Antibacterial Printing of Wool Using Natural Dyes. Teli MD*, Javed Sheikh and Pragati Shastrakar	Textile Science & Engineering	Vol.4 Issue 2	5 pages	Jan 2014
29.	Eco-friendly colouration of natural fibre Pandanus Utilis. Teli M.D. , Sanket Valia and Shruti Venkatram	Asian Dyer	Vol 11 No. 1	24-26	Feb-March 2014
30.	Bamboo Rayon-ZnO Nanoparticles Composite as multifunctional textile materials. M.D Teli and Javed Sheikh	Journal of Textiles	-	5 pages	2014
31.	Carboxy-methylatedd Karaya Gum - this to be added after Reactive Printing of cotton fabric using	Internat-lonal Dyer	Vol. Issue 4	4 pages	2014
32.	Healing Touch of Textiles: 1 Colour therapy. Teli M.D. , G Patil and A Mallick	Asian Dyer	Vol.11 Issue 2	33-37	April-May 2014
33.	Influence of substitution of madder by marigold incolouration of natural fibres M.D. Teli, Sanket Valia & Asmita Jadhav	Journal of Textile Association	Vol 74 Issue 3	117-121	Sept 2013
34.	Hygenic wool through dyeing with green tea. M.D.Teli, Monika Mali	Textile Value Chain	Vol 2(3)	57-60	Oct 2013
35.	Flower waste from temple for dyeing of cotton and Cotton/Silk. M.D.Teli, Sanket P. Valia & Dhanashri Kolambkar	Journal of Textile Association	Vol 74 issue 4	210-214	Nov-Dec 2013

36.	Cost competitivenessin Textiles a Clothing Sector. Professor M. D. Teli	Textile Value Chain	Vol 2 (4)	25-29	Jan 2014
37.	"Branded or Non Branded Garments?" A study on Consumers Preference M. D. Teli*, Sanket P. Valia, Shruti Venkatram	Journal of Textile Association	Vol 74 issue 5		Jan-Feb 2014
38.	Building sustainable Value chain: is it a choice or Compulsion? M. D. Teli, Shraddha Teli & Sanket Valia.	Textile Value Chain	Vol 3.1	35-39	April 2014
39.	Dyeingof OrganicCotton Fabric with Lac dye using different mordants M. D. Teli*, Sanket Valia, Dhanashri Kolambkar, Rupa Trivedi and Maruti Kamble.	Journal of Textile Association	Vol 74 issue 6	337 -341	Mar -Apr 2014

PROFESSOR (DR.) S. R. SHUKLA

Sr. No.	Title and authors	Journal	Vol. No.	Pages	Year	Impact Factor	Citations
40	Biosorption of Cu(II), Pb(II), Ni(II), and Fe(II) on alkali treated coir fibers. Pushkar M. Shukla, S.R. Shukla	Seperation Science and Technology	48 (3)	421-428	2013	1.088	02
41.	Recycling of PET waste using 3-amino-1-propanol by conventional or microwave irradiation and synthesis of bis-oxazin there from. Rikhil V. Shah, Vasant S. Borude and Sanjeev R. Shukla	Journal of Applied Polymer Science	127 (1)	323-328	2013	1.289	06
42.	Microwave synthesis and antibacterial activity of 1,4-bis (5-aryl-1,3,4-oxadiazole-2-yl) benzene derivatives from terephthalic dihydrazide obtained through aminolysis of pet bottle waste. Yogesh S. Parab, Sanjeev R. Shukla	Waste and Biomass Valorization	4(1)	23-275	2013	-	-

43	Novel synthesis, characterization of n1,n1,n4,n4-tetrakis (2-hydroxyethyl) terephthalamide (theta) and terephthalic acid (TPA) by depolymerization of pet bottle waste using diethanolamine. Yogesh S. Parab & Sanjeev R. Shukla	Journal of Macromolecular Science, Part A: Pure and Applied Chemistry	50 (11)	1149-1156	2013	0.887	-
44.	Phosphine-free copper-mediated sonogashira coupling reaction. Vasant S. Borude, Rikhil V. Shah, Sanjeev R. Shukla	Monatshefte für Chemie - Chemical Monthly	144 (11))	1663-1669	2013	1.532	-
45.	Synthesis of β-amino alcohol derivatives from phenols in presence of phase transfer catalyst and lipase biocatalyst. Vasant S. Borude, Rikhil V. Shah and Sanjeev R. Shukla	Current Chemistry Letters	2(1)	1-12	2013	-	-
46.	Equilibrium and kinetic study of Uranium (IV) from aqueous solution by Citrus limetta peels. Sachin Gondhalekar, Sanjeev R. Shukla.	Journal of Radioanalytical and Nuclear Chemistry	300 (2)	1-7	2014	1.520	1
47.	Novel synthesis, characterization and application of Dibutyrate bis (2-hydroxyethyl) Terephthalamide as a Plasticizer in PVC Compounding. Yogesh Parab, Sanjeev R. Shukla.	Polymer Bulletin	DOI 10. 1007/ s00289 - 014- 1218-y	-	-	1.332	-
48.	Recovery of Ga (III) by raw and alkali treated citrus limetta peels. Sachin Gondhalekar, Sanjeev R. Shukla.	International scholarly Research Notices	2014	1-10	2014	-	-

DR. USHA SAYED

Sr. No	Author's name	Name of the journal	Volume	Page no	Year
49.	Innovative use of outdated tetracycline hydrochloride drug to dye Jute Prashant Gangawane and Usha Sayed	International Journal of Medicine and Pharmaceutical Sciences	3(4)	23-28	Oct 2013
50.	Dyeing of Wool with discarded tetracycline hydrochloride drug Prashant Gangawane and Dr. Usha Sayed	Research Journal of Pharmacy and Technology	6(3)	244-246	March 2013
51.	Dyeing of Nylon with discarded tetracycline hydrochloride drug Prashant Gangawane and Dr. Usha Sayed	International Journal of Textile and Fashion Technology	3(1)	49-54	March 2013

DR. R. D. KALE

Sr. No.	Title and Authors	Journal	Vol. No.	Pages	Year
52.	Effect of the nanoclay loading on Zeta potential of Polyester nanocomposite fibre M.D.Teli*, R.D. Kale	Polymer Engineering and Science	Communicated (April 2013)		
53.	Dyeing of Polyester and Polyamide at low temperature using solvent crazing technique- Part I R.D. Kale*, Gaurav Katre, Ashis Banerjee	Fibres and Polymers (ISSN: 1875-0052)	Accepted (Sept 2013)		
54.	Dyeing of Polyester-Wool Blend Using Nanoemulsion Technique R. D. Kale, P. B. Kane, V. Gorade, A. Raybole	Conference proceeding in a book to be published by Wood head publication (Indo-Czech, International Conference on "Advancements in Specialty Textiles and their Applications in Material Engineering and Medical Sciences" - APRIL 2014	--	--	April 2014
55.	Decolourization of C. I. Reactive Black 5 by PVP stabilized Nickel nanoparticles Dr. R. D. Kale, Prerana Kane, Namrata Phulaware	International Journal of Engineering Science and Innovative Technology (ISSN: 2319-5967)	3	2	March 2014
56.	Dyeing of Polyester using Crude Disperse Dyes by Nanoemulsion technique. R.D. Kale*, Prerana Kane, Kumud Arora, Siddesh Pradhan	International Journal of Scientific Engineering and Technology (ISSN: 2277-1581)	3(2)	133-138	Feb. 2014

DR. SUJATA PARITI

Sr. No.	Title and authors	Journal	Vol. No.	Pages	Year
57.	Greener opportunities and solutions in textiles (part 1) , pariti sujata,sharmistha chattopadhyay	Dye chem pharma business news	Xviii, no. 3	31	2013
58.	Greener opportunities and solutions in textiles (part 2), pariti sujata,sharmistha chattopadhyay	Dye chem pharma business news	Xviii, no. 4	32	2013
59.	PLA (polylactic acid) : new era of textiles , pariti sujata	Business news	Xviii, no.5	38	2013
60.	Biotechnology in textiles, pariti sujata,	Dye chem pharma business news	Xviii (8),	35	2013
61.	Corn fibre : an innovative eco-friendly technology, pariti sujata	Dye chem pharma business news	Xix (3),	36	2014
62.	Performance enhancement of textile, pariti sujata	Dye chem pharma business news	Xvii (9),	43	2013

BOOKS/ BOOK CHAPTERS

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
1	Professor Dr. M. D. Teli	Nano Silver for Imparting Antibacterial Properties to the Textile Substrates	Mahmood Aliofkhazraei	Nova Science Publishers	U.S.A	2013	365-386
2	Professor Dr. M. D. Teli	Softening finishes for textile and Clothing	Roshan Paul	Woodhead publication	U.K	2014	In Press

OUTSIDE PARTICIPATION

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR

Lectures attended

Sr. No.	Lecture	Speaker	Date
1.	Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology	Dr. Prasad Potluri University of Manchester, UK	12-Jul-13
2.	Ecological Considerations of Colorants for Textile Applications	Dr. Siva Rama Kumar Pariti, Industry expert, Dystar India Pvt. Ltd.	02-Sept-13
3.	Surface Modification Using Dendritically Functionalised Polymers	Dr. Imtiyaz Ansari Sheffield Hallam University, UK.	4-Jan-14
4.	Developing Novel Biomaterials Using Nanotechnology	Professor Sandra Downes Professor of Biomaterial Science at "School of Material Science, Manchester University" in UK.	20-Jan-14

5.	Elemental & Molecular Spectroscopy in Textile Industry	Mr. Prashant Shah & Mrs. Purnima Parkhi Product manager for elemental and molecular spectroscopy, Agilent technologies	22-Jan-14
6.	Textile - A Road Map to 2025 and Globalization	Professor Rishi Jamdagni Director, The Technological Institute of Textile & Sciences, Bhiwani, Haryana	30-Jan-14
7.	Workshop on Awareness of Sport Textile, Institute of Chemical Technology, Matunga and WRA, Thane under TEQIP Phase-II.	Dr. M. K. Talukdar (Kusumgar corporate) Dr. M. R. Choudhari (DD, WRA) Mr. Dakshesh Desai (Premier colour scan) Dr. K. H. Prabhu, Mr. Shishir Taygi Mr. Mayur Basuk Mr.Jagadanand Behera, (Scientist, WRA)	27th& 28th Jan 2014
8.	Higher education opportunities in France	Mrs. Amruta Datar Counseller for Mumbai, Campus France, India	24-Jan-14

Paper and Poster presentations are given in following table:

Sr.	Authors	Presentation type: Paper/ poster	Title	Conference name	Date (from -to)	Venue	Organized by	Year
1.	Shyam Phadke, Saptarshi Maiti and R.V. Adivarekar	Paper	Dyeing of cotton with reactive dyes using LBL technique	Advances in fibers, finishes and technical textiles	1-2nd Oct 2013	Orchid, Mumbai	AATCC and Tecnitex, Bangalore	2013
2.	Girendra Pal singh and R.V. Adivarekar	Paper	Use of Oreodoxa Regia fibre in composites	Advances in fibers, finishes and technical textiles	1-2nd Oct 2013	Orchid, Mumbai	AATCC and Tecnitex, Bangalore	2013
3.	Geetal Mahajan and R.V. Adivarekar	Poster	Combined finishing of flame retardancy and water repellency on P/C blend, Polyester and cotton fabric	Advances in fibers, finishes and technical textiles	1-2nd Oct 2013	Orchid, Mumbai	AATCC and Tecnitex, Bangalore	2013
4.	Priti B. Tayade, R. V. Adivarekar	Poster	Couropita guianesis: A source of Natural Indigo dye	Pharmacognosy, Phytochemistry & Natural Products	Oct 21-23 2013	Radisson Blue Plaza Hotel, Hyderabad	OMICS Group	2013

PROFESSOR (DR.) MANGESH D. TELI

CONFERENCES

Sr.	Title of The paper with Authors	Conference Name	Place	Month & Year
1.	Functional Modification of Bamboo Rayon (Cellulose) fabric to render it Antibacterial and UV protectiveTeli M.D. and Sheikh J.,	4th International conference on Multi-Functional Materials and Structures (MFMS 2013)	Bangkok, Thailand	July 2013
2.	Cellulose-Metal Nanoparticles Composite Multifunctional Textile Materials. Teli M.D.	Advances in Functional textiles.	The Textile Institute, Manchester	July 2013
3.	Mosquito Repellent, Fragrant and Disperse Dyeable multifunctional Polypropylene fibers. Teli M.D. ,Sabale A.G. and Desai P.V,	International Conference on Advances in Fibers, Finishes, Technical Textiles and Nonwovens (AFFTTN)	Mumbai, India	October 2013
4.	Modification of bio-materials for functional application M. D. Teli, Valia S. P.	International conference on advanced Polymeric Materials (ICAPM 2013)	ICAPM, Kottayam	October 2013
5.	Modified Bamboo rayon as durable multifunctional textiles. Javed Sheikh, M.D. Teli	2nd National conference on emerging trends in Textile, Fibre & Apparel engineering. (ETTFAE-2013,GCETTB)	Govt. College of Engineering & Textile Technology, Behrampore, West Bengal.	December 2013
6.	Wash durable immobilization of ZnO on grafted bamboo rayon for functional textiles. Javed Sheikh, M.D. Teli	Chemcon 2013	ICT, Mumbai	December 2013
7.	Application of sustainable modified natural sorbents in oil spill cleanup for environmental protection M.D. Teli & Sanket Valia	International conference on environment and sustainable technologies (iCEST-2014)	Manipal University, Karnataka	January 2014
8.	Designing of Cellulosic Functional materials using Nano technology. M.D. Teli	"Design and Manufacture of Technical Textile Materials and Products"; 27TH Convention of Textile Engineers. Institute of Engineers.	KSR College of Technology, Trichongode	February 2014
9.	Polyaniline based Conductive Textiles for Technical Textiles Application." M.D.Teli*, S. Dash and P.V.Desai	"Design and Manufacture of Technical Textile Materials and Products''; 27th Convention of Textile Engineers.	KSR College of Technology, Trichongode	February 2014

10.	Optimization of Process Parameters for UV and Antibacterial finishing of Cotton using Cerium Oxide. M.D.Teli, Parag Bhavsar.	"Design and Manufacture of Technical Textile Materials and Products''; 27TH CONVENTION OF TEXTILE ENGINEERS.	KSR, Trichongode	February 2014
11.	Application of Nanoparticles for Functionalization of Textile Substrate. M.D.Teli, Javed Sheikh and Parag Bhavsar.	Advances in Functional, Smart and Innovative Textiles (AFSIT-2014)	PSG Institute of Advanced Studies, Coimbatore	February 2014
12.	Eco-friendly multifunctional finishing of cotton using chitosan extracted from bio-waste. M.D.Teli, Javed Sheikh	International Conference Emerging Trends in Traditional and Technical Textiles. (ICETT 2014)	NIT, Jalandhar	April 2014
13.	In-situ polymerisation of multiwalled carbon nanotubes doped Polyaniline onto textile substrates. M.D.Teli, P.V.Desai	Indo-Czech International Conference," Advancement in Speciality Textiles and their applications in Material Engineering and Medical Sciences" (ICIC 2014)	KCT, Coimbatore	April 2014
14.	Wash durable functionalization of cellulosic material using ZnO nanoparticles. M.D.Teli, Javed Sheikh	Indo-Czech International Conference, " Advancement in Speciality Textiles and their applications in Material Engineering and Medical Sciences" (ICIC 2014)	KCT, Coimbatore	April 2014

PROFESSOR (DR.) SANJEEV R. SHUKLA

ORAL PRESENTATIONS

Sr. No.	Title of The paper with Authors	Conference Name	Place	Month and Year
1.	workshop on Sportech, ICT & WRA, Prasun Kumar, Saket Kulkarni, Anjum Ahmad, Sajir Mallick.	ICT and WRA	Thane,	27th-28th Jan 2014
2.	CO2 utilization & water treatments, Namata Patil, Neha Parmar.		ICT, Mumbai	26th and 27th Nov 2013
3.	Emerging trends in traditional and technical textiles. Namata Patil & Neha Parmar, Shweta Vyas & Umesh Kore, Saket Kulkarni, S.R. Shukla.		NIT, Jalandhar	11th -12th April 2014
4.	Sportech, Umesh Kore, Shweta Vyas	ICT & WRA	Thane	27th-28th Jan 2014
5.	Ion Chromatography, Umesh Kore, Saurabh Singh.	SIES college	Nerul	21st May 2014
6.	Bioprocessing, Neha Parmar, S.R. Shukla	Bioprocessing India 2013	IIT Delhi	5th – 7th Dec 2013

DR. USHA SAYED

Sr. No.	Authors	Presentation type: Paper/ poster	Title	Conference Name	Venue	Year
1	Dr. Usha sayed	Poster	Application of variously produced nanoparticles of, Cu, Ag and Chitosan on Textile substrates to produce functional Textiles	UTIB R & D brokerage Event, Turkey	Turkey	2014
2	Dr. Usha Sayed	Poster	Water soluble chitosan and its derivatives, nano chitosan on textile substrates to obtain medical, smart and functional textiles	UTIB R & D brokerage Event, Turkey	Turkey	2014
3	Dr. Usha Sayed	Poster	Application and production of nano-ZnO on synthetics to produce functional textiles	UTIB R & D brokerage Event, Turkey	Turkey	2014

DR. RAVINDRA D. KALE

Sr. No.	Title of The paper with Authors	Conference Name	Place	Month & Year
1.	"Solvent crazing of Textile polymers" R D Kale and Prabhat Bansa	Affichem Paper Presentation in Nanotechnology at Exergy 2013	ICT, Mumbai, India	17th to 20th January 2014
2.	"Decolourization of Effluent using nano particles" R D Kale and Prerana Kane	Seminar organized by Society of Dyers and Colourist	Society of Dyers and Colourist, ICT, Mumbai, India	20 Sept 2013
3.	Decolourization of Effluent using nano particles"	R D Kale and Prerana Kane	Paper was selected	in AATCC's 2014 International Conference
4.	R D Kale , Prerana Kane and Abhishek Raybole	Indo-Czech International Conference (ICIC2014) on Advancements in Specialty Textiles and their Applications in Material Engineering and Medical Sciences	Kumaraguru College of Technology, Coimbatore	29th & 30th April 2014
5.	Decolourization of C. I. Reactive Blue 21 by PVP stabilized Nickel nanoparticles R D Kale and Prerana Kane	International Conference on "Effects of Emissions & Effluent on Environment-2014"	AU College of Engineering (A), Visakhapatnam, Andhra Pradesh	30th June and 1st July 2014

DR. SUJATA SIVARAMAKUMAR PARITI

Sr.	Topic & Authors	Conference	Venue	Date
1.	Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology	Lecture	ICT, Mumbai	12 July, 2013
2.	Ecological Considerations of Colorants for Textile Applications	Lecture	ICT, Mumbai	2 nd September, 2013.
3.	Effective Literature Survey	Lecture	ICT, Mumbai	15 January, 2014
4.	Developing novel biomaterials using nanotechnology	Lecture	ICT, Mumbai	22 January, 2014
5.	Higher education opportunities in France	Lecture	ICT, Mumbai	24 January, 2014
6.	Awareness of Sport Textile	Workshop	ICT, Mumbai	27 & 28 January, 2014
7.	Textile - A road map to 2025 and globalisation	Lecture	ICT, Mumbai	30 January, 2014
8.	Biophysical Instruments	Lecture	ICT, Mumbai	14 April, 2014

DEPT CONDUCTED FOLLOWING ENDOWMENT LECTURES/INVITED LECTURES FOR THE STUDENTS OF THE TEXTILE DEPT AND ALUMNI:

Sr. No.	Type of Endowment/ Lecture name	Speaker	Topic	Date
1.	Class of 1966 Visiting Fellowship	Mr. Prabhatkumar K. Trivedi General Manager, Archroma India Pvt. Ltd.	"Key Concerns for Continuous Dyeing & Features for Finishing"	24-March -2014
2.	Dr. M.V. Nimkar endowment lecture	Mr. Arvind Shikarkhane Textile Processing Consultant	Energy Conservation & Effluent Control in Textile Processing	21-March -2014
3.	Industry experts under TEQIP phase II	Dr. Prasad Potluri University of Manchester, UK	Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology	12-Jul-2013
4.	Industry experts under TEQIP phase II	Dr. Siva Rama Kumar Pariti, Industry expert, Dystar India Pvt. Ltd.	Ecological Considerations of Colorants for Textile Applications	02-Sept-2013
5.	Industry experts under TEQIP phase II	Dr. Imtiyaz Ansari Sheffield Hallam University, UK.	Surface Modification Using Dendritically Functionalised Polymers	4-Jan-2014
6.	Industry experts under TEQIP phase II	Professor Sandra Downes Professor of Biomaterial Science at "School of Material Science, Manchester University" in UK.	Developing Novel Biomaterials Using Nanotechnology	20-Jan-2014

7.	Industry experts under TEQIP phase II	Mr. Prashant Shah & Mrs. Purnima Parkhi Product manager for elemental and molecular spectroscopy, Agilent technologies	Elemental & Molecular Spectroscopy in Textile Industry	22-Jan-14
8.	Industry experts under TEQIP phase II	Mrs. Amruta Datar Counseller for Mumbai, Campus France, India	Higher education opportunities in France	24-Jan-2014
9.	Industry experts under TEQIP phase II	Professor Rishi Jamdagni Director, The Technological Institute of Textile & Sciences, Bhiwani, Haryana	Textile - A Road Map to 2025 and Globalization	30-Jan-2014
10.	Industry experts under TEQIP phase II	Dr. M. K. Talukdar (Kusumgar corporate) Dr. M. R. Choudhari (DD , WRA) Mr. Dakshesh Desai (Premier colour scan) Dr. K. H. Prabhu, Mr. Shishir Taygi Mr. Mayur Basuk Mr.Jagadanand Behera,(Scientist, WRA)	Workshop on Awareness of Sport Textile, Institute of Chemical Technology, Matunga and WRA, Thane under TEQIP Phase-II.	27th& 28th Jan 2014

SEMINARS/WORKSHOPS ORGANIZED

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR

- Texquest 2014, Annual National Level Intercolligiate Technical Competition
- Texpression 2014, Annual Cultural Event of the Department
- Dr. M. V. Nimkar Endowment lecture on the topic "Energy Conservation & Effluent Control in Textile Processing" by Mr. Arvind Shikarkhane, Textile Processing Consultant, held on 21th March 2014.
- Class of 1966 visiting fellowship lecture on the topic "Key Concerns for Continuous Dyeing & Features for Finishing" by Mr. Prabhatkumar K. Trivedi, General Manager, Archroma India Pvt. Ltd. Held on 24th March 2014.
- Guest Lecture under TEQIP Phase-II on the topic "Biophysical Instruments" by Mr. Zak Reese, Measurement Technology NW USA, held on 15th April 2014.

PROFESSOR (DR.) MANGESH D. TELI

- Member of organizing committee of 11th International and 69th All India Textile Conference held in Surat 20-21st December 2013.
- Member of organizing committee of 9th International Conference on Apparel & Home Textiles ICAHT 2013, New Delhi, 20th -21st September 2013.

PROFESSOR (DR.) RAVINDRA D. KALE

- Texpression 2014, Cultural event of the Textile dept in the ICT, Mumbai, India on 21st Feb2014, annual event of the department
- Texquest 2014, Technical competition event of the Textile dept in the ICT, Mumbai, India on 21st Feb2014.
- Two day workshop on "awareness of Sporttech" organized by WRA Thane and ICT, Mumbai on 27th and 28th Jan 2014-01-27 at ICT, Mumbai and WRA Thane.
- Organized about 15 lectures held in the dept under TEQIP-II and different Endowments

DR. SUJATA SIVARAMAKUMAR PARITI

- Texpression 2014, Cultural event of the Textile dept in the ICT, Mumbai, India on 21st March 2014, annual event of the department.
- Texquest 2014, Technical competition event of the Textile dept in the ICT, Mumbai, India on 21st February 2014

INDUSTRIAL CONSULTANCY

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR

Name of Company:
Unilever Industries Pvt. Ltd., Mumbai (Development of Technologies for Consumer Demonstrations)
Period: 3 Year

Name of Company :
Unilever Industries Pvt. Ltd., Mumbai (Hair Colourants - Surface Engineering Genesis)
Period: 1 Year

PROFESSOR (DR.) MANGESH D. TELI

Name of Company:
Adiv Nature Pure

Area of Advice:
Natural Dyeing
Period 1 year

PROFESSOR (DR.) S. R. SHUKLA

Name of Company:
Navin Fluorine International Ltd., Dewas
Name of Company:
GOTs, India.

IN-HOUSE RESPONSIBILITIES

PROFESSOR (DR.) RAVINDRA V. ADIVAREKAR

- Looking after Students Sports Activities.
- Member of Examination committee
- Member of Academic Activities committee

PROFESSOR (DR.) MANGESH D. TELI

- TEQIP, students, staff and faculty development Activity coordinator
- Member of TEQIP performance monitoring committee on behalf of Board of Management.
- PG admission committee
- Chairman, Selection committee for best Ph.D. Tech and Ph.D. Sci thesis in ICT
- Member, Research recognition committee of Textiles.
- Chairman, Board of advisory council for Textile Department.
- In addition, time to time I have served as a member of number of committees entrusted with the responsibility of scrutiny of applications, enquiry committee, etc.

PROFESSOR (DR.) SANJEEV R. SHUKLA

- Registrar of ICT

PROFESSOR (DR.) RAVINDRA D. KALE

- TEQIP Dept coordinator
- Syllabus Revision Committee
- Departmental Advisory Committee
- Cultural Committee
- Institute MIS Committee

PROFESSOR (DR.) SUJATA SIVARAMAKUMAR PARITI

- Assisting the Head of the Department in various activities such as making reports and submitting these on a timely basis.
- Arranging for Industrial Visits of students (under graduates as well as post-graduates).
- Organizing workshops, visiting lectures and endowment lectures for the Department.

UNDERGRADUATE SEMINARS / PROJECTS / HOME PAPERS

UNDERGRADUATE STUDENTS' B.TECH SEMINARS

No.	Student	Topic	Guide
1.	Shastrakar Pragati W.	Biodegradable Polymers for Drug Delivery	RVA
2.	Raut Poorva Bhushan	Microencapsulation of Perfumes for Application in Textile Finishing	RVA
3.	Dandekar Rasika S.	Blend Dyeing	RVA
4.	Gatade Aman Anil	Eco-friendly Coloration of Textiles using Natural Dyes.	RVA
5.	Katgaye Ashish T.	Flame Retardant Finish	RVA
6.	Varne Vibha	Role of a textile merchandiser	MDT
7.	Pradhan Chandni	Novel techniques for the production of nanoparticles	MDT
8.	Agarwal Yash	Herbal finished textiles and their assessment	MDT
9.	Desai Shivani	Application of carbon fibres in composites	MDT
10.	Sapkal Dhiraj	Grafting of natural fibres	MDT
11.	Rashmi Sunil Garg	Electrochemical Treatment Of Waste Water	SRS
12.	Yogita Lahu Bhambere	Eco-Friendly Reactive Dyeing	SRS
13.	Sushant S. Bhowad	Electrochemical Dyeing Of Cellulosics Fibre	SRS
14.	Sanket R. Shingote	Sun Protective Textiles	SRS
15.	Aditya Patil	Applications In Automotive Textile	SRS
16.	Monica Mali	Leather chemistry and processing	US
17.	Indrajit Bramhecha	Synthesis of pigments	US
18.	Ambica manepalli	Role of fabric structure and particle size in textile finish	US
19.	Yogesh savate	Machine used in garment processing	US
20.	Keyur gokhle	Bio-degradable polymers and their application	US
21.	Priyanka Suresh Jagtap	Biodegradable Filters for Facemasks	RDK
22.	Anagha A. Hunoor	Regeneration of Natural Fibres (Other than Viscose) by Wet Spinning Method	RDK
23.	Vinamrata Gandhi	Inorganic-Organic Hybrid Technology	RDK
24.	Rahul Sanjay Dubey	Shade Nets in Agrotextiles	RDK
25.	Nikhil Ashok Salunkhe	Activators used for Peroxide Bleaching under Low Temperature for Cotton	RDK
26.	Ketki Chavan	Chemical Modifications of Natural Fibres for Composites	SP
27.	Irshad Inamdar	Life Cycle Assesment and Textile Waste Recycling	SP
28.	Bhavya Singhi	Graphene –Synthesis andApplications	SP
29.	Nischay Rathi	Steps Taken By Textiles Processing and Chemical Industries Towards Sustainability	SP
30.	Shashwat Gupta	Smart Textiles: Textile Sensors For Healthcare	SP
31.	Surabhi Anurag	Sustainability In Finishing	SP

POSTGRADUATE STUDENTS' M.SC. - TEXTILE CHEMISTRY - SEMINARS

No.	Student	Topic	Guide
1.	Jadhav Asmita	Natural dyes on non textiles	RVA
2.	Parte Sneha B.	Carbon fibre	RVA
3.	Patrawala Mohammad	Protective textile	RVA
4.	Nilesh C. Jadhav	Ultrasonication and Cavitation in Textiles	MDT
5.	Dhanashri Pundlik Kolambkar	Techniques of Finishing for Control Release in Textile	MDT

6.	Supriya H. Ramugade	Low Liquor in Dyeing Technology	SRS
7.	Hardik Pathak	Ecolabeling and Carelabeling of Textiles	SRS
8.	Sagar M. Desai	Energy conservation in textile wet processing	US
9.	Rohan patil	Novel printing method and machine	US
10.	Aniket S. Chuvan	Specialty chemicals and its application in textile	US
11.	Meghraj Mahesh Motilal	UV-protective & IR-reflectance compounds on Textile	RDK
12.	Potdar Tejasvi Ajit	Application of Magnetic Nanoparticles in Textiles	RDK
13.	Shetty Varun Shashidhar	Natural Fibre Modification techniques for Fibre Reinforcement Composites	RDK
14.	Sujata J. Ajab	Smart Textiles	SP
15.	Sushant Pawar	Zero Discharge Of Hazardous Chemicals	SP
16.	Sandeep R.Gupta	Development In Dyeing Machines	SP

POSTGRADUATE STUDENTS' M.SC. - TEXTILE CHEMISTRY – PROJECTS

No.	Student	Topic	Guide
1.	Jadhav Asmita	Optimization of Low Temperature Bleaching Using Statistical Modeling	RVA
2.	Parte Sneha B.	Economical and Eco Friendly Colouration of Cotton Using Bentonite: I	RVA
3.	Patrawala Mohammad	Economical & Eco Friendly Colouration of Cotton Using Bentonite: II	RVA
4.	Jadhav Nilesh	Chemical Processing and Natural Dyeing of Unconventional Fibre	MDT
5.	Kolambkar Dhanashri	Studies in Processing of Textile Fibres with Natural Colourants	MDT
6.	Hardik Naresh Pathak	Dyeing Of Brocade	SRS
7.	Supriya Ramugade	Sea Water Dyeing	SRS
8.	Sagar M. Desai	Finishing of silk fabric	US
9.	Rohan patil	Printing and finishing with fragrance	US
10.	Aniket S. Chuvan	Finishing of hosiery fabric	US
11.	Meghraj Mahesh Motilal	Role of Magnetic Field in Reactive Dyeing	RDK
12.	Potdar Tejasvi Ajit	Dyeing And Finishing of Polyester using Crude Disperse Dye by Nanoemulsion Technique	RDK
13.	Shetty Varun Shashidhar	Removal of Heavy Metals using Activated Carbon prepared from Areca Nut	RDK
14.	Sujata Ajab	Study in Conductive Polymerization on Cotton and Bamboo fabric	SP
15.	Sushant Pawar	Study of some Novel acids as core alkali neutralizers in Textile	SP
16.	Sandeep Gupta	Study to make Ayurvastra	SP

POSTGRADUATE STUDENTS' M. TECH.

No.	Research Scholar	Previous Institution	Project	Supervisor
1.	Maiti Saptarshi	Institute of Jute Technology, Kolkata	Application of Dendrimer in Textile Processing	RVA
2.	Phadke Shyam	ICT, Mumbai.	Standardization of Disperse Dyes with Chemical Reduction and its Application in Polyester	RVA

3.	Sinha Roy Pallabi	Institute of Jute Technology, Kolkata	Wool, Keratin as Biopolymers for Potential Medical Application	RVA
4.	Honade Smita	ICT, Mumbai.	Application of Disperse Dyes on Wool/PET Fabrics	RVA
5.	Mahajan Geetal	ICT, Mumbai.	Multifunctional Finishing of Textile	RVA
6.	Sakhare Karishma M.	D.K.T.E, Ichalkaranji	Effect of Low Temperature Plasma on Textile Wet Processing	RVA
7.	Bhawsar Shripad Jeevan	ICT, Mumbai.	Green Textile Processing	RVA
8.	Pati Pramod Kumar	BIJU Patnaik, Odisa	Process Intensification in Textile Pro-cessing for Value Addition	RVA
9.	Desai Dhanraj S.	D.K.T.E, Ichalkaranji	Study of Carbon Fibre and Composite	RVA/SP
10.	Powar Ajinkya S	D.K.T.E, Ichalkaranji	Synthesis of Chitosan and its Application in Textile	RVA/SP
11.	Patil Swapnali Yashvant	D.K.T.E, Ichalkaranji	Synthesisand Application of Flame Re-tardants on Textiles	RVA/SP
12.	Shitole Pallavi	DKTE Textile & Engineering Institute	Biopolymer Based Thickeners and their blends for Printing	MDT
13.	Pandit Pintu	Dept. Of Jute and Fibre Technology	Combined Dyeing and Finishing for Process Intensification.	MDT
14.	Maurya Shailesh	DKTE Textile & Engineering Institute	Upcycling of Damaged Textile Goods through Value Addition	MDT
15.	Viveki Somling	DKTE	Conservation of Mordants and Colourants in Natural Dyeing	MDT
16.	Kumar Manish	DKTE	Processing of fibrous material for value addition	MDT
17.	Gupta Dhramendra	DKTE	Modification of Fibres	MDT
18.	Shaiwale Nikhil	DKTE	Combined dyeing and resin Finishing	MDT
19.	Jangle Amol	DKTE	Natural Dyes for Antibacterial Textiles	MDT
20.	Mr. Ahmad Anjum	Government College of Engg. and Textile Technology, Berhampore	Low salt consumption in reactive dyeing on cotton fabric.	SRS
21.	Mr. Mallick Md. Sajir	Government College of Engg. and Textile Technology, Serampore	Dyeing of Textiles using Pomegranate waste extracted dyes.	SRS
22.	Mr. Kumar Prasun	DKTE, Ichalkaranji	Study of effluent using coagulation method	SRS
23.	Mr. Kulkarni Saket	ICT, Mumbai	One bath process: Desizing and scouring using enzymes	SRS
24.	Mr. Thitame Prasad	VJTI, Mumbai	Removal of reactive dye by activated carbon from aqueous solutions	SRS
25.	Prince A. Dabhi	Sarvajanik College of Engineering & Technology, Surat.	Value Addition In Finishing And Application of Non-Woven In Shoe Technology	US
26.	SK MD Zulfikar	Govt. college of Engineering and Textile Technology, Shreerampore	Studies in surfactant and its application	US

27.	Vijay Hebbalkar	D.K.T.E	Performance enhancement of fibrous polymer (Bagasses)	US
28.	Gaurav Katre	Institute of Chemical Technology, Mumbai	Modificationand Applicationof Biodegradable Polymer	RDK
29.	Abhishek Raybole	Institute of Chemical Technology, Mumbai	Application of Nano Emulsion in Textile Processing	RDK
30.	Prabhat Shobha Bansal	Institute of Chemical Technology, Mumbai	Extraction and Application of Micro Cellulose	RDK
31.	Akshay Narottam Vade	DKTE, Ichalkaranji	Application of Magnetic field in Textile Wet Processing	RDK
32.	Sanchayan Pal	Institute of Jute Technology (CU)	Developments of Green Composites with improved Green Characters	RDK
33.	Ambadas Namdev Garje	DKTE, Ichalkaranji	Synthesis and Preparation of bio-degradable films and foams	RDK

DOCTORAL / POST-DOCTORAL RESEARCH PROJECTS

POSTGRADUATE STUDENTS' Ph.D. (TECH)

Sr.	Research Scholar	Previous Institution	PROJECT	Supervisor
1.	Meena Chetram	UICT	Ecofriendly Colouration of Textiles	RVA
2.	Katode Sanjay	UICT	Sustainable Approach towardsGarment Processing	RVA
3.	Kherdekar Girish	TITS, Bhiwani	Natural Eco-Friendly Alternatives to the Existing Scouring & Dyeing of Wool & Woolens	RVA
4.	Udakhe Jayant	IIT, New Delhi	Synthesis & Application of Far Infrared Reflecting Dyes	RVA
5.	Harane Rachana	ICT, Mumbai	Selective Treatment and Recycling of Textile Effluent	RVA
6.	Madiwale Pallavi	ICT, Mumbai	Studies in Medical Textiles	RVA
7.	Singh Girendra Pal	ICT, Mumbai	Studies in Natural Fibre Composite	RVA
8.	Biranje Santosh	ICT, Mumbai	Extraction of Biopolymers and their Modification for Application in Medical Textile	RVA
9.	Mallick Aranya	U.D.C.T	Modification of polymers for enhancement of functional properties	MDT
10.	Shukla Armaity	SNDT university	Naturally colored functional Nonwovens	MDT
11.	Soocheta Angha	University of Mauritius	Investigation into extraction, processing of Pandanus Utilius leaf fibre and its potential for product development	MDT
12.	Ambre Pragnya	Dr. B.M.N college SNDT	Combined Dyeing and finishing of natural dyes.	MDT
13.	Bhavsar Parag	ICT	Synthesis and application of Functional textile materials	MDT
14.	Chavan Pravin	ICT	Functional modifications for specialty applications in textiles	MDT
15.	Annaldewar Bhagyashri	ICT	Studies in Speciality finishes	MDT
16.	Nadiger Vinay G.	VJTI, Mumbai	Studies on Nano-composite Polypropylene Fibres for UV Protective Sports Textile Application	SRS

17.	Vyas Shweta K.	D.K.T.E, Ichalkaranji	Process intensification in textile colouration	SRS
18.	Parmar Neha D.	ICT	Microbial decolourisation of dyeing effluent	SRS
19.	Jadhav Abhishek	ICT	Studies in multifunctional auxiliaries	SRS
20.	Arputhraj A.		Nanotechnology in textile applications	SRS
21.	Mr. Umesh Kore	ICT	Theoretical aspects of reactive dyeing for process intensification	SRS
22.	Ms. Shital Palaskar	ICT	Studies on effect of plasma treatment on different textile fabrics	SRS
23.	Gangawane Prashant	ICT	Finishing of Textiles	US
24.	Prerana Kane	ICT	Studies in Non-Conventional Method for Effluent Treatment	RDK

POSTGRADUATE STUDENTS' Ph.D. (TECH) (INTEGRATED)

No.	Research Scholar	Previous Institution	Project	Supervisor
1.	Priti Tayade	UICT	Extraction, Standardization and application of Natural Dyes	RVA

POSTGRADUATE STUDENTS' Ph.D. (SCIENCE)

No.	Research Scholar	Previous Institution	Project	Supervisor
1.	Manasi Joshi	Ruia Collage, Mumbai.	Production and Application of Marine Pectinase in Textile Processing	RVA
2.	Zunzunwala College, Mumbai	Kapadi Parag U.	Polymers from renewable resources	SRS
3.	Gondhelekar Sachin C.	Institute of Science, Mumbai	Removalof heavy metals from waste water using bio-absorbents	SRS
4.	Singh Saurabhkumar A.	Khalsa College, Mumbai	Adsorptive separation of strategic and heavy metal ions and process characterization.	SRS
5.	Patil Namata N.	SNDT	Studies on colour removal from waste water	SRS
6.	Musale Rakesh M	SSVPS College, Dhule	Studies in depolymerization of waste poly(ethylene terephthalate) and utilization of the products obtained there from	SRS
7.	Kokate Sanika	BTRA, Mumbai	Biotechnology for textile processes	SRS

POSTGRADUATE STUDENTS' Ph.D. (TEXTILE CHEMISTRY)

No.	Research Scholar	Previous Institution	Project	Supervisor
1.	Pallavi Badhe	ICT	Protease production and application in textiles	RVA
2.	Pawar Ashitosh	ICT, Mumbai	Synthesis of Colourants Form Natural Sources	RVA
3.	Patil Ashwini	ICT, Mumbai	High Performance Auxillaries for Textile Substrates	RVA
4.	Sutar Trupti	ICT, Mumbai.	Studies in Blood Clotting Materials	RVA

5.	Shinde Suvidha	ICT, Mumbai.	Application of Fluorescent Dyes on Textile and Leather Substrates	RVA
6.	Jadhav Akshay	ICT	Processing of non conventional fibres and their value additions	MDT
7.	Latika Bhatt	CCS Haryana Agriculture University, Haryana	Application of essential Oils on Textiles	RDK
8.	Vikrant Gorade	Institute of Chemical Technology, Mumbai	Application of Micro/Nano Cellulose in Textiles	RDK
9.	Ravikant Sharma	Institute of Chemical Technology	Synthesis and Application of Speciality Chemicals	US

DEGREES AWARDED

No.	Name	Course	Title	Guide
1.	Mehra-Khurana Neha	Integrated Ph.D. (Tech)	Studies in Technical Textiles	RVA
2.	Nerurkar Madhura	PhD (Sci)	Screening of Marine Microorganisms for the Production of Textile Enzymes	RVA
3.	Nathany Abhinav	M. Tech.	Optimization of Simultaneous Dyeing and Finishing Using Statistical Modeling	RVA
4.	Singh Girendra Pal	M. Tech.	Non Conventional Fibres in Composites	RVA
5.	Madiwale Pallavi	M. Tech.	Silicone Application in Value Addition to Textiles	RVA
6.	Patil Sachin	M. Tech.	Application of Biopolymer in Textile Wet Processing	RVA
7.	Biranje Santosh	M. Tech.	Optimization of Detergent Ingredients using Statistical Modeling for Stain Removal	RVA
8.	Javed Sheikh	Ph.D. Tech	Performance Enhancement of Fibrous Polymers.	MDT
9.	Parag Bhavsar	M.Tech	Application of finishing and coating for functional textile.	MDT
10.	Pravin Chavan	M.Tech	Mosquito repellent / aroma finishing in textile.	MDT
11.	Aranya Ghosh	M.Tech	Functional textile using nanoparticles	MDT
12.	Navneet Shekhwat	M.Tech	Application of Medicinal herbs/ herbal colourants in textile	MDT
13.	Shah Rikhil V.	Ph.D (Sci)	Synthetic reactions and applications of chemically recycled products from polyester waste	SRS
14.	Borude Vasant S.	Ph.D (Sci)	Application of ionic liquid in organic synthesis and polymer degradation	SRS
15.	Ms. Bharti Pahuja	M. Tech	Application of anti odour and perfumery material on textile substrate	SRS
16.	Ms. Palaskar Shital	M. Tech	Studies on development of air filter fabric	SRS
17.	Shirsat Nikhil	Ph.D (Tech)	Studies in synthesis and formulations of specialty chemicals and their applications	US
18.	Kokate Pravin	M. Tech	Studies in Jute Processing	US
19.	Wanjari Shilpa	M. Tech	Studies in superabsorbent Polymer	US
20.	Kore Umesh B.	M. Tech	Synthesis and Application of Surfactants	RDK
21.	Kane Prerana	M. Tech	Decolourization of Effluent using nano particles	RDK
22.	Agnihotri Arunabh	M. Tech.	Functionalisation by Novel Finishing Technique on Textiles	RDK

ABSTRACT

Neha Mehra
[Integrated Ph. D (Tech)]

Studies in Technical Textiles

The term "technical textiles" was coined in the 1980s to describe the growing variety of products and manufacturing techniques being developed primarily for their technical properties and performance rather than their appearance or other aesthetic characteristics. A segment branch of technical textiles which has a high growth rate and huge market in India is Medtech or Medical Textiles. The main properties required by medical textiles products are antimicrobial property for use in healthcare products like hospital upholstery and high absorbency for disposable hygiene products such as diapers, sanitary napkins etc.

Information on use of the non-conventional fibres in medical textile is inadequate. Thus an attempt was made to use banana fibre for use in medical textile product namely diaper by increasing its absorbency by grafting method. A statistical relation was developed between the various parameters of grafting and hydrolysis and absorbency. Similarly, grafting of waste cotton fibres (postconsumer) was carried out and application sought in diapers. The diaper pads were made in the laboratory and their performance checked against commercial diapers.

Today's diapers contain a large amount of superabsorbent polymer which has very high absorbency and reduces the weight of the diaper largely. A Superabsorbent is a water soluble compound which has been cross-linked to render it water insoluble but still swellable to at least 15 times its own weight in physiological saline solution. In this work, Tapioca starch based superabsorbent was synthesized by grafting the starch with acrylamide using two different initiators. The application of the superabsorbent polymer was done in diapers which were made in the laboratory using banana fibres and waste cotton fibres and their performance compared with the commercial diapers.

In the third part of the work, nano particles particularly nano metals which have a high antimicrobial property were synthesized. Nano titanium dioxide particles were synthesized using sol gel technique and the effect of dispersing agents with varying ionic character during synthesis on the particle size of the synthesised nano particles in terms of crystallinity and particle size was studied. The synthesized particles were then applied onto cotton to check their antimicrobial property and UV protection property. Effect of this finish on the physical properties of the fabric was also studied.

Keywords : Non-conventional fibres, Superabsorbent polymer, nano titanium dioxide, medical textiles, diapers.

Madhura Nerulkar
[Ph.D (Sci)]

Screening of Marine Microorganisms for the Production of Textile Enzymes

Textile industries commonly use various harsh chemical agents and synthetic dyes which cause pollution due to its effluents. Thus, the inclusion of microbial products such as enzymes and colourants in the textile industry as an eco-friendly approach is the need of the hour. For the enzymatic studies, a Gram positive marine Bacillus sonorensis capable of producing extracellular lipase was isolated from marine clams, Paphia malabarica, collected from Kalbhadevi estuary, India. The medium optimization conditions supporting maximum lipase production was carried out at shake flask level using olive oil as the conventional substrate and oil cakes of mustard and sesame as cheap agricultural substrates. The lipase was extracted and purified using ammonium sulphate precipitation and dialysis bag technique followed by ion-exchange column chromatography. The characterization studies of the purified lipase showed that lipase is stable in alkaline conditions over a wide range of temperature. Majority of the chemicals enhanced the lipase activity. When used as an additive in detergent to study its efficiency for oil stain removal from fabric, an increase in the efficiency of removal of oil stains by 20% was observed in the natural as well as synthetic fabrics dyed with respective, preferred class of dye. As a

scouring agent for cotton fabrics, the lipase was capable of removing considerable amount of wax from the cotton surface and hydrolyzing it into fatty acids. Evaluation of the physico-chemical properties of the fabric revealed that the bioscouring using lipase from Bacillus sonorensis is as effective as conventional alkaline treatment. For microbial dyes, seven microbial dyes of red, blue, green and yellow colours were selected and used as natural microbial colourants. Dyeing of silk, wool and cotton fabrics with these seven microbial dyes indicated that four microbial dyes showed affinity for all the three fibres. The colour strength values of the fabrics were good with excellent rubbing fastness, moderate wash fastness and poor light fastness. Based on the colour strength properties, two dyes namely Bluish violet and Scarlett Red were shortlisted to carry out detailed dyeing process study. Optimization of dyeing process parameters and dyeing kinetics of these two selected dyes was successfully carried out. When dyeing was implemented with mordanting of silk fabrics there was a marked improvement in the fastness properties.

Keywords: Marine lipase, *Bacillus sonorensis*, bioscouring, microbial dyes, dyeing

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Abhinav Nathany
(M.Tech)

Optimization of Simultaneous Dyeing and Finishing Using Statistical Modeling

Water is becoming a scarce commodity worldwide. Rising costs for fresh water, waste water treatment, and heating energy, force the textile industry to research and develop new processes and equipment in order to conserve water and energy. Thus all research efforts in the textiles are directed towards shortening and simplification of the processing sequence.

The quest to find better cellulose solvents was undertaken in this study. To have a preliminary study in the use of a novel class of solvents, ionic liquid (BMIMCl) was synthesized for cellulose dissolution and regeneration. The simple dissolution of cellulose (MCC) in BMIMCl enables its easy derivatization under homogeneous conditions, as well as ease of recycling.

The increasing awareness of environmental issues has raised interest in reactive dyeing of cotton in the absence of electrolyte. An attempt was made to develop a process using MI as substitution of electrolyte and as cationising agent for reducing the effluent load by reactive dyeing of cellulosic material especially 100% cotton without addition of electrolyte in the dyebath.

In order to minimise water and energy consumption it has become necessary to combine several processing stages to reduce number of operations or shorten the process time. Simultaneous reactive dyeing and crease-resistant finishing of cotton with a non-formaldehyde and environment-friendly compound (CA) was successfully optimized using a statistical model. An optimized recipe was formulated based on the half factorial central composite design and numerical optimization solution by Design-Expert 6.0 software. The performance of the optimized sample was compared with the sample using conventional two-step dyeing and finishing process. The results obtained were found satisfactory for further research.

Keywords: water, ionic liquids, simultaneous dyeing and finishing, crease recovery, cotton, MCC, BMIMCl, 1-Methyl imidazole, reactive dye, citric acid, design of experiments, CCD, RSM, numerical optimization

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Girendara Pal Singh (M.Tech)

Non Conventional Fibres in Composites

The increase interest in using natural fibres as reinforcement in plastics to substitute conventional synthetic fibres in some structural applications has become one of the main concerns to study the potential of using natural fibres as reinforcement for polymers. In the light of this, researchers have focused their attention on natural fibre composite which are composed of natural or synthetic resins, reinforced with natural fibres. Accordingly, manufacturing of high-performance engineering materials from renewable resources has been pursued by researchers across the world owning to renewable raw materials are environmentally sound and do not cause health problem.

India, endowed with an abundant availability of natural fibres such as jute, coir, sisal, pineapple, ramie, bamboo,

banana etc., has focussed on the development of natural fibre composites primarily to explore value-added application avenues. Such natural fibre composites are well suited as wood substitutes in the housing & construction sector. The natural fibre composites can be very cost-effective material especially for building & construction industry (panels, false ceilings, partition boards etc.), packaging, automobile & railway coach interiors and storage devices Due to an occurrence of a wide variety of natural fibres in the country, Indian researchers have directed efforts for quite some time in developing innovative natural fibre composites for various applications.

In present work some novel natural sources were used to extract fibres and these fibres were successfully applied in low cost composite. Fibres were extracted from the Saccharum Munja grass and Oreodoxa Regia plant leaf stalk. Fibres properties were evaluated and these fibres were reinforced with UPR to make low cost composites by hand lay technique. The prepared polymer composite has good tensile and thermal properties, homogeneous surface structure, and the greatest interface bonding. From the characterization of composites, it is found that the prepared composite is of light weight and high strength. As the composite is made using bio-materials from local resources, its cost is less.

Keywords- Saccharum Munja, Oreodoxa Regia, unsaturated polyester resin, composites, natural fibres, low cost.

Pallavi Madiwale (M.Tech)

Silicone Application in Value Addition to Textiles

In conventional softener finish application, the finish is applied using an emulsion of silicone oil in water. The active content or the mixture of silicone oil and surfactant in the emulsion ranges from 15 to 50 percent of the emulsion. The remaining 50 percent of the emulsion consists of water. This is additional cost to both the seller and buyer. It is a liability to both the seller of the finish product and customer buying it. The seller has to incur additional cost of water in transportation and packing of the product. On the customer's side, he has to pay for the additional cost of water which does not pay back its value. Also there is possibility of adulteration in the emulsion. During transportation, there is a high tendency of the emulsion to break into separate phases which results in further processing problems. Due to breaking of emulsion, the silicone oil is deposited on the fabric unevenly and hence results in uneven application of finish. Hence keeping in mind the limitations involved in the use of emulsions the research work carried out for eliminating water from the emulsion. A successful attempt is done for producing solid form of softener. Method of encapsulation of oil is used for the same. By doing so the shelf life of the softener product is increased to very large extent as compared with its conventional form of emulsion. Exhaust and pad applications are used for the application of softener finish. Various performance testing are carried out for the evaluation of softener application.

Keywords: Softener, Silicone, Encapsulation, Exhaust Application, PDC application

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Sachin Patil (M.Tech)

Application of Biopolymer in Textile Wet Processing

Maharashtra (India), the main producer of rainy season sorghum, produces large quantity of wastage of these grains due to their storage problem at the government end as well as with farmers. This grain wastage has raised concerns causing huge monetary losses at both the ends. This project uses the same waste grain to produce starch which can be used mainly in textile applications.

Starch extracted from waste sorghum grains were characterized by measuring swelling power, paste clarity, particle size, and iodine binding. Starch obtained from waste sorghum was compared with starch from maize as a thickener in textile printing. Printing of vat dyes on 100% cotton fabric was carried out using both the starches. Results show that waste sorghum starch is having potential to substitute the maize starch in vat printing.

Further waste sorghum starch was modified to synthesize St-gg-AA i.e. starch grafted with Acrylic Acid (AA) and carboxy methylated waste sorghum starch (CMWS) by polymerization reaction with AA and Mono chloro acetic

acid (MCA) respectively. These grafted starches were compared with Sodium alginate as a thickener in reactive printing. Results in terms of colour matching, fastness properties of printed fabrics and its handle were reported. Results shows that St-gg-AA and CMWS starch can fully or partially substitute sodium alginate in reactive printing.

An attempt was also made to use the CMWS starch in sizing of yarns. Comparison with conventional size was carried and the results in terms of tensile strength and elongation at break were reported.

Keywords: waste sorghum starch, grafting, carboxymethylation, printing, sizing etc.

Santosh Biranje (M.Tech)

Optimization of Detergent Ingredients using Statistical Modeling for Stain Removal

Artificially soiled test fabrics are widely used to study the cleaning performance of detergents and washing processes. Detergent manufacturers use them for developing and improving detergent formulations, to study the diverse action of active agents, washing components, etc.

To study the detergency performance of the detergent, different standard commercial stained fabrics are available in the market. The cost of commercial stained fabric is too high and it is not affordable for initial trial and error methods to study detergency performance. So in the current work, efforts were made to prepare different stained fabrics using carbon black as a soil.

The artificial soiled test fabrics were prepared in the laboratory to study the optimization of detergent ingredients for stain removal. Statistical modeling has been used to optimize the concentration of detergent ingredients for ease of stain removal. A multi-factorial analysis of variance was used to explain the effect of anionic surfactant, non-ionic surfactant and builders on the removal of soil from the fabric and the efficiency of surfactant as detergent. A colourimetric evaluation according to a CIELAB system was used for all the samples, where the % reduction in K/S of washed sample over soiled sample represents performance of detergency.

Keywords: Carbon black, Soiling, Surfactants, Builders, Performance of Detergency, Box-Behnken design

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Javed Sheikh (Ph.D. Tech)

Performance Enhancement of Fibrous Polymers

Modification of fabric, mainly cellulosic of different origin, was carried out by grafting vinyl monomers onto the backbone. The modified fabrics were characterized, evaluated for textile properties and tested for their enhanced dyeability towards different dyes depending on the nature of monomer used for grafting.

Aranya Ghosh (M.Tech)

Functional textile using nanoparticles

The research work is primarily associated with the application of nanoparticles on cellulosic fabric surface with multifunctional finishing effect and also combined with dyeing. The Nano particles treated fabric was subjected for various enhanced finishing activity and were tested and their mechanical and chemical properties were evaluated.

Navneet Shekhwat (M.Tech)

Application of Medicinal herbs/ herbal colourants in textile

In this research the antimicrobial activity of some herbs extract onto the cotton fabric is assessed. The optimization of extraction was carried out. Furthermore, the efficiency of these treated fabrics along with the various fastness properties was evaluated.

Parag Bhavsar (M.Tech)

Application of finishing and coating for functional textile

In the present work, synthesis of UV resisting and antibacterial finishing formulations were carried out and applied for the apparel purpose. Unprocessed and processed fabrics with these formulations are evaluated using different characterization techniques.

Pravin Chavan (M.Tech)

Mosquito repellent / aroma finishing in textile.

Different microencapsulation methods have been used to prepare microcapsule of various mosquito repellent organic and synthetic chemicals. These microcapsules are applied on to different textile materials by various processes. The efficiency

and characterization was also studied.

Vasant S. Borude Ph.D (Sci.)

Application of Ionic Liquid in Organic Synthesis and Polymer Degradation

Ionic liquids have attracted the attention of chemists around the world for various reasons. Ionic liquids have opened up a new face of chemistry. Before 1998, there were relatively few studies of chemistry at temperatures below 100°C in a liquid environment that was entirely ionic compared with chemistry in molecular environment.

More than 1500 ionic liquids have been reported in scientific literature. Unlike organic solvents, ionic liquids have negligible vapour pressures and therefore do not evaporate under normal conditions. Ionic liquids are generally non flammable and many remain thermally stable at temperature higher than conventional organic solvents. They have wider liquid ranges than molecular solvents. They can be used as reaction media and catalysts for a wide variety of chemical reactions and are readily recyclable. Ionic liquids could contribute significantly to the development of green chemistry and green technology.

The work done is summarized as follows:

- Efficient Synthesis of Polysubstituted Cyclohexene Derivatives by Using Lipase in "Biodegradable Solvent".
- Synthesis of β-amino alcohol derivatives from phenols in presence of phase transfer catalyst and lipase biocatalyst.
- Convenient and metal free synthesis of 1,2,3,4-tetrasubstituted pyrroles using bronsted acidic ionic liquids [BMIM] HSO4.
- Phosphine Free Copper Mediated Sonogashira Coupling Reaction.
- Acidic Ionic liquid catalyzed synthesis of 2-oxazines from γ-hydroxyamides.
- Alkaline hydrolysis of PET waste has been carried out using [BMIM]Cl as Phase transfer catalyst under atmospheric pressure to get good yield of monomer terephthalic acid (TPA).
- Aminolysis of Poly(ethyleneterephthalate) Waste using a) 1-amino-2-propanol b) 2-amino-2-methyl-1-propanol c) 3-amino-1-propanol

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Rikhil V. Shah Ph.D (Sci.)

Synthetic Reactions & Applications of Chemically Recycled Products from Polyester Waste

The PET is one of versatile engineering plastics and shows excellent thermal & mechanical properties. It is semi-crystalline, thermo plastic polyester with high strength and transparency. Although its main application was, by far, in textile industry, large quantities of this materials are used in manufacture of video & audio tapes, food packaging and especially of soft drink bottles. The post-consumer PET product waste does not create a direct hazard; however, its substantial volume fraction in solid waste streams coupled with its high resistance to the atmospheric and biological degradation is the main threat to the environment.

The work done is summarized as follows:

- Phase transfer catalyzed alkaline hydrolysis of PET Waste
  Reaction parameters: PET Waste (1mol); Aq. NaOH (3 mol); TBAB (3% w/w); Time (3h); Temp (80°C).
- Aminolysis of PET Waste

a. Using N-(2-aminoethyl) ethanolamine3
b. Using propanol amines
c. Application of microwave irradiation for aminolytic depolymerization
d. Synthesis of bis-oxazoline and bis-oxazine

- Synthesis of heterocyclic derivatives from PET waste and evaluation of their antibacterial activity
  The present study deals with the prearation of terephthalic dihydrazide (TPHD) from PET waste via aminolysis using hydrazine hydrate. The TPHD was further subjected to chemical reactions to obtain various heterocycles. All synthesized compounds were characterized and evaluated for the anti bacterial activity. Activity of each compound was compared with ciprofloxacin and sulphametoxazol and found to show moderate activity as compared to these standards.
- Acidic ionic liquid catalyzed synthesis of 2-oxazolines from β-hydroxyamides
  2-oxazolines are widely

found in natural products with a different range of biological activities in catalysis and as synthetic intermediates. Also bis-oxazolines and different chiral oxazolines have been widely used as auxillaries and ligands in asymmetric synthesis. We have developed novel acidic ionic liquid and used for synthesis of 2-oxazolines from β-hydroxyamides. The products were obtained in good yields for variety of substrates. Efficient reaction protocol was developed and ionic liquid was recyclable up to 3 cycles.

- Phosphine free copper oxide catalyzed sonogashira coupling reaction

  A new, efficient and inexpensive system has been developed to catalyze sonogashira cross coupling reaction between aryl iodides and terminal alkynes. We have employed CuO as catalyst using ethanolamine as ligand, base and solvent. The reaction conditions were mild as compared to those reported in literature and products obtained were in good to excellent yields.

Bharti Pahuja (M.Tech)

Application of anti odour and perfumery material on textile substrate

With the improvement of living standards, people's attitude towards textiles' comfort and functionality has become increasingly demanding. The researchers have predicted that comfort, cleanness and safety would be the main tone of functional finish of the 21st century's fabric. Now a days textile product are not simply apparel, fashion and classical textiles but should also have some special properties in which the consumers expect novelty in apparels that smell good, control body odour and remain fresh for longer time. The purpose of present research work is to impart anti odour properties to the textile material. Odour is mainly generated in the textile materials due to the bacterial decomposition of the sweat produced by the body. Sweat from the body mainly consists of water, amino acids, ions, lactic acid, glycerol, urea, peptides and proteins. These secretions are microbial nutrients and produce a water-rich environment that supports the bacteria population (i.e., Corynebacteria, Stapphylococci and Propionibacteria).

Since most of the body odours are mainly organic acid, odor can be removed by applying a chemical finish that can bind these volatile compounds and convert them into non volatile compounds. The present research work is based on the similar approach where hydroxyl containing amines are applied onto the cotton textile substrate using cross linking agents. A significant reduction in the smell of the fabric was observed during smell testing. Comparison of the amount of the volatile substance absorbed by the treated and untreated textile were also done, where fabric treated with fresh finishing have remarkable anti odor effect. Another approach includes the use of microencapsulated aroma oil that along with providing the revitalizing effect also controls the odour of the fabric. Encapsulation of essential is done using coacervation technique and same was applied onto the fabric.

Shital Palaskar (M.Tech)

Studies on development of air filter fabric

Cotton is a natural cellulosic fibre, which dominates the synthetic fibres due to its unique properties. However, cotton fibre is prone to microbial attack, and also catches flame easily. Therefore, modification of cotton fibres for functional finishing has been attempted in this project.

The work conducted includes development of multifunctional cotton textiles to fulfill the requirement of ultraviolet protection, antimicrobial functionality and anti flammability of textiles on plain cotton fabric via plasma treatment followed by application of various nano particles by pad-dry-cure method.

Atmospheric pressure plasma technology followed by application of nano- particles by pad-dry-cure method was carried out. TiO_2 and SiO_2 nano particles were padded on the plasma treated cotton fabric with BTCA as crosslinker. An optimized recipe was formulated for multifunctional finished cotton. The performance of the plasma treated samples were compared with the without

plasma treated samples. The results obtained were found significantly improved after plasma treatment. In addition, HMDSO plasma polymerization was carried out on optimized sample and improved wash durability was found after plasma polymerization. HMDSO plasma polymer acts as a barrier layer and improves the durability.

Easter cross linking of cotton with BTCA reduces the tensile properties. Therefore, the application of silicon softener was carried out on the optimized samples. It was found to be beneficial to retain the tensile properties.

Prasad Thitame (M.Tech)

Removal of reactive dye by activated carbon from aqueous solutions

High activity mesoporous carbons were prepared from sterculia foetida fruit shell and coir pith. One step chemical activation was carried out using phosphoric acid (H3PO4) as an activant. The BET surface areas were found to be 1133.25 m2/g and 1210.58 m2/g, respectively for the activated carbons produced from sterculia foetida fruit shell (AC-SF) and coir pith (AC-CP). Batchwise adsorption of C. I. Reactive Red 2 (RR 2) and C. I. Reactive Yellow 145A (RY 145A) was carried out on prepared activated carbons. The equilibrium data was best described by the Langmuir isotherm in all the cases. The maximum dye uptake was 2022.9 mg/g for RR 2 and 1694.3 mg/g for RY 145A at 60°C and initial concentration of 1000 mg/L. Pseudo second order kinetic model fitted well the adsorption data, with the intraparticle diffusion being the essential rate controlling step. Thermodynamic analysis revealed that the adsorption of both the dyes on activated carbons was spontaneous and endothermic in nature. The 't' test analysis showed that the difference between adsorption capacity of AC-SF and AC-CP was not significant at 95% confidence level for both the dyes at all the temperatures studied.

Kokate Pravin (M.Tech)

Studies in Jute Processing

Jute, as a natural fibre, has many inherent advantages like high tensile strength, low extensibility, moderate heat and fire resistance and long staple lengths. It is a biodegradable and eco-friendly. Wet processing of jute fabric has many drawbacks and hence it is not as popular as synthetic fabrics. Hence in this project scouring and bleaching was carried out by the conventional method and rectified with new process modifications. Bleaching of raw jute was also carried out and found to be efficient and more economical than the former. Lacasse enzyme scouring was also carried out and compared with alkaline scouring followed by bleaching.

The primary aim of this project was to study one of these value added finish, flame retardency on jute, to improve the flame retardancy, durability and applicability of the non halogenated phosphorus based flame retardant polymers. Flame retardancy of the new phosphorus based polymer could be increased by increasing the content of phosphorus. Also simultaneous dyeing and finishing was observed when synthesised products were used. Usually jute is difficult to dye with acid dyes. In this project a new product was synthesized from HEMA (Hydroxyethyl methacrylate). This product was used to finish jute by the continuous process. The same fabric could be then easily dyed by acid dye and simultaneously the dyed jute fabric posses good flame retardancy. So non-halogenated flame retardant was synthesized and applied and tested. Jute printing is another area of interest of the project work where printing of jute fabric is carried out with the synthesised product in the print paste. The results were encouraging with good bright prints with higher color value.

Keywords: Laccase enzyme, flame retardant, jute.

Wanjari Shilpa (M.Tech)

Studies in superabsorbent Polymer

The project aims at preparation of superabsorbent material from natural ingredients since they can be disposed of even after use. From this view point synthesis of superabsorbent polymer from recycled material or from waste is experimented. Expanding clay/polyacrylamide polymer have the capacity to absorb large amounts of water while retaining good mechanical strength and high damping characteristics, and therefore

represent a new and promising class of hydrogel materials. Aluminium magnesium silicate has been used as expanding clay mineral and a superabsorbent poly (acrylamide)-Clay polymer has been prepared. Different natural waste like News paper waste, Tissue paper waste, cardboard waste, coir pith, jute waste, food waste are used as main substrate in graft co polymerization process.

The techniques of graft co polymerization and free radical initiator polymerization were used for synthesis. Each absorbent was mainly characterized by its equilibrium capacity of water absorption and by the rate of absorption. The swelling characteristics of the polymers were evaluated in terms of change in polymerisation variables which include, type and amount of crosslinker, monomer composition, process of polymerisation, temperature, initiator concentration and monomer concentration. The swelling dependency on salinity was also examined.

Umesh Kore (M.Tech)

Synthesis and application of surfactants

Organic pigments are widely used in coatings, inks, plastics and some other industrial products. They have superior performance with respect to hue, brilliance, colour strength, transparence. Organic pigment dispersions prepared by conventional methods using conventional surfactants have poor stability in aqueous media because of large particle sizes and broad size distributions. Polymeric dispersants is a class of specially designed and structured materials with good properties for stabilizing organic pigments. They effectively prevent the flocculation and coagulation of the organic pigment in dispersion. Low molecular dispersants are easily desorbed from the pigment surface at high temperature. Polymeric dispersants are easily tangled together after long-time storage, resulting in good stability. They can act as emulsion stabilizer also as per their end use. Encapsulating pigments with various polymers provide promising approach for improving the quality of the pigment dispersion. The synthesis and application of novel polymeric surfactants can provide a prominent solution to the problems related with aqueous dispersions and emulsions. Polymeric dispersants for pigments can be a potential solution for today's textile industry, which is searching for stable dispersions and emulsions that can give the same advantages as commercial available surfactants.

Prerana Kane (M.Tech)

Decolourization of effluent using nano-particle

The large quantity of organic coloured wastewater generated by textile processing industries has become a significant environmental problem. Strong colour of the wastewater effluents is particularly troublesome because of its negative visual impact. These dyes also cause serious ecological problems; for example, they significantly affect the photosynthetic activity of aquatic plants by reducing light penetration, and they may be toxic to some aquatic organisms. In this project different metals and bimetals will be synthesized in the nano scale following the most economical routes, with the stable colloidal form. The most commonly and widely used dyes will be subjected to decolourization using these nano metals and bi metals. The concentration and time required to get the acceptable level of the colour removal will be looked into. Combination of different metals will be tried to select the best combination of metals. The recycling efficiency of these nano metal and bimetals will also be evaluated. The use of nano metals and bimetals for decolourization of coloured effluent can be a promising approach and prominent solution for today's textile industry.

Arunab Agnihotri(M.Tech)

Functionalisation by Novel Finishing Technique on Textiles

Textiles are probably the most popular of materials since they decorate and protect our bodies while bringing comfort into our lives. The functionalisation of textiles is to maintain current properties and create new material properties. Post-equipping textiles (fibre, fabrics) with functional coatings is a very important functionalisation technique and generally done by sol-gel method. This universal method is very flexible with regard to coating technology and productive capacity, and is largely independent of fabric

type. It requires low quantities of additive and enables the combination of different functionalities in a simple way. Nanosol coatings are usually prepared by using the sol-gel process. This process can be basically divided into three steps: formation of the nanosol by hydrolysis of the precursor material and subsequent condensation reactions, the padding process, then drying or curing. The condensation reactions lead to the formation of particles with sizes in the nanometer range. Almost umpteen work has done by sol-gel method right from incorporation of dyes and studying its performance properties to finishing and its performance properties, also today's requirement is to adopt such a process which is techno-economical feasible besides no single literature known which tells the combined dyeing and finishing on textiles. So studies on combined dyeing and finishing by sol-gel are important. In this Sols will be formed by taking tetraethoxy silane as silane, cationic dyes as colarant on different fabrics like Cotton, Poly/cot will use. Eco friendly flame retardants, antimicrobial agents, super hydrophobic chemicals will be added to impart functional finishing property. This type of process is effective in term of cost, energy and time.

AWARDS AND SCHOLARSHIPS TO STUDENTS

Awards & Scholarships awarded to Textile Dept Students

Sr. No	Name of the Awards/ Scholarships/ Nomination	Name of the Student	Year
1.	Mrs. Asha Khemani Memorial Award for each year (Textile)	Sakharkar Mrunal Kamlesh	1st Y. B. Tech- 1st Ranker
2.		Nawage Sneha Jayprakash	2nd Y. B. Tech - 1st Ranker
3.		Gupta Shashwat Vinodkumar	3rd Y. B. Tech - 1st Ranker
4.		Vyawahare Radhika Dinesh	Final Y. B. Tech - 1st Ranker
5.	Mrs. Asha Khemani Best Student Award	Keyur Gokhale	B. Tech
6.	Mrs. Asha Khemani Memorial Award	Shailesh Maurya	M. Tech
7.	Mrs. Asha Khemani Best Student Award	Geetal Mahajan	M. Tech
8.	Dr. M. V. Nimkar – Texanlab Foundation Scholarship award	Sakharkar Mrunal Kamlesh	1st Y. B. Tech- 1st Ranker
9.		Dahale Monali Rajendra	1st Y. B. Tech - 2nd Ranker
10.		Nawage Sneha Jayprakash	2nd Y. B. Tech - 1st Ranker
11.		Shruti Venkatram Parvathy	2nd Y. B. Tech - 2nd Ranker
12.		Gupta Shashwat Vinodkumar	3rd Y. B. Tech - 1st Ranker
13.		Raut Poorva Bhushan	3rd Y. B. Tech - 2nd Ranker
14.		Vyawahare Radhika Dinesh	Final Y. B. Tech - 1st Ranker
15.		Aditi Suresh Kala	Final Y. B. Tech- 2nd Ranker
16.		Honade Smita Pradiprao	1st Y. M. Tech- 1st Ranker

17.		Maurya Shailesh Ramdhani	1st Y. M. Tech- 2nd Ranker
18.		Pahuja Bharti Gulshan	2nd Y. M. Tech- 1st Ranker
19.		Shekhawat Navneet Singh Devendra Singh	2nd Y. M. Tech- 2nd Ranker

Following students were awarded Rs. 500 per paper for publishing research paper in reputed journals through "Dr. M. V. Nimkar – Texanlab Foundation".

Sr. No	Name of the Student	Name of the Research article	Name of the Journal	International / National	LAB
1	Abhinav Nathany	Optimisationof concentration of ingredients for simultaneous dyeing and finishing using response surface methodology	The Journal of Textile Institute	International	RVA
2	Chetram Meena	Cationising of Cotton for educed electrolyte consumption in dyeing with ME reactive dyes	Colourage	National	RVA
3	Chetram Meena	Cationisation of Cotton for low salt dyeing using HE reactive Dyes part – I	Asian Dyer	National	RVA
4	Chetram Meena	Cationisation of Cotton for low salt dyeing using HE reactive Dyes part – II	Asian Dyer	National	RVA
5	Chetram Meena	One bath dyeing process for polyester/cotton blend using physical mixtures of disperse/ reactive dyes	European International Journal of Science and Technology	International	RVA
6	Chetram Meena	Synthesis and application of vinyl sulphone disperse reactive dyes for polyester	International Journal of Chemtech Research	International	RVA
7	Geetal Mahajan	One bath finishing of flame retardancy and water repellancy of PC blend fabric	Man Made Textiles in India	National	RVA
8	Madhura Nerurkar	Use of natural dye from serratiamarcescrns subspeices marcescens in Dyeing of textile fabrics	Octa Journal of Environmental Research	International	RVA
9	Madhura Nerurkar	Use of sesame oil cake for lipase production from a newly isolated marine Bacillus sonorensis	Innovative Romanian Food Biotechnology	International	RVA
10	Mansi Joshi	Use of Citrus Limetta peels for pectinase production by marine bacillus subtilis	Innovative Romanian Food Biotechnology	International	RVA
11	Mansi Joshi	Scouring of cotton using marine pectinase	Journal of Molecular Catalysis B: Enzymatic	International	RVA
12	Priti B. Tayde	Adsorption kinetic study of Cuminum Cymnium L dyeing on silk	Journal of Environmental Chemical Engineering	International	RVA

13	Girendra Pal Singh	Topping of Sulphur Dyed Cotton with Basic Dye	Asian Dyer	National	RVA
14	Satish Dasarwar	Ecofriendly flame retardant for cotton	Melliand International	International	RVA
15	Satish Dasarwar	Synthesis of Halogen free Flame Retardant and development of FR Polypropylene	IJFTR	National	RVA
16	Satish Dasarwar	Sodium stannate based formulation as a flame retardant for cotton	Journal of Textile Association	National	RVA
17	Shyam Phadke	Reactive Dyeing of Cotton with LBL Technique	Journal of Textile Association	National	RVA
18	Vasant Borude & Rikhil Shah	Phosphine-free copper-mediated Sonogashira coupling reaction	Monatsh Chem	International	SRS
19	Yogesh Parab	Novel Synthesis, Characterization of N1,N1,N4,N4- tetrakis(2-hydroxyethyl) terephthalamide (THETA) and Terephthalic Acid (TPA) by depolymerization of PET Bottle Waste Using Diethanolamine	Journal of Macromolecular Science, Part A: Pure and Applied Chemistry	International	SRS
20	Parag Kapadi	Extended Release formulation of Theophylline using Modified Fenugreek Gum as a Hydrophilic Polymer	International Journal of Pharmaceutical Sciencs and Research	International	SRS
21	Vinay Nadiger	Antimicrobial Finishing of Polyester fabric using Atmospheric Pressure Plasma Technology - Morphology & Physical properties: Part I	Asian Dyer	National	SRS
22	Vinay Nadiger	Antimicrobial Finishing of Polyester fabric using Atmospheric Pressure Plasma Technology - Morphology & Physical properties: Part II	Asian Dyer	National	SRS
23	Saket Kulkarni	Printing made Sustainability	Asian Dyer	National	SRS
24	Monalika Mali	Hygenic Wool through dyeing with Green Tea	Textile Value Chain	National	MDT
25	Maruti Kamble	Simultaneous Natural dyeing and antibacterial finishing of Bamboo Rayon using Catechu and Natural Mordants	Journal of Textile Association	National	MDT
26	Dhanashri Kolambkar	Flower Waste from Temple for Dyeing of Cotton and Cotton/Silk	Journal of Textile Association	National	MDT
27	Pawan Desai	Polypropylene Poly (Trimethylene Terephthalate) Meltblemde Fibres with enhanced Dyeability	International Journa of Engineering Research & Technology	International	MDT
28	Asmita Jadhav	Influence of Substitution of Madder by Marigold in Colouration of Natural Fibres	Journal of Textile Association	National	MDT
29	Chandni Pradhan	Wool: Natural dyed but also hygienic	Asian Dyer	National	MDT

30	Pushkar Yeola	Dyeing of Milk Fibre with Marigold and Turmeric Dyes	Journal of Textile Association	National	MDT
31	Pragati Shahtrakar	Exploratory Investigation of Chitosan as Mordant for Eco-friendly Antibacterial Printing of Cotton with Natural Dyes	Journal of Textiles	International	MDT
32	Pragati Shahtrakar	Eco-friendly Antibacterial Printing of Wool using Natural Dyes	Journal of Textile Science & Engineering	International	MDT
33	Sanket Valia	Application of Modified Coir Fibre as Eco-friendly Oil sorbent	Journal of Fashion Technology & textile Engineering	International	MDT
34	Sanket Valia	Application of Sustainable Modified Natural Sorbens in Oil Spill Cleanup for Environmental Protection	Inteanational Journal of Renewable Energy & Environmental Enginnering	International	MDT
35	Sanket Valia	Modification of Lignocellulosic Fibre for Enhanced Oleophilicity	International Journal of Advanced Engineering Applications	International	MDT
36	Javed Sheikh	Functional Modification of Bamboo rayon (Cellouse) fabric to render it antibacterial and UV protective	Advanced Material Research	International	MDT
37	Javed Sheikh	Bamboo rayon-Copper nano-particles composites as durable antibacterial textile materials	Composite Interfaces	International	MDT
38	Javed Sheikh	Modified Bamboo rayon-Copper nanoparticles composites as durable antibacterial textiles	International journal of Biological Macromolecules	International	MDT
39	Javed Sheikh	Combined Antibacterial and Flame Retardant finishing of Denim fabric using Chitosan formulation	Melliand International	International	MDT
40	Javed Sheikh	Bamboo Rayon-ZnO Nanoparticles Composite as Multifunctional Textile Materials	Journal of Textiles	International	MDT
41	Prerana Kane	Dyeing of Polyester using Crude Dispersion Dyes by Nanieulsion technique	International Journal of Scientific Engineering and technology	International	RDK
42	Prashant Gangawane	Innovation use of Outdated Doxycycline Hydrochloride to Dye Wool.	International Journal of Medicine and Pharmaceutical Science	International	US
43	Prashant Gangawane	Innovation use of Outdated Tetracycline Hydrochloride to Dye Jute.	International Journal of Medicine and Pharmaceutical Science	International	US
44	Prashant Gangawane	Innovation use of Outdated Doxycycline Hydrochloride to Dye Nylon.	International Journal of Scientific Engineering and technology	International	US

MAJOR ACCOMPLISHMENTS OF FACULTY MEMBERS

Professor (Dr.) Mangesh D. Teli

- Received TAI RATNA award on 9th April 2014 on the occasion of Platinum Jubilee of Textile Association of India.

PLACEMENTS

Employment record of Textile dept students

B.TECH. 2013-14

Sr.	Student Name	Company name	Salary in Lakhs - PA
1	Varne Vibha Sanjay Pratibha	Going for higher studies (M.S. at University of New South Wales, Australia)	-
2	Sapkal Dhiraj Narendra Sunita	Going for higher studies (Doing internship in Genii Technologies-Designing company)	-
3	Agarawal Yash Satish Sudha	Joining Family Buisness	-
4	Pradhan Chandni Rajeev Pratima	Going for higher studies (M.S. at Istituto Marangoni,Milan, Italy)	-
5	Desai Shivani Bhalchandra Manisha	Arvind Mills	4
6	Shingote Sanket Rajaram Rohini	-	-
7	Bhowad Sushant Suryakant Supriya	-	-
8	Patil Aditya Sandeep Smita	Going for higher studies (Preparing for MBA)	-
9	Garg Rashmi Sunil Suman	Raymonds	2.64
10	Bhambare Yogita Lahu Sushila	Raymonds	2.64
11	Katgaye Ashish Tulsidas Vanita	-	-
12	Gatade Aman Anil Anita	Going for higher studies (M.Tech at ICT, Mumbai)	-
13	Shastrakar Pragati Wasudeo Anita	Arvind Mills	4
14	Raut Poorva Bhushan Varsha	Going for higher studies (M.S. at North Carolina State University, U.S.A)	-
15	Dandekar Rasika Sitaram Archana	Going for higher studies (Preparing for MBA)	-
16	Mali Monika Vitthal Rohini	Hohenstein India Pvt Ltd	3
17	Savale Yogesh Kadu Indubai	Raymonds	2.64
18	Gokhale Keyur Arvind Amita	Pidilite	4.5
19	Manepalli Ambica Ramana Murthy Padma	Going for higher studies (M.S. at North Carolina State University, U.S.A)	-
20	Bramhecha Indrajit Chandrakant Deena	Raymonds	2.64
21	Hunoor Anagha Anand Suneeta	Going for higher studies (Preparing for M Tech in Chem Engg in ICT)	-
22	Jagtap Priyanka Suresh Snehal	Going for higher studies (M.Tech at ICT, Mumbai)	-
23	Dubey Rahul Sanjay Pushpa	-	-
24	Gandhi Vinamrata Pravigya Archana	Going for higher studies (M.B.A at XLRI, Jamshedpur)	4.5
25	Surabhi Anurag	Pidilite	4.5
26	Inamdar Irshad Nazir Sayara	Going for higher studies (M.Tech at ICT, Mumbai)	-
27	Singhi Bhavya Kamal Kishore Seema	Going for higher studies (M.S at North Carolina State University, U.S.A)	-

28	Gupta Shashwat Vinod Kumar Anita	Going for higher studies (plan to go to USA in Jan 2015)	-
29	Rathi Nischay Mahesh Surekha	Global Nonwovens, Igatpuri	3
30	Chavan Ketki Suresh Manisha	Pidilite	4.5
31	Nikhil Salunkhe	-	3.55-231

M.TECH. 2012-14

Sr.	Student Name	Company name	Salary in Lakhs - PA
1	Mahajan Geetal Atul Sangit	Going for higher studies Ph.D. Tech at ICT, Mumbai	-
2	Md Sajir Mallick	Huntsman	4.0
3	Kulkarni Saket Damodar Sadhana	BTRA	4.0
4	Raybole Abhishek Pratap Rekha	Huntsman	4.0
5	Maurya Shailesh Ramdhani Shardadevi	-	-
6	Viveki Somling Basagonda Malabai	-	-
7	Thitame Prasad Vasant Suman	Going for higher studies Ph.D. Tech at ICT, Mumbai	-
8	Bansal Prabhat Shobha Anil Meena	Do not Require Job	-
9	Sinaha Roy Pallabi Partha Kamala	Global Nonwovens, Igatpuri	4.0
10	Pintu Pandit	Going for higher studies Ph.D. Tech at ICT, Mumbai	-
11	Saptarshi Maiti	Going for higher studies Ph.D. Tech at ICT, Mumbai	-
12	Prasun Kumar	-	-
13	Shitole Pallavi Adinath Pushpalata	-	-
14	Kumar Manish Subodh Prabha	-	-
15	Honade Smita Pradiprao Shalini	Going for higher studies Ph.D. Tech at ICT, Mumbai	-
16	Phadke Shyam Divakar Mangala	Pidilite Industries	2.5
17	Katre Gaurav Bhumesh Shashi	Antham Cell	4.5
18	Anjum Ahmad	-	-

M.SC. TEXTILE CHEMISTRY 2012-14

Sr.	Student Name	Compay name	Salary in Lakhs - PA
1.	Jadhav Nilesh Chandrakant Sulochana	Going for higher studies, ICT, Mumbai	-
2.	Kolambkar Dhanashri Pundlik Shubhlaxi	Going for higher studies, ICT, Mumbai	-
3.	Pathak Hardik Naresh Neela	-	-
4.	Ramguge Supriya Hanamant Sunanda	Going for higher studies, ICT, Mumbai	-
5.	Jadhav Asmita Machindra Shubhangi	Tanatex, Thane.	1.6
6.	Parte Sneha Babasaheb Rajeshree	Going for higher studies, ICT, Mumbai	-
7.	Patrawala Mohammad Shabbir Rashida	AADTT	2.4
8.	Desai Sagar Motiram Mohini	Going for higher studies, ICT, Mumbai	-
9.	Chavan Aniket Sopan Anjana	Pako Hindustan Pvt.Ltd, Dombivali, Mumbai.	2.0
10.	Patil Rohan Bharat Surekha	-	-
11.	Meghraj Mahesh Motilal Narmada	-	-
12.	Potdar Tejasvi Ajit Malan	Going for higher studies, ICT, Mumbai	-

13.	Shetty Varun Shashidhar Shobha	-	-
14.	Ajab Sujata Jaysingh Nanda	Associated Chemicals, Mumbai.	1.8
15.	Pawar Sushant Shivaji Taramati	Going for higher studies, ICT, Mumbai	-
16.	Gupta Sandeep Ramchandra Sushildevi	-	-

IN-PLANT TRAINING

B. TECH. 2012-13

Sr.	Name	Assigned Company & Contact Person
1	Nawage Sneha	BASF India Limited, Turbhe,Navi Mumbai, India.
2	Venkatram Shruti	Intertek Softlines, Vikroli, Mumbai
3	Wagle Shreyas	BASF India Limited, Turbhe, Navi Mumbai, India
4	Bhagwat Sagar	Alok Industries Ltd, Vapi Industrial Estate, Vapi.
5	Tiwari Rina	Evonik Degussa India Pvt. Ltd, Saki Naka, Andheri (East), Mumbai.
6	Nayak Shrinkhala	Renewable Energy Segment, Owens Corning Ind. Pvt. Ltd.
7	Gharde Avoni	BASF India Limited, Turbhe, Navi Mumbai, India
8	Shinde Kshitij	Alok Industries Ltd, Vapi Industrial Estate, Vapi.
9	Bhagwat Advait	Dy Star India Private Limited,Rabale, Post Ghansoli,Navi Mumbai - 400 701
10	Pirzada Muqsit	Venus Ethoxyethers Pvt. Ltd.,Bicholim,Goa-403504, India
11	Patil Gaurav	Intertek Softlines, Vikroli, Mumbai
12	Patil Jidnyasa	Intertek Softlines, Vikroli, Mumbai
13	Munshi Ishira	Croda India company Pvt. Ltd.Koparkhairane, Navi Mumbai.
14	Srivastava Aakansha	Dow Chemical International Pvt Ltd.,Vikroli (W),Mumbai.
15	Dash Abhilash	Renewable Energy Segment, Owens Corning Ind. Pvt. Ltd.
16	Karapurkar Ameya	DyStar India Private Limited,Rabale,Navi Mumbai.
17	Redkar Yash	Alok Industries Ltd, Vapi Industrial Estate, Vapi.
18	Girase Arjunsing	Croda India company Pvt. Ltd.Koparkhairane, Navi Mumbai.
19	Ayyar Anand	Alok Industries Ltd Servey, Vapi Industrial Estate, Vapi.
20	Yogesh Yeole	Atul Ltd, Near Valsad City, Valsad, Gujarat, India
21	Chatterjee Kony	Colorband Dyestuff Pvt Ltd.,Mumbai
22	Ansari Paiker	National Aerospace Laboratories (NAL) ,Bangalore 560017
23	Agarwal Rohan	NTC House, (National Textile Corporation Ltd) Coimbatore, Tamil Nadu, India
24	Hule Abhishek	National Aerospace Laboratories (NAL) ,Bangalore
25	Pare Kaustubh	Grasim Industries,
26	Palwe Priya	National Aerospace Laboratories (NAL) , Bangalore.
27	Agarwal Nihit	Subhalakshmi Polyester Pvt Ltd.
28	Shailesh Thorat	Texanlab Laboratories Pvt. Ltd.Ghansoli,Navi Mumbai.
29	Shaheen Nadaf	Raymond Zambaiti, Five Star Ind, Kolhapur.
30	Dash Neiladri	Elixir Apparel Factory, Karbala, Narendrapur, Kolkata
31	Sharma Ayush	Bir Horizons Ltd, Surajpur Greater Noida -201306

M.SC. TEXTILE CHEMISTRY 2012-14

Sr.	Student Name	Name of Industry
1.	Shetty Varun Shashidhar Shobha	Texanlab
2.	Jadhav Nilesh Chandrakant Sulochana	BASF, Turbhe
3.	Desai Sagar Motiram Mohini	BASF, Turbhe
4.	Meghraj Mahesh Motilal Narmada	BASF, Turbhe
5.	Kolambkar Dhanashri Pundlik Shubhlaxmi	Archroma India Private Limited, Thane
6.	Jadhav Asmita Machindra Shubhangi	Archroma India Private Limited, Thane
7.	Pawar Sushant Shivaji Taramati	Texanlab
8.	Pathak Hardik Naresh Neela	Arvind
9.	Gupta Sandeep Ramchandra Sushiladevi	Arvind

10.	Patrawala Mohammad Shabbir Rashida	Colorband Dyestuff Pvt Ltd.
11.	Chavan Aniket Sopan Anjana	Texanlab
12.	Ajab Sujata Jaysingh Nanda	Colorband Dyestuff Pvt Ltd.
13.	Patil Rohan Bharat Surekha	Texanlab
14.	Potdar Tejasvi Ajit Malan	Oswal F.M.Hämmerle Textiles Ltd., Kolhapur
15.	Parte Sneha Babasaheb Rajeshree	Oswal F.M.Hämmerle Textiles Ltd., Kolhapur
16.	Ramugade Supriya Hanamant Sunanda	Oswal F.M.Hämmerle Textiles Ltd., Kolhapur

PROFESSIONAL ACTIVITIES

PROFESSOR R. V. ADIVAREKAR

- Life Member of Textile Association (India)
- Life Member of Indian Fibre Society
- Editor of Journal of Textile Association
- Visiting faculty for Sophia Polytechnic
- Member of selection committee, College of Home Science, Nirmala Niketan
- Member of technical/ Research advisory committee of Wool Research Association
- Member of Board of studies and faculties of The Maharaja Sayajirao University of Baroda in Textile chemistry
- Member of General Advisory Committee for Research and Liason of BTRA for the period 2011-2014
- Member of 'Core Group' to function as a Sub-committee of the Council for COE in Sportech at WRA
- Member as Expert in Department Research Committee at Textile Manufacturers Department, Veermata Jijabai Technological Institute
- Member of RRC, Department of Physics, ICT

PROFESSOR M. D. TELI

- Chairman, Research Monitoring Committee of TIFAC -DST for Technical Textiles at DKTE Textile Institute, Ichalkaranji.
- Chairman, Research Monitoring Committee of TIFAC -DST for Technical Textiles at Kumarguru College, Coimbatore.
- Member, Research Advisory Committee, ATIRA (Ahmedabad), SASMIRA (Mumbai).
- Chairman Jury for Export Excellence awards, Indian Textile Machinery Manufacturers Association, Mumbai.
- Member Craft mark market excess Jury 2013, Market Excess for evaluation of rural craft producers readiness to meet contemporary demand. (Organised by All India Artisans and craft workers welfare associations (AIACA, New Delhi)
- Member of the Research advisory committee for the Seri Biotechnology, Dept of Biotechnology, Ministry of Science and Technology.
- Referee for projects submitted to Dept. Of Science and Technology and Dept. Of Seri Bio Technology. GOI-New Delhi
- Patron/Governing Council Member of Textile Association (India)
- Patron Member, Association of Chemical Technologists, India
- Life Member, Colour Group of India
- Member, Editorial Board, Rossera
- Member, Editorial Board, Colourage
- Member, Board of Studies in Textiles and Clothing, SNDT University
- Member, Academic Council, S.V.T College, SNDT University
- Referee for Ph.D. Thesis at IIT, MS University and Vishweshwarya University Belgaum, Bengalaru, Kolkata university etc.

PROFESSOR S. R. SHUKLA

- Member, Editorial Board, Indian Journal of Fibres & Textile Research
- Life Member, Indian Fibre Society
- Member, Polymer Society, India
- Life Member, Textile Association (India)
- Life Member, Colour

Group of India
- Life Member, Marathi Vigyan Parishad
- Patron Member, Association of Chemical Technologists, India

DR. R. D. KALE
- TEQIP coordinator of the dept
- Part of the Chief Conductor cum Senior Examiner for all the examinations conducted for UG and PG students
- Committee member of the MIS system of the Institute
- Placement coordinator the dept
- IPT in charge for T Y B Tech and M Sc Textile Chemistry students
- Coordinator of the dept for UGC-SAP programme
- Divisional Representative of the dept for IPC
- Member of the Cultural Activity Cell of the Institute
- Member of the Admission Committee of the Institute
- Member of the "Shri G.M. Abhyankar Students'Travel Assistance" of the Institute
- Examiner for Practical Exam in SASMIRA, Worli
- External Examiner for NMIMS(Deemed to be Univeristy), Shirpur
- Assisting NMIMS(Deemed to be Univeristy), Shirpur for designing the DTT course syllabus
- Expert on the committee formed by by Dept of Health Sciences, Maharashtra State that is tasked with preparing specification for different garments/items that is used in Govt. mental hospitals

DR. USHA SAYED
- Referee for Journal of polymer and Environment
- Member of Editorial Advisory Board of International Journal of Advanced Science and Engineering
- Chairperson of Adhoc Committee of Textile Technology (MU)
- Best Ph.D.Tech Thesis Committee,
- Referee- for Nirmala Niketan college for M. Sc. (Home Science).
- Referee- for SNDT.
- Examiner for Nirmala Niketan college for M. Sc. (Home Science).
- Student counselling,
- Trained and Lectured students of National Institute of Fashion Technology [NIFT]

DR. SUJATA PARITI
- Member, Society of Dyers and Colourists (SDC), London, for Mumbai Region from 2001.

SPECIAL AWARDS

PROFESSOR S. R. SHUKLA
- Fellow of Maharashtra Academy of Sciences (FMAS)

PROFESSOR M.D. TELI
- Received TAI RATNA award on 9th April 2014 on the occasion of Platinum Jubilee of Textile Association of India.
- Key note speaker for SDC's annual conference Sustainable Innovation in Colouration on 6th June 2014.
- Served On the Elite Panel of SAC's (Sustainability Apparel Coalitions) (U.S.A)
- Served as a member of UGC sponsored curriculum design workshop, Agra.
- Chairman Jury for Export Excellence awards, Indian Textile Machinery Manufacturers Association, Mumbai.

DEPT CONDUCTED FOLLOWING ENDOWMENT LECTURES/INVITED LECTURES FOR THE STUDENTS OF THE TEXTILE DEPT AND ALUMNI

Dept. arranged guest lectures by Industry experts under TEQIP programme phase II and also lectures under different endowments

Sr. No.	Lecture	Speaker	Date
1.	Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology	Dr. Prasad Potluri University of Manchester, UK	12 Jul 13
2.	Ecological Considerations of Colorants for Textile Applications	Dr. Siva Rama Kumar Pariti, Industry expert, Dystar India Pvt. Ltd.	02 Sept 13
3.	Surface Modification Using Dendritically Functionalised Polymers	Dr. Imtiyaz Ansari Sheffield Hallam University, UK.	4 Jan 14
4.	Developing Novel Biomaterials Using Nanotechnology	Professor Sandra Downes Professor of Biomaterial Science at "School of Material Science, Manchester University" in UK.	20 Jan 14
5.	Elemental & Molecular Spectroscopy in Textile Industry	Mr. Prashant Shah & Mrs. Purnima Parkhi Product manager for elemental and molecular spectroscopy, Agilent technologies	22 Jan 14
6.	Higher education opportunities in France	Mrs. Amruta Datar Counseller for Mumbai, Campus France, India	24 Jan 14
7.	Textile - A Road Map to 2025 and Globalization	Professor Rishi Jamdagni Director, The Technological Institute of Textile & Sciences, Bhiwani, Haryana	30 Jan 14
8.	Workshop on Awareness of Sport Textile, Institute of Chemical Technology, Matunga and WRA, Thane under TEQIP Phase-II.	Dr. M. K. Talukdar (Kusumgar corporate) Dr. M. R. Choudhari (DD, WRA) Mr. Dakshesh Desai (Premier colour scan) Dr. K. H. Prabhu, Mr. Shishir Taygi Mr. Mayur Basuk Mr. Jagadanand Behera,(Scientist, WRA)	27th & 28th Jan 2014

Sr. No.	Type of Endowment	Speaker	Topic	Date
1.	Class of 1966 Visiting Fellowship	Mr. Prabhatkumar K. Trivedi General Manager, Archroma India Pvt. Ltd.	"Key Concerns for Continuous Dyeing & Features for Finishing"	24/03/2014
2.	Dr. M.V. Nimkar endowment lecture	Mr.Arvind Shikarkhane Textile Processing Consultant	Energy Conservation & Effluent Control in Textile Processing	21/03/2014

RESEARCH GROUP

PROFESSOR (DR.) R. V. ADIVAREKAR RESEARCH GROUP

From Left to Right: (Top Row) Pramod Pati, Ajinkya Powar, Shripad Bhawsar, Dhanraj Desai, Shyam Phadke, Santosh Biranje, Saptarshi Maiti, Ashitosh Pawar, Girendra Pal Singh **(Bottom Row)** Ashwini Patil, Pallavi Madiwale, Swapnali Patil, Trupti Sutar, Professor (Dr.) R. V. Adivarekar, Pallabi Sinha Roy, Pallavi Badhe, Geetal Mahajan, Rachana Harane, Karishma Sakhare

PROFESSOR M. D. TELI RESEARCH GROUP

From Left to Right: Pintu Pandit, Akshay Jadhav, Amol Jangle, Aranya Mallick, Dharmendra Gupta, Parag Bhavsar, Nikhil Shaiwale, Pawan Desai, Shailesh Maurya, Pravin Chavan, Sanket Valia, Bhagyashree Annaldelwar

PROFESSOR S. R. SHUKLA RESEARCH GROUP

From Left to Right: (Bottom Row) Neha Parmar, Namata Patil, Sajir Mallick, Professor S. R. Shukla, Shweta Vyas, Saurabh Singh, Arputhraj **(Top Row)** Sachin Gondhelekar, Prasad Thitame, Rakesh Musale, Saket Kulkarni, Anjum Ahmad, Prasun Kumar, Vinay Nadigar, Parag Kapadi

DR. USHA SAYED RESEARCH GROUP

From Left to Right: Dr. Usha Sayed **(front side)**, SK MD Zulfikar, Prince Dabhi, Vijay B Hebbalkar, Ravikant Sharma

DR. R. D. KALE RESEARCH GROUP

From Left to Right: (Top Row) Ambadas Garje, Sanchayan Pal, Gaurav Katre, Akshay Vade, Abhishek Raybole **(Bottom Row)** Prerana Kane, Latika Bhat, Dr. R. D. Kale, Prabhat Shobha Bansal, Vikrant Gorade

DR. SUJATA PARITI RESEARCH GROUP

From Left to Right: Dhanraj Desai, Ajinkya Powar, Dr. Sujata Pariti, Swapnali Patil

PREFACE

PROFESSOR REKHA S. SINGHAL

B.Sc.(Hons.), M.Sc.(Tech.), Ph.D.(Tech.)
Fellow, Maharshtra Academy of Sciences
Fellow, Association of Food Scientists and Technologists (India)
Fellow of the Biotech Reasearch Society of India (BRSI)
Professor of Food Technology and HOD
rs.singhal@ictmumbai.edu.in

The year 2013-14 began on a good note and witnessed the continuing progress in research and development in the Food Engineering and Technology Department (FETD) as well as good campus placement encompassing national, international and multinational companies. Many of these companies have come year after year to recruit our graduates from all streams of learning. It is a matter of great satisfaction and pride to all faculty members in FETD that the training imparted to the students at all levels is able to meet the industry requirement in the emerging areas of food science and technology. The interdisciplinary masters program in food biotechnology has picked up very well. Since the last two years, we have also begun a new Ph.D program in food science to attract students from diverse backgrounds and explore newer areas of research which were hitherto not addressed in FETD. In spite of just 5 full time faculty members in FETD (we have 3 vacant positions), our productivity is impressive. During the year, we have had 52 publications in national and international journals and/or books. Currently there are 67 PhD fellows and 44 M.Tech students working in the Department.

The FETD was established in then UDCT in 1943 offering Bachelor of Science (Tech) in chemistry of foods and drugs. Later in 1949, a full-fledged B.Sc Tech. degree course in food technology was started. In 1963, again for the first time in the country, masters program in fermentation technology was initiated and the department was christened 'Food and Fermentation Technology Department'. In the 21st Century, after aligning all the graduate programs as 12+ 4 pattern, the department has focused on engineering as well. To keep up with the present times, the course in fermentation technology has been restructured as food biotechnology.

MISSION

"Establishing a center of excellence to provide demand driven, value-based and quality technical education to make India a developed country through socio-economic transformation"

VISION

- To improve food, especially Indian traditional foods, in terms of nutrition, safety and functionality employing fundamental and applied sciences.

DEPARTMENT OF FOOD ENGINEERING AND TECHNOLOGY

It is a matter of great satisfaction and pride to all faculty members in FETD that the training imparted to the students at all levels is able to meet the industry requirement in the emerging areas of food science and technology. The interdisciplinary masters program in food biotechnology has picked up very well.

- To produce trained personnel of highest standards for the benefit of the industry and society, in the field of food engineering & technology and food biotechnology.
- To provide leadership in areas of education, research, innovations and solutions in food and biotech sciences, technology and engineering to direct overall activity towards economic growth of India.

We are thankful to UGC for the Center of Advanced Studies Status (CAS-I) and continued support by way of Ph.D fellowships under the SAP program. Support from TEQIP too facilitated many students and faculty in attending conferences and showcasing their work. ICT has been active in instituting severalmerit-cum-means scholarship for the needy and meritorious undergraduate students. FETD has Dr. P.J. Dubash- AFST scholarship of Rs 25,000/- per year. In addition we are also thankful to PFNDAI and Kamani Oil Industries who have generously sponsored scholarships regularly. We are grateful to industry houses for accommodating our students for the mandatory 6-week in-plant training, to all the visiting faculties who have assisted us in conducting our courses despite severe time constraints, and to all the examiners who have spared valuable time in evaluating theses of our M.Tech and doctoral students.

The burgeoning student strength is placing severe constraints on our infrastructure. We seek financial help in the form of generous donations from all the well wishers and alumni. We appeal to all concerned to extend their support in whatever way they can. We are also grateful to all our UG-PG students and support staff for being with us all the time and enriching our lives in numerous ways. We expect your continued support and long term association with us.

FETD takes pride in playing leading role in co-curricular as well extension activities at ICT and also through professional body, Association of Food Scientists and Technologists (India) or AFST (I). Two of our faculty members are hostel wardens and 3 are office bearers of Mumbai chapter of AFST (I) including the president. One of the highlights of this year was establishing a full fledge laboratory for the food

biotechnology program, and the renovation of the adjacent lab with very generous funding from the UDCT Alumni association.

The International collaborations in teaching as well as research have picked up momentum in FETD. We are indeed blessed to receive support from our well wishers, alumni and friends of the department. Professor K. Niranjan (University of Reading, UK, who is also our Adjunct Professor) conducted a course of 15 lectures for the M.Tech students through skype. We also had thought provoking lectures by faculty from other universities as well as industry personnel under endowment lectures and under TEQIP.

Some of our PhD scholars could get opportunites to work at the University of Saskatchewan (Canada) and University of Aalto (Finland) under various research programs. Besides, one student is at Germany and another one would be going to Belfast, UK on joint collaboratve programs with faculty colleagues in the FETD. Under the Summer Research Fellowship Program of the Science Education Panel, Indian Academy of Sciences, one student did her project in FETD. Many of our undergraduate students also did summer training.

Our interaction with the industry has been on an increase with mutual support and benefit to all concerned. The seminar on 'traditional Foods' conducted this year along with AFST (I) Mumbai Chapter with particpants both from academia and industry garnered Rs. 3.25 lakhs for the FETD for which we are grateful.

RESEARCH ACTIVITIES AND INSTRUMENTAL / LAB FACILITIES AVAILABLE :

Major Research Interests

Thrust areas under CAS include _

Carbohydrate Chemistry & Technology

- Cereal science & technology
- Chemistry & technology of traditional foods
- Enzymology, enzyme applications, modification of enzymes
- Food product / process development; instant food premixes
- Food quality analysis
- Fruits and vegetable processing

Fermentation Technology & Food Biotechnology

- Fermented foods
- Fermentative production and downstream processing of enzymes / metabolites
- Nutraceuticals & natural pigments
- Nutrigenomics
- Plant tissue culture

MAJOR INSTRUMENTAL / PROCESSING FACILITIES

Infrastructure

The FETD is well structured with equipments required for food processing that include retort processing unit, blast and fluidized freezer, pasta making machine, modified atmosphere packaging, dough sheeter, tray and ir dryer, fluidized bed dryer, fermentor, high pressure homogenizer, ultrasonic processor, RO and ultrafiltration unit, spray dryer, and twin screw extruder.

The FETD also houses many analytical instruments such as HPLC, HPTLC, GC, GCMS, spectrophotometers, Hunter lab colorimeter, supercritical carbon dioxide extraction unit, image analyzer, Brookfield rheometer, texturimeter, Haake viscometer, electrophoresis unit, protein purification system, PCR thermal cyclers, RT-PCR, and differential scanning calorimeter (DSC).

PROGRAMS OFFERED

No.	Degree	Comments	Seats
1	B.Tech. (Food Engineering & Technology)	AICTE Approval in 2002 and later in 2008 (12 + 4) Pattern.	17
2	M.Tech. (Food Engineering & Technology)	AICTE Approval in 2008 and NBA accreditation in 2013	5
3	M.Tech.(Food Biotechnology) (Restructured Fermentation Technology course)	DBT Supported	10
4	M.Tech. (Bioprocess Technology)	DBT Supported *Interdisciplinary* course with Chemical Engineering & Pharmaceuticals Department.	30*
5	M.Tech. (Perfumery & Flavors)	The Perfumery & Flavors Association of India (PAFAI) supported *Interdisciplinary* course with Chemical Engineering, Oils, Pharmaceuticals & Dyes Department.	5*
6	Ph.D. (Tech.) (Food Engineering and Technology Ph.D (Tech) (Food Biotechnology) Ph.D (Tech) (Bioprocess Technology) Ph.D (Biotechnology), Ph.D (Biochemistry) Ph.D (Food Science)	10 UGC-SAP fellowships from 2007. 15 UGC-SAP fellowships (Food 10 + 5 BPT) from 2009.	15

* At Institute level

CURRENT STUDENTS :

Course	No. of Students		
	2012-13	2013-14	% increase
Masters (both years)	45 [including 9 M.Tech (BPT)]	48 [including 4 M.Tech (BPT)	
Ph.D. (Tech) (all)	32	40	
Ph.D. (Sci) (all)	31	27	
PGDCTM (all)	23	8	

DEGREES AWARDED DURING 2013-14

Course	No. of Students		
	2012-13	2013-14	% increase
B.Tech	16	Convocation yet to take place	
M.Tech.	19 [including 4 M.Tech (BPT)]	Convocation yet to take place	
Ph.D. (Tech)	3	1	
Ph.D. (Sci)	2	8	
PGDCTM	22	Convocation yet to take place	400

RESEARCH OUTPUT

		2012-13	2013-14	% increase
No. of Research Project	Govt.	5	6	20
	Private	1	5	400
No. of consultation Assignments		7	9	28
No. of Patents	Applied	1	-	
	Obtained	-	-	
No of Paper Published	National	10	7 + 1 book chapter	
	International	49 + 3 book chapters	38 + 6 book chapters	
No. of Conference Presentations	National	6	37	516
	International	29	5	
Citations*		822 (2012)	954 (2013)	16

*from Scopus for the calendar year 2012 and 2013

ANY OTHER INFORMATION

NBA accreditation was received for the M.Tech degree course in Food Engineering and Technology.

PROFESSOR R. S. SINGHAL

B.Sc.(Hons.), M.Sc.(Tech.), Ph.D.(Tech.)
Fellow, Maharshtra Academy of Sciences
Fellow, Association of Food Scientists and Technologists (India)
Fellow of the Biotech Reasearch Society of India (BRSI)
Professor of Food Technology and HOD
rs.singhal@ictmumbai.edu.in

SUBJECTS TAUGHT :

- Food additives and ingredients, Current topics in food science and technology, Nutraceuticals and functional foods, Principles of food analysis, Modern techniques in food analysis, Food safety and toxicology

RESEARCH INTERESTS :

- Food quality, Food chemistry, Biopolymers, Lipid chemistry and technology, Food product development, Food processing, Fermentative production and downstream processing of biomolecules, Traditional foods.

RESEARCH STUDENTS:

Ph.D. (completed) - 20
Masters (completed) - 72
Ph.D. (ongoing) - 21
Masters (ongoing) - 12
Post-docs - 2
Summer trainee - 1

RESEARCH PUBLICATIONS:

International- 288
National- 9
Conference Proceedings: 140
Book chapters - 34
Patents (till date): 1granted and 2 applied

SPONSORED PROJECTS :

Government – 2 (ongoing)
Private – 1 (completed
Government – 2 (completed)
Private – 1 (ongoing)

AWARDS/HONOURS :

National – 5
International - 1

H-INDEX: 41*

Number of citations: 6136

*As per google scholar on July 15, 2014

PROFESSIONAL ACTIVITIES :

- Member, Editorial Board, International Journal of Food Science and Nutrition.
- Member, Editorial Board, Plant Foods for Human Nutrition.
- Member, Selection committee for promotions, BARC, Mumbai.
- Member, Expert group in the area of secondary agriculture, Department of Biotechnology, Government of India.
- Member, Selection committee, appointment of Assistant Professors and Associate Professors, Shivaji University, Kolhapur.
- Expert, UGC-DSA Programme, University of Mysore.
- Life Member, Association of Food Scientists and Technologists (India).
- Life Member, Association of Carbohydrate Chemists and Technologists, India.
- Member, Advisory Board, Trends in Carbohydrate Research, published by ACCT (I).
- Member, BIPP, BIG, SBIRI, SPARSH and BIRAP, Department of Biotechnology, Government of India
- Referee, Several journals in food science and technology, and bioprocess technology
- Examiner, Ph.D thesis at some universities in India

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

Professor Rekha Singhal has made outstanding contributions in the area of biopolymers in foods, in particular to polysaccharides and their modifications and their applications in the area of microencapsulation of numerous sensitive food constituents such as spice oleoresins, neutraceuticals and flavours. She successfully explored the use of indigenous raw materials for microencapsulation as an alternative to import substitutes; to fermentative production and downstream processing of industrial biomolecules such as therapeutics (clavulanic acid, cyclosporin), neutraceuticals (lycopene, ubiquinone, zeaxanthin, gamma-linolenic acid), enzymes (glutaminase), polymers of varied industrial interest (polyglutamic acid, polylysine), and microbial polysaccharides (schizophyllan, curdlan, scleroglucan) among many others. Her work on supercritical carbon dioxide extraction of food/ pharmaceutical constituents and microbial metabolites is noteworthy. Besides, she has worked in frontier areas in food science and technology including traditional Indian foods with an aim to improving their quality and establishing the authenticity. In particular, her work on investigating acrylamide in traditional Indian foods was the first of its kind in the country and has received laurels. Her work on hydrocolloids for reducing oil content of deep-fat fried foods attracted the food industry and catalyzed their acceptance as permitted additives by the legal authority in India (PFA). She has collaborated with scientists both in India (BARC, NIIST) and abroad (Aalto University, Finland; IIT Chicago) on topics of mutual interest such as food toxicology and biofuels, and has publications in standard journals based on the work undertaken.

TEN BEST REPRESENTATIVE PUBLICATIONS/PATENTS

Sr. No.	Title	Name of the Journal	Year, Vol.: page no.	Journal impact factor (5 year)
1	Resistant starch-a review	Comprehensive Reviews in Food Science and Food Safety	2006, 5(1): 1-17	5.053
2	Glucose oxidase—An overview	Biotechnology Advances	2009, 27(4): 489-501	11.85
3	Microencapsulation of cardamom oleoresin: Evaluation of blends of gum Arabic, maltodextrin and a modified starch as wall material	Carbohydrate Polymers	2005,61(1): 95-102	3.479
4	Starch-galactomannan interactions: Functionality and rheological aspects	Food Chemistry	1996, 55(3): 259-264	3.334
5	Comparison of artificial neural network (ANN) and response surface methodology (RSM) in fermentation media optimization: Case study of fermentative production of scleroglucan	Biochemical Engineering Journal	2008, 41(3): 266-273	2.579
6	Process optimization for the synthesis of octenyl succinyl derivative of waxy corn and amaranth starches	Carbohydrate Polymers	2006, 66(4): 521-527	3.479
7	Supercritical carbon dioxide extraction of cottonseed oil	Journal of Food Engineering	2007, 79(3): 892-898	2.276
8	Biosynthesis of silver nanoparticles using aqueous extract from the compactin producing fungal strain	Process Biochemistry	2009, 44(8): 939-943	2.414
9	Use of metabolic stimulators and inhibitors for enhanced production of β-carotene and lycopene by *Blakeslea trispora* NRRL 2895 and 2896	Bioresource Technology	2008, 99(8): 3166-3173	4.750
10	Carboxymethylcellulose and hydroxypropylmethylcellulose as additives in reduction of oil content in batter based deep-fat fried boondis	Carbohydrate Polymers	1996, 29:33-35	3.479

PROFESSOR S. S. LELE

B.Chem.Engg., M.Chem.Engg., Ph.D. (Tech.)
Fellow, Maharshtra Academy of Sciences
Fellow, Biotech Research Society of India (BRSI)
Professor of Biochemical Engineering
ss.lele@ictmumbai.edu.in, dr.smita.lele@gmail.com

SUBJECTS TAUGHT

- Food Engineering, Fermentation Technology, Fundamentals of Food Process Engineering, Advances in Food Enggineering & Technology, Fundamentals of Food Science and Technology.

RESEARCH INTERESTS

- Food product/process development, microalgal metabolites, enzyme production from indigenous strains, biological effluent treatments, fruit and vegetable based dehydrated and nutritious product development.

RESEARCH STUDENTS

Ph.D. (completed) – 19
Masters (completed) – 54
Ph.D. (ongoing) – 14
Masters (ongoing) – 8

RESEARCH PUBLICATIONS

International-75
International (this year) - 16
National- 9
Conference Proceedings – 32
Book / chapters -1 /3 (1 Chapter this year)

PATENTS

4 (applied)

SPONSORED PROJECTS

Government – 8 (completed)
Ongoing- 2

AWARDS/HONOURS

National - 9
International – 1

H-INDEX 18*:

citations: 1400
*As per google scholar on July 15, 2014

PROFESSIONAL ACTIVITIES :

- Member, Examination Board, K J Somaiya College of Engineering, Vidyavihar, Mumbai.
- Mentor, C-CAMP, DBT initiative for Entrepreneurs in Biotech, Bangalore, dated February 8, 2014.
- Member, DBT- JRF program, Syllabus committee and policy for BET exam 2014, held at Pune, Jan 13-14, 2014.
- Convenor, DBT supported- First DBT-JRF Fellows- Supervisors Regional Meet, ICT, Nov 21-22, 2013
- Member, Brain Storming session on Bio-processing of Agri-residues organized by Department of Biotechnology, Ministry of Science and Technology, Government of India on August 29, 2013 at Bioprocessing Unit Mohali Punjab.
- Member, National Policy Meeting for DBT-JRF program, June 20, 2013 Pune.
- Member of 'Promoting Industrial Cluster Development Program' in State of Maharashtra, March 20, 2014
- Member, Scientific panel on contaminants in food chain of the Food Authority; FSSAI, New Delhi (2013-2016).
- Member, Research Recognition Committee in Food Science and Nutrition, SNDT (2009-2014).
- Council Member, Indian National Science Academy (INSA-ICSU), 2012-15.
- Referee of several International Journals in Biotechnology and Food Engineering.
- Life member of a number of national and international professional bodies engaged in activities related to Science & Technology and Women Scientists, AFST, AMI, BRSI, IIChE, UAA.

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

Professor S. S. Lele has made outstanding contribution in the field of biological treatment of highly concentrated industrial waste. In 1990 she developed a novel award winning process of simultaneous coal recovery with biogas production from distillery spent wash that is commercialized. Her work on distillery effluent was appreciated and she was awarded "Hari Om Ashram Preit Shri. S.S.Bhatnagar Research Award-2001", on Prevention of Water Pollution. Another significant work was on developing continuous biological treatment of concentrated, radioactive nitrate waste generated by nuclear plants. This technology has solved an important national problem that was pending for several years. She is known for her expertise in novel photo bioreactors and as an expert in food processing and machinery design for Indian traditional foods. In the area of food technology, she has developed vegetable and fruit based products and processes, filed 4 patents and taken 2 trade marks. She was instrumental in setting up a demo plant for small scale processing of fruits/ vegetables to reduce post harvest losses. This project was supported by the Rajiv Gandhi S and T Commission of the Govt. of Maharshtra. Food product & process development, microalgal metabolites and heavy metal adsorption are some other areas where Dr. Lele has made significant contribution and published over 50 international papers. She is also known for her contribution is popularizing science in the society. Set of 3 films on subjects related to energy saving while cooking, food adulteration and nutrition was prepared by her.

TEN BEST REPRESENTATIVE PUBLICATIONS/PATENTS

Sr. No.	Title	Name of the Journal	Year, Vol.: Page no.	Journal impact factor (5 year)
1	Kinetic modeling and implementation of superior process strategies for beta-galactosidase production during submerged fermentation in a stirred tank bioreactor.	Biochemical Engineering Journal	(2013). 77 49–57	2.984
2	Use of a batch-stirred reactor to rationally tailor biocatalytic polytransesterification.	Biotechnology and Bioengineering	(2000) 67 (4): 424-434.	3.648
3	Modelling of air-lift fluidized bed: Optimization of mass transfer with respect to design and operational parameters	Chemical Engineering Journal	(1992) 49 (2): 89-105	3.691
4	Three Phase Partitioning of β-galactosidase produced by an indigenous *Lactobacillus acidophilus* isolate	Separation and Purification Technology	(2013). 110 (2013). 44–50	3.525
5	Synthetic dye decolorization by white rot fungus, Ganoderma sp.	Bioresource Technology	(2007) 98 (4): 775-780.	5.172

6	Kinetic and equilibrium modeling of chromium (VI) biosorption on fresh and spent *Spirulina platensis/Chlorella vulgaris* biomass.	Bioresource Technology	(2008) 99 (9): 3600-3608.	5.172
7	Simultaneous removal of carbon and nitrate in an airlift bioreactor	Bioresource Technology	(2009). 100 (3): 1082-1086.	5.172
8	Application of response surface methodology to cell immobilization for the production of palatinose	Bioresource Technology	(2007). 98 (15): 2892-2896.	5.172
9	Denitrification of high strength nitrate waste.	Bioresource Technology	(2007) 98 (2): 247-252.	5.172
10	Phase transfer catalysis in extraction accompanied by fast reaction in diffusion film	Chemical Engineering Science	(1981) 36: 955 - 956	2.653

DR. U. S. ANNAPURE

B. Tech., M.Sc. (Tech)., Ph.D. (Tech).
Associate Professor
us.annapure@ictmumbai.edu.in

SUBJECTS TAUGHT

Food Chemistry, Principles of Food Preservation, Technology of Fruits, Vegetables and Tubers, Food Biotechnology, Current Topics in Food Science and Technology, Food Processing Lab, Food Microbiology Lab, Carbohydrate Chemistry and Technology.

RESEARCH INTERESTS

Cold plasma technology for food Processing, Extrusion processing – process and product development, Frying - chemistry and technology, Nutraceuticals – chemistry, technology and product development, Carbohydrates - chemistry and technology of minor grains, tubers and plant gums, Traditional foods - product and technology development, Enzyme applications in food processing, Downstream processing-enzymes, antioxidants, and biomolecules

RESEARCH STUDENTS

Ph.D. (completed) – 2
Masters (completed) – 38
Ph.D. (ongoing) – 19
Masters (ongoing) – 11

RESEARCH PUBLICATIONS

International- 41
International (this year)- 8
National- 7
Conference Proceedings – 32
Book Chapter - 1

SPONSORED PROJECTS

Government – 2 (ongoing)
Private – 1 (ongoing)
Government – 1 (completed)

AWARDS/HONOURS

National - 01
International – 1

H-INDEX: 10

CITATIONS: 286

PROFESSIONAL ACTIVITIES

- Life Member, Association of Food Scientists and Technologists, India [(AFST (I)].
- Life Member, Association

of Carbohydrate Chemists and Technologists of India (ACCTI).

- Life Member, Biotech Research Society of India (BRSI).
- Member, International Society of Food Engineering (ISFE), USA.
- Life Member, UDCT Alumni Association.
- President, Association of Food Scientists and Technologists, India (AFSTI), Mumbai Chapter.
- Member, Ad-hoc Board in Food Science and Technology at Shivaji University, Kolhapur.
- Expert, FDA, Maharashtra
- Referee, Journal of Agricultural and Food Chemistry
- Referee, Journal of Food Science
- Referee, International Food Research Journal
- Referee, Ultrasonics Sonochemistry

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

Cold plasma can be used as a non-thermal process which is capable of surface modification and surface sterilization. The plasma processing of food grains may lead to changes in surface morphology. The objectives of these studies may include but not limited to study the physico-chemical changes occur during plasma treatment and their impact on overall quality of the grains.

Extrusion is being commonly used for manufacture of sncak foods. The process is well studied with the common cereals and few legumes as a raw material. In our laboratory the focus is on the possible utilization of indigenous grains and legumes so that the locally available raw material can be utilized for extrusion as well as there will be value addition to these indigenous grains.

Gums are being commonly used in food systems as stabilizers, viscosity and texture modifying agents. Few plant gums are well established for thei food applications but our focus is to identify and explore the edible gums from lesser known indigenous plants. The isolated gums will be studied for their characteristics includes but not limited to viscosity, rhelological properties and food applications.

TEN BEST REPRESENTATIVE PUBLICATIONS/PATENTS

Sr. No.	Title	Name of the Journal	Year, Vol.: page no.	Journal impact factor (5 year)
1	Combined effect of chemical treatment and/or modified atmosphere packaging (MAP) on quality of fresh-cut papaya	Postharvest Biology and Technology	2013, 85, 147-153	2.378
2	Modelling the effect of time and temperature on respiration rate of selected fresh-cut produce	Postharvest Biology and Technology	2013, 80, 25–30	2.378
3	Cyclosporin A — A review on fermentative production, downstream processing and pharmacological applications	Biotechnology Advances	2011, 29 418–435	11.85
4	Acrylamide content in fried chips prepared from irradiated and non-irradiated stored potatoes	Food Chemistry	2011, 127 (4), 1668-1672	3.606
5	Effect of damaged starch on acrylamide formation in whole wheat flour based Indian traditional staples, *chapattis* and *pooris*	Food Chemistry	2010, 120(3), 805-809	3.606

6	Effect of an alkaline salt (papad khar) and its substitute (2:1 sodium carbonate:sodium bicarbonate) on acrylamide formation in *papads*	Food Chemistry	2009, 113(4), 1165–1168	3.606
7	Preparation of ferulic acid from agricultural wastes: its improved extraction and purification.	Journal of Agricultural and Food Chemistry	2008, 56(17) 7644 – 7648.	2.906
8	Response surface methodology in media optimization for production of β-carotene from *Daucus carota*.	Plant Cell, Tissue and Organ Culture	2008, 93:123-132	3.663
9	Starch-based spherical aggregates: screening of small granule sized starches for entrapment of model flavouring compound, vanillin.	Carbohydrate Polymers	2003, 53, 45-51	3.942
10	Screening of hydrocolloids for reduction in oil content of a model deep-fat fried product.	Fett/Lipids	1998, 6(101), 217-221	2.266

DR. LAXMI ANANTHANARAYAN

B.Sc. (Hons.), M.Sc. (Tech.), Ph.D.(Tech.)
Associate Professor, Coordinator M Tech (Food Biotechnology)
l.ananthanarayan@ictmumbai.edu.in

SUBJECTS TAUGHT

Chemistry of food constituents, Nutrition, Technology of plantation products, Food packaging, Current topics in food science and technology, Biochemistry lab I and II, Microbiology Lab II, Principles of Food preservation, Food Biotech lab, Advances in nutrition, Enzymes in the food industry, Food product development and analysis

RESEARCH INTERESTS

Traditional foods, Fermented foods, Low GI foods, Fruit and vegetable processing, CAP/MAP technology, Extrusion technology, Protein purification, Enzymology, Nutraceuticals/ health beneficial phytoconstituents, Natural pigments, Microbial metabolites, Novel methods of food processing and preservation, Development of novel nutritional products, Food adulteration/ contamination/ authentication/ allerginicity by proteomics

RESEARCH STUDENTS

Ph.D. (ongoing) – 14
Masters (completed) – 55
Masters (ongoing) – 11

RESEARCH PUBLICATIONS

International - 24
International (this year) - 02
National - 01
Book / chapters - 01

H-INDEX: 09

CITATIONS: 644

PROFESSIONAL ACTIVITIES

- Member, Board of Studies, Food and Nutrition at SNDT Women's Universtiy, Juhu, Mumbai, 2012-2015.
- Life Member, Association of Food Scientists and Technologists (India).
- Life Member, UDCT Alumni

Association

- Member, examination of projects, SIES GST, PPT Dept., Nerul, Navi Mumbai

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

Dr. Laxmi Ananthanarayan has carried out extensive research on varied topics of food science and technology, bioprocess technology, food biotechnology and biochemistry. She has worked in the area of traditional foods, fermented foods, foods with improved nutritional properties, functional foods, healthy snacks, extruded foods etc. Her work on prevention of staling in *chapatti* has been widely recognized and referred to by small scale manufacturers while her work on *idli* batter stabilization and preservation has also attracted the attention of producers in this sector. She has also explored various nutritional aspects of foods such as bioactive peptides, legume based allergens, isoflavones from legume sources, nutraceutical rich ingredients from banana. She has investigated the exploitation of novel methods of food processing for food preservation such as edible coatings, ultrasonication, CAP etc. She has shown interest in developing methods for detection of food adulteration based on proteomics. She has also undertaken research in the area of characterization and deactivation of fruit based enzymes and enzyme inhibitors. Dr. Laxmi has undertaken extensive research in exploring the production, purification and characterization of various microbial metabolites such as enzymes, pigments and antimicrobials.

TEN BEST REPRESENTATIVE PUBLICATIONS/PATENTS

Sr. No.	Title	Name of the Journal	Year, Vol.: page no.	Journal impact factor (5 year)
1	Effect of extrusion process parameters and pregelatinized rice flour on physicochemical properties of ready-to-eat expanded snacks	Journal of Food Science and Technology	2014, Article in Press	1.123
2	Characterization and *in vitro* probiotic evaluation of lactic acid bacteria isolated from idli batter	Journal of Food Science and Technology	2013, 50(6): 1114-1121	1.123
3	Identification of putative and potential cross-reactive chickpea (*Cicer arietinum*) allergens through an in silico approach	Computational Biology and Chemistry	2013, 47: 149-155	1.596
4	Co-immobilization of glucose oxidase-catalase: Optimization of immobilization parameters to improve the immobilization yield	International Journal of Food Engineering	2011, 7(2):8	2.927
5	Purification of a bifunctional amylase/ protease inhibitor from ragi (*Eleusine coracana*) by chromatography and its use as an affinity ligand	Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences	2010, 878 (19): 1549-1554	2.9
6	Purification of lycopene by reverse phase chromatography	Food and Bioprocess Technology	2009, 2(4): 391-399	4.115

7	Optimization of *Aspergillus niger* fermentation for the production of glucose oxidase	Food and Bioprocess Technology	2009, 2(4): 344-352	4.115
8	Glucose oxidase - An overview	Biotechnology Advances	2009, 27(4):489-501	11.85
9	Enzyme stability and stabilization-Aqueous and non-aqueous environment	Process Biochemistry	2008, 43(10):1019-1032	2.983
10	Effect of α-amylase addition on fermentation of *idli* - A popular south Indian cereal-Legume-based snack food	LWT - Food Science and Technology	2008, 41(6):1053-1059	3.107

DR. S. S. ARYA

B.Tech., M. Tech, Ph. D (Tech.).
Assistant Professor of Food Technology
ss.arya@ictmumbai.edu.in, shalu.ghodke@gmail.com

SUBJECTS TAUGHT

Technology of cereals, legumes and oilseeds, Food microbiology, Technology of plantation crop, Current topics in food science and technology, Basics of food science and technology, Advances in food biotechnology and genetics, Food processing (I), Food analysis (Chemical), Technical analysis-I,II, Food technology laboratory

RESEARCH INTERESTS

Cereal chemistry and processing – process and product development, Indian traditional foods – chemistry, technology and product development, Nutraceuticals – chemistry, technology and product development, Cereal legume health products - low glycemic index foods, gluten free formulations, utilization of food waste, Fermented indigenous foods, Downstream processing of biomolecules.

RESEARCH STUDENTS

Ph.D. (ongoing) – 05
Masters (completed) – 10
Masters (ongoing) –07

RESEARCH PUBLICATIONS

International - 17
International (this year) - 07
National - 05
Conference Proceedings - 32
Book / Monograph - 1

SPONSORED PROJECTS

Government
Completed - 2
Ongoing - 01
Private
Completed – 2

H-INDEX: 5

CITATIONS: 120

PROFESSIONAL ACTIVITIES

- Local Executive Committee Member, Association of Food Scientists and Technologists (I), Mumbai Chapter
- Life Member, Biotechnology Research Society of India (BRSI), India.
- Life Member, Association of Carbohydrate Chemists and Technologists of India.
- Member, Society of Chemical Industry (SCI), London.
- Member, International Society of Food Engineering (ISFE), Pullman, USA.
- Member, CFT-PBN Alumni Association (CPAA), Mumbai

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

Dr Shalini Arya works in the area of Indian traditional foods, in particular cereal based staple foods such as *chapatti, phulka, thepla, khakhara, thalipeeth, naan* and *kulcha*. Under this she has worked towards various aspects such as product development and standardisation, nutritional improvement and characterisation, chemistry and technology, staling, extension of shelf life using various technologies (MAP, oxygen scavenger, chemical, freezing etc) for these products. Her work on *chapatti* was recognised during international and national conferences and was awarded with first prize under cereal category. In addition to this she also works towards utilisation of food industry waste into value added products, bioactive peptides from underutilised plant seeds, development of low glycemic index foods, functional food products from peanuts and quality improvement of gluten free flat bread.

TEN BEST REPRESENTATIVE PUBLICATIONS/PATENTS

Sr. No.	Title	Name of the Journal	Year, Vol.: page no.	Journal impact factor (5 year)
1	Effect of flaxseed flour addition on physicochemical and sensory properties of functional bread	LWT- Food Science and Technology	2014, 5 (2): 614–619	3.107
2	Effect of drying and storage on bioactive components of jambhul and wood apple	Journal of Food Science and Technology	2014, in press	1.123
3	Use of fruits by-products in the preparation of hypoglycaemic *thepla*-Indian unleavened vegetable flat bread	Journal of Food Processing and Preservation	2014, 38 :1198–1206	0.450
4	Effect of guar gum on dough stickiness and staling in *chapatti* – an Indian unleavened flat bread	International Journal of Food Engineering	2009, 5 (3) :1-19	0.463
5	Use of response surface methodology to investigate the effects of milling conditions on damaged starch, dough stickiness and *chapatti* quality	Food Chemistry	2009, 112 (4): 1010-1015	3.334
6	Inhibition of staling in *chapatti* (Indian unleavened flat bread)	Journal of Food Processing and Preservation	2008, 32(3): 378-403	0.450
7	Influence of additives on rheological characteristics of whole wheat dough and quality of *chapatti* (Indian unleavened flat bread) part I- hydrocolloids	Food Hydrocolloids	2007, 21: 110-117	3.525
8	Staling of *chapatti* (Indian unleavened flat bread)	Food Chemistry	2007,101: 113-119	3.334
9	Role of novel nanomaterials in solving food safety issues	European Journal of Nutrition & Food Safety	2014, 4(4): 301-317.	-

B.TECH (Food Enginering and Technology)

- **Dr. Hormaz Patwa,** Technical Executive, Sensient India Pvt. Ltd., Powai, Mumbai.
- **Dr. Vilas Shirhatti** A 501, Hiranandani Gardens, Powai, Mumbai.
- **Dr. Rashmi Motey,** 403, Gagangiri Avenue, J.K.Gram Post, Near Raymonds, Pokhran Rd.No.1 Samta Nagar, Thane (W).
- **Dr. Joseph I Lewis,** C-602, Vastu Park, Malad West, Mumbai.
- **Dr. Lipi Das,** C/O Mr. Nilanjan Maity, B-904 Gundecha Heights, LBS Marg, Kanjur Marg (W), Mumbai – 400 078

M.TECH. (Food Engineering and Technology) and (Food Biotechnology)

- **Professor K. Niranjan,** University of Reading, UK
- **Dr. Jayant R. Bandekar,** BARC, Trombay, Mumbai – 400 085
- **Dr. Rashmi Motey,** 403, Gagangiri Avenue, J.K.Gram Post, Near Raymonds, Pokhran Rd. No. 1 Samta Nagar, Thane (W).
- **Dr. Joseph I Lewis,** C-602, Vastu Park, Malad West, Mumbai.
- **Mrs. Smita Kandar,** 4B, Annapurna, Anushaktinagar, Mumbai.
- **Dr. Malathy Venkatesh,** 2C-704,Great Eastern Links, Ram Mandir Road, Goregaon (W), Mumbai.
- **Dr. Lipi Das,** C/O Mr. Nilanjan Maity, B-904 Gundecha Heights, LBS Marg, Kanjur Marg (W), Mumbai – 400 078
- **Dr. D. R. Rangaprasad,** Director, SIES School of Packaging, Sri Chandrasekarendra Saraswathy, Vidyapuram, Nerul, Navi Mumbai – 4 00706
- **Ms. Shruti Baadkar,** 259/10187, Sagar-Sangeet, Kannamwar nagar-1, Vikhroli (E), Mumbai – 400 083
- **Dr. Geeta Ibrahim,** Shri Guru Niwas, 49, Gokhale Road North, Dadar, Mumbai - 400028

SUPPORT STAFF

Mrs. Sagarika S. Jadhav
Laboratory Technician

Mr. Datta N. Dingankar
Laboratory Assistant

Ms. Sangeeta R. Dhakne
Laboratory Assistant

Ms. Chitra B.Koli
Laboratory Assistant

Mr. Ganesh. S. Bhagat
Laboratory Attendent

Mrs. Pramila P. Pawar
Laboratory Attendent

Mr. Santosh J Rajam
Laboratory Attendent

MAJOR AWARDS / HONOURS

- Dr. Uday S. Annapure received the Best Teacher Award from Professor D.V. Rege AFST (I), Mumbai Chapter Award for the year 2013-2014.
- Professor Rekha S. Singhal received C. G. Memorial Award, XVIII Carbo Conference, Forest Research Institute, Dehradun, December 20, 2014.

UNDERGRADUATE AND POSTGRADUATE SEMINARS & PROJECTS

As a part of the curriculum, every student of final year B.Tech student and first year M.Tech student presents a specific technical topic and submits a written review in the form of a seminar. The faculty members of FETD actively participate in guiding the undergraduate (B. Tech.) and postgraduate (M. Tech.) students for their seminars, project reports and other curricular activities which are tabulated below:

(SSL: Professor S. S. Lele; RSS: Professor R. S. Singhal; USA: Dr. U. S. Annapure; LA: Dr. L. Ananthanarayan; SSA: Dr. S. S. Arya)

(* Indicates women student)

B. TECH. (FOOD ENGINEERING & TECHNOLOGY) SEMINARS

Sr. No.	Name of the Student	Title	Guide
1	Chandhok Anmol	Cold plasma - Applications in food preservation	USA
2	Awade Ayushi *	Food allergies/intolerance of fruits & vegetables	SSL
3	Joshi Isha*	Emerging trends in sorghum: chemistry, technology, health benefits and	SSA
4	Sharma Pooja*	Recent developments in various dairy products and its importance in the	SSA
5	Rao Namrata*	Value added products from plant seeds (e.g. mango, *kokum*, shea)	SSL
6	Mangalvedhe Ankita *	Recent advances in nanocomposites used in food packaging	LA
7	Phalke Saurabh	Nutraceuticals from seaweeds	RSS
8	Abraham Anu*	Berries for management of UTI: types and mechanism of action	RSS
9	Wagh Ovee*	Jack fruit: chemistry & technology	SSL
10	Kanase Yogesh	Recent developments in methods for detection of food adulteration and	LA
11	Dev Arun	Biochemical changes associated with ripening of fruits	LA
12	Gosavi Madhuri*	Indian water chestnut: chemistry, Technology and applications in food	SSA
13	Mandre Rahul	Protein-polyphenol interactions: nutritional and technological aspects	RSS
14	Vispute Swapnil	Cereal bars and *chikkis*: products & processes	SSL
15	Jadhav Gautam	Chewing gum: chemistry, manufacture and technology	RSS
16	Gupta Nidhi*	Applications of UV for food preservation - recent advances	USA
17	Jhamb Spardha*	Food biopreservation	USA
18	Khandelwal Avani*	Microencapsulation using extrusion processing - recent trends	USA

B. TECH. (FOOD ENGINEERING & TECHNOLOGY) PROJECTS

Sr. No.	Name of the Student	Title	Guide
1	Chandhok Anmol	Gluten-free pasta	USA
2	Awade Ayushi *	Preservation of tender coconut	SSL
3	Joshi Isha*	Microwavable fermented cereal starch snack	SSA
4	Sharma Pooja*	Cereal/ Legume based probiotic beverage	SSA
5	Rao Namrata*	*Bhakarwadi-fulwadi* combination product	SSL
6	Mangalvedhe Ankita*	Traditional foods as functional foods	LA
7	Phalke Saurabh	*Misthi doi* from condensed milk	RSS
8	Abraham Anu*	Gluten free cheeslings	RSS
9	Wagh Ovee*	*Zunaka* premix	SSL
10	Kanase Yogesh	Spice dehydrated products	LA
11	Dev Arun	Sports food formulation	LA
12	Gosavi Madhuri*	Staples from water chestnut	SSA
13	Mandre Rahul	Coconut milk yoghurt	RSS
14	Vispute Swapnil	Vegetable *paratha* premix	SSL
15	Jadhav Gautam	Coconut milk *paneer*	RSS
16	Gupta Nidhi*	Citrus peel candies	USA
17	Jhamb Spardha*	Jackfruit intermediate moisture food	USA
18	Khandelwal Avani*	Tamarind/date candies	USA

M.TECH. (FOOD ENGINEERING & TECHNOLOGY) SEMINARS

Sr. No.	Name of the Student	Title	Guide
1	Banerjee Puja	High pressure processing of orange juice.	SSL
2	Patil Monali Patil	Microwavable starch	SSA
3	Pore Harsha	Development in identification of biomolecule as an indicator of food safety and authenticity	LA
4	Patil Vishruti	Newer advances in gluten free food products	SSA
5	Ganeshan Saishree	Magnetic nanoparticles for food and related applications	RSS
6	Mali Swapnil	4-Hexylresorcinol as a food additive	RSS
7	Kulkarni Nikhil	Biorefinery products for sustainable food packaging products	RSS
8	Pathade Ajay	Recent development in meat industry	USA
9	Sadhu Subham	Recent advances in bakery	USA

M.TECH. (FOOD BIOTECHNOLOGY) SEMINARS

Sr. No.	Name of the Student	Title	Guide
1	Chaubey Pravesh	Designer yeast for food applications	RSS
2	Bagul Mayuri	Tamarind seeds - chemistry, technology and applications, pharmaceuticals and health benefits	SSA
3	Bansal Love Kumar	Inactivation kinetics of microbes during food processing	RSS
4	Kapoor Mitali	Colored fruits wines: science and technology	SSL
5	Sinha Rishabhdev	Allergens present in Indian varieties of oilseeds and legumes	SSL
6	Girdher Hunny	Biovanillin – biotechnological approach	USA
7	Gharde Akshay	Custard seeds - chemistry, technology and applications , pharmaceuticals and health benefits	SSA

8	Gupta Abhishek	Identification and detection of GM foods	USA
9	Wagh Priti	Never approaches to acceleration of food processing	LA
10	Savant Sayali	Never approaches to utilization of food processing/agro waste	LA
11	Kusmode Sneha	Recents developments in enzyme biosensors for food applications	LA
12	Nimbalkar Megha	Carotenoids, pectins and other value added biomolecules from fruits and vegetable wastes	SSL
13	Bhaulal Lucky	Quinoa and garden cress: cultivation, nutrition and processing	SSL
14	Pathak Rachana	Recent developments in polysaccharide modification for production of functional ingredients	LA

Ph.D (TECH.) [FOOD ENGINEERING AND TECHNOLOGY (FET)/ FOOD BIOTECHNOLOGY (FBT) / BIOPROCESS TECHNOLOGY (BPT)]

Sr. No.	Research Scholar & Sponsors	Previous Institute	Project Title	Date of Registration	Guide
1	Chavan Yogita* (UGC SAP)	SLIET, Punjab	Extraction, separation and purification of polyphenols from areca nut (FET)	Aug 2009	RSS
2	Sarkar Shatabhisha* (UGC SAP)	SLIET, Punjab	Microencapsulation of sensitive food ingredients (FET) of sensitive food ingredients (FET)	Aug 2009	RSS
3	Harde Shirish (UGC-SAP)	ICT, Mumbai	Extraction of forskolin from coleus forskohlii roots and utilization of its spent biomass (BPT)	March 2010	RSS
4	Sardar Bikash (UGC SAP)	ICT, Mumbai	Encapsulation of sensitive bioactive food constituents (FET)	July 2010	RSS
5	Jadhav Manisha * (UGC SAP)	SLIET, Punjab	Development of extruded food products based on sorghum (FET)	Sept 2010	USA
6	Waghmare Roji * (UGC SAP)	ICT, Mumbai	Preservation of fresh produce by modified atmosphere (FET)	Sept 2010	USA
7	Silotry Azza* (UGC SAP)	ICT, Mumbai	Studies in development of functional foods for inflammatory disorder (FBT)	June 2011	SSL
8	Bhotmange Devshri* (UGC SAP)	ICT, Mumbai	Fermentative production and downstream processing of chondroitin sulphate (BPT)	June 2011	RSS
9	Bawane Amruta* (UGC SAP)	SLIET, Punjab	Studies on stability of added constituents during extrusion (FET)	April 2014	RSS
10	Bajaj Vinit (UGC SAP)	ICT, Mumbai	Utilization of waste material for value added products (BPT)	July 2011	USA
11	Rathod Rahul (UGC SAP)	ICT, Mumbai	Development of extruded food product (FET)	July 2011	USA
12	Srivastava Neha* (UGC SAP)	D.Y.Patil, Navi Mumbai	Biotechnologiical aspects of *idli* batter fermentation (FBT)	June 2011	LA
13	Giri Shital* (UGC SAP)	LIT, Nagpur	Studies in development of low glycemic index foods (FET)	June 2011	LA

14	Gat Yogesh (UGC SAP)	SLIET, Punjab	Studies in development of extruded snacks and ingredients (FET)	May 2011	LA
15	Joshi Chetan (UGC SAP)	ICT, Mumbai	Fermentative production and downstream process-ing of zeaxanthin (BPT)	July 2011	RSS
16	Choudhari Sandeep (UGC SAP)	ICT, Mumbai	Fermentative production, downstream processing and appli-cations of microbial cutinase (BPT)	April 2012	RSS
17	Waghmare Aashish (UGC SAP)	ICT, Mumbai	Extraction of bio-oil and valuable products from microalgae (BPT)	July 2013	SSA
18	Palamthodi Shanoba *(UGC SAP)	SRM, Chennai	Studies on gourd family vegetables for their biotechnological applications with special emphasis on *Lagenaria siceraria* (FBT)	July 2012	SSL
19	Bhaskar Bincy * (DBT)	D.Y.Patil, Navi Mumbai	Studies on bioactive peptides from selected legumes commonly consumed in India (FBT)	July 2012	LA
20	Kulkarni Anuja* (UGC-SAP)	D.Y.Patil, Navi Mumbai	Studies in biotechnological aspects of food allergens (FBT)	July 2012	LA
21	Gaikwad Sonali* (UGC-SAP)	MAU, Parbhani	Chemistry and technology of cereal-legume based Indian traditional food (FET)	July 2013	SSA
22	Kar Jayaranjan (UGC SAP)	D.Y.Patil, Navi Mumbai	Fermentative production, downstream processing and application of glycine betaine (FBT)	June 2013	RSS
23	Tupe Rupesh (UGC SAP)	ICT, Mumbai	Studies in functional foods	October 2012	LA
24	Patil Sonal* (UGC SAP)	ICT, Mumbai	Studies on production and characterization of gluten-free flat bread (FET)	July 2013	SSA
25	T. Rohit (UGC SAP)	MAU, Parbhani	Studies on effect of cold plasma processing on properties of rice varieties (FET)	December 2012	USA
26	Purohit Pulkit (UGC SAP)	IICPT, Tamil Nadu	Characterization of *jamun* and *karwand* fruits and their utilization in cereal/fruit bars (FET)	February 2014	SSL
27	Sonawane Sachin (UGC SAP)	ICT, Mumbai	Studied on fruit seed pepties and its application in food preservation (FET)	In-process	SSA
28	Arekar Chetan (UGC SAP)	Karunya University, Coimbatore	Studies in tropical fruit wines (FBT)	In-process	SSL
29	Deshaware Shweta *(DBT)	Amity University, Delhi	Study on genetic polymorphism of TAS2R38 bitter taste receptor gene in an Indian population and approaches for debittering of glycosides (FBT)	July 2012	RSS
30	K. V. Umesh (UGC SAP)	ICT, Mumbai	Enhancing bioavailability of nutraceuticals (FBT)	In-process	RSS

31	Regubalan Baburaj	Anna University, AICT Campus, Chennai	In process (FET)	In-process	LA
32	Shah Nirali Nitin	ICT, Mumbai	Hydrophobic modification of biopolymers (FET)	May 2014	RSS
33	Desai Mihir Mukund	UICT, NMU, Jalgaon	PhD (Tech.) (FET)	In process	SSL
34	Bhushette Pravin Rajkumar	UICT, NMU, Jalgaon	PhD (Tech.)FET	In process	USA
35	Nagavekar Nupur Shantaram	ICT, Mumbai	Extraction technologies for novel food ingredients (FBT)	May 2014	RSS
36	Sorde Kaurna Liladas	UICT, NMU, Jalgaon	In process (FBT)	In process	LA
37	Kadam Deepak Sunil	ICT, Mumbai	Studies on utilization of *Nigella sativum* and *Lepidium sativum* seed cake (FBT)	May 2014	SSL
38	Sindhu Bhupender	Shri Ramaswami Memorial University, Chennai	Enhanced production of glutathione (FBT)	In process	USA
39	Bedade Dattatray Kashinath	ICT, Mumbai	Fermentative production, downstream processing and applications of acrylamidase (BPT)	May 2014	RSS
40	Tulamandi Sreedath	TNAU/Cornell University joint degree	Development of biopolymer films using agricultural biomass	In process	RSS

Ph.D. SCIENCE [BIOTECHNOLOGY (BT)/ BIOCHEMISTRY (BC)/ FOOD SCIENCE (FS)]

Sr.	Research Scholar & Sponsors	Previous Institute	Project Title	Date of Registration	Guide
1	Inarkar Mangesh (UGC SAP)	Department of Biotechnology, University of Mumbai	Studies for carbon sequestration produced by alcohol distillery (BT)	Aug 2009	SSL
2	Raut Supriya* (RGC)	G.N. Khalsa College, Mumbai	Studies in carbonate degrading & precipitation microorganisms in materials (BT)	Aug 2009	SSL
3	Bandekar Harshali * (UGC SAP)	St. Xavier's College, Mumbai	Studies on *Ficus benghalensis* using	Sept 2010	SSL
4	Gohil Dhiraj (UGC SAP)	Institute of Science, Mumbai	Fermentation of dietary fibers *in vitro* with human colonic bacteria (BT)	Sept 2010	SSL
5	Subramaniam Jayshree* (UGC SAP)	Ruia College, Mumbai	Fermentative production and downstream processing of fucoxanthian (BT)	Aug 2010	RSS

6	Hingse Swarali* (UGC SAP)	KET's V.G. Vaze College, Mumbai	Studies in production of vanillin using biotech-nological approaches (BT)	Sept 2010	USA
7	Digole* Shraddha (UGC SAP)	Institute of Science, Mumbai	Fermentative production and downstream processing of mycophenolic acid using biotechnological approach (BT)	Sept 2010	USA
8	Jadhav Swati* (DBT)	SIES College, Mumbai	Studies on improvement of stability of enzymes (BT)	Dec 2011	RSS
9	Dabir Mugdha* (UGC SAP)	NMU, Jalgaon	Studies in characterization and deactivation of fruit based enzymes (BC)	December 2011	LA
10	Datta Suprama* (CSIR)	Birla College, Mumbai	Characterization and profiling of *Saccharomyces boulardii* (BT)	July 2013	USA
11	Bagul Vaishali *(UGC SAP)	KTHM College, Nashik	Studies in fermentative production and downstream processing of docosahexanoic acid (BT)	August 2013	USA
12	Insulkar Prajakta* (UGC SAP)	Birla College, Kalyan	Study of production of exopoly saccharide from halorolerant organisms and their biotechnological application (BT)	In-process	SSL
13	Rahman Momin Bilal M. (UGC SAP)	Institute of Science, Mumbai	Fermentative production and dowmnstream processing of arginase (BT)	July 2013	USA
14	Vaidya Aniruddha (UGC SAP)	Dept. of Microbiology, University of Pune	Development of phage-based biosensor (BT)	December 2012	USA
15	Ghanate Aarti* (UGC SAP)	Shivaji University, Kolhapur	Studies in traditional foods: process and technology development (BT)	December 2012	USA
16	Bhagwat Ashlesha* (UGC SAP)	K.J. Somaiya College, Mumbai	Studies in probiotics (BT)	December 2012	USA
17	Jamakhani Majeed (UGC SAP)	SASTRA University, Tamilnadu	Study on isolation and characterization of tomato allergens (BT)	July 2013	SSL
18	Vishwasrao Chandrahas (UGC SAP)	Ruia College, Mumbai	Biochemical characterization of selected indigenous fruit varieties during ripening and extended shelf life (BC)	December 2012	LA
19	Amane Dhanashree* (UGC SAP)	K.J. Somaiya College, Mumbai	Development of biochemical methods for detection of adulteration in legume-based traditional food products (BC)	December 2012	LA
20	Deorukhkar Anuradha* (UGC SAP)	SIES College,Sion	Biochemical studies and characterization of isoflavones occurring in commonly consumed Indian legumes (BC)	December 2012	LA

21	Bannerji Anamika Amit*	SNDT University, Mumbai	Indian flat breads: physicochemical and nutrituional aspects (FS)	SNDT Women's University, Mumbai	SSL
22	Janve Madhura Pramod*	University of Mumbai	Chelates of iron with amino acids and sugars for improved bioavailability and stability (FS)	In process	RSS
23	Bakshi Gayatri Girish*	University of Mumbai	In process (FS)	In process	LA
24	Mishra Rachna*	University of Allahabad	PhD (FS)	In process	USA
25	Salve Akshata Raosaheb*	University of Mumbai	Development of peanut based functional foods (FS)	In process	SSA
26	Dash Pratipanna*	University of Mumbai	In process (BC)	In process	LA
27	Pathan Fayaz Latif	MPKV, Rahuri	Studies on effect of plasma processing on physicochemical properties of legumes	May 2014	USA

M.TECH. (FOOD ENGINEERING & TECHNOLOGY)

Sr.	Research Scholar & Sponsors	Previous Institute	Project Title	Date of Registration	Guide
1	Chaple Sonal*	LIT, Nagpur	Studies in extending the shelf life and processing of chillies	April 2013	LA
2	Sonawane Swati*	MGM, Aurangabad	Preservation of Indian traditional food	April 2013	LA
3	Kharat Mahesh	ICT, Mumbai	Study of formation of benzene in Indian traditional foods and ways to mitigate it	April 2013	RSS
4	Shah Prakriti*	WBUT, West Bengal	Product development: stock value added from edible oil seed cake	April 2013	SSL
5	Pandey Tripti*	GJUS&T, Hisar, Haryana	*Khoa* replacement in dairy confectonary	April 2013	SSL
6	Raj Tanvi*	ICT, Mumbai	Par frying of Indian snacks	April 2013	RSS
7	Gupta Pradeep Kumar	SRM University, Chennai	Extrusion as a method for encapsulation of food ingredients	April 2013	RSS
8	Devi R Yamuna*	Anna university, Chennai	Studies in plasma processing	April 2013	USA
9	S. Chaitanya Krishna	Osmania University	Studies in plasma processing	April 2013	USA
10	T. Shivakumar.	Osmania University	Development and characterisation of gluten-free Indian traditional foods	April 2013	SSA
11	Trimbak Dattatray K.	MIT, Pune	Studies on omega-3 enriched *khakra*	April 2013	SSA

M. TECH. (FOOD BIOTECHNOLOGY)

Sr.	Research Scholar & Sponsors	Previous Institute	Project Title	Date of Registration	Guide
1	Singh Virendra	VIT university vellore, Tamil Nadu	Preparation of enzyme-polysaccharide complex and its application	April 2013	RSS
2	Ray Samyapriya	Guru Nanak Institute of Technology, Kolkata	Studies in enzymatic pretreatment during extrusion	April 2013	USA
3	Singh Sartaj	UICET, Panjab University, Punjab	Utilisation of spent turmeric	April 2013	RSS
4	Rupini S.P.*	Anna university, chennai	Fortified vegetable fruit candy	April 2013	SSL
5	Kumar Rajan	VIT university vellore, Tamil Nadu	Utilization of chicken waste and fish	April 2013	SSL
6	Rakshit Madhulekha*	Haldia Institute of Technology, West Bengal	Studies in development of functional beverages	April 2013	LA
7	Narwade Rangeshkumar	UDCT, Aurangabad	Studies on sorgum based low glycemic index Indian traditional foods	April 2013	SSA
8	Anand Abhishek	VIT university vellore, Tamil Nadu	Studies in the development of functional ingredients from banana	April 2013	LA
9	Kanbargi Ketaki*	KIT, Kolhpur	Studies bioactive peptides from indigenous varieties of ber	April 2013	SSA
10	Bheron Shashee*	Guru Gobind Singh Indraprastha University, Delhi	Studies in production of lutein using algae	April 2013	USA

M. TECH. (BIOPROCESS TECHNOLOGY)

Sr.	Research Scholar & Sponsors	Previous Institute	Project Title	Date of Registration	Guide
1	Jha Prashant	Guru Gobind Singh Indraprastha University, Delhi	Comparative study of cellulose production from submerged and solid state fermentation by *T.reesei* ATCC 26921.	September 2013	LA
2	Kumar Ajay	Guru Gobind Singh Indraprastha University, Delhi	Concentration and partial purification of arabinose by ATP flotation technique.	February 2014	USA
3	Rathod Vishal	MVP College of Pharmacy, Nashik	Fermentative production of succinic acid.	August 2014	USA
4	Mulchandani Ketan	NIT Raipur (Chhattisgarh)	Devlopment of three phase partitioning for extraction of lipids and proteins from algae.	September 2014	RSS
5	Pathak Bhumika	GGSRP University, New Delhi	Biotransformation of anthocyanin	November 2011	RSS

POST-DOCTORAL FELLOWS RESEARCH PROJECTS

Sr. No.	Post-Doctoral Fellow	Previous Institute	Project Title	Guide
1	Dhara Rupali (UGC-Dr. D. S. Kothari PDF)	University of Calcutta, Kolkata	Phytosterol enriched diacylglycerols DAGs) and their stability in food processing	RSS
2	Sadineni Varakumar (UGC-Dr. D. S. Kothari PDF)	Sri Venkateswara University, Tirupati	Evaluation of the role of nutra-ceuticals as bioenhancers of oral bioavailability of anti-cancer drugs	RSS

DEGREES AWARDED

M. TECH. (FOOD ENGINEERING & TECHNOLOGY)

Sr. No.	Name of the Student	Title	Guide
1	Rathi Kunal	Combination process for preservation of gourd family vegetables	SSL
2	Pandey Sumit	Studies on development of milk based healthy products	LA
3	Shah Nirali*	Hydrophobic modification of food hydrocolloid(s) for novel food application	RSS
4	Chauhan Sheetal*	Studies on multigrain *khakra*	SSA
5	Hamid Suheel	Studies in walnut processing	USA

M. TECH. (FOOD BIOTECHNOLOGY)

Sr. No.	Name of the Student	Title	Guide
1	Gupta Apoorva*	Structural modification of areca nut polyphenols for enhanced bioactivity	RSS
2	Nagavekar Nupur*	Food biotechnological study on fruit of *Ficus benghanensis*	SSL
3	Kumar Pavitra*	Characterization and quantification of biomolecule(s) produced by microbes isolated from *Kurdai*- A traditional Indian fermented snack food	SSA
4	Marpalle Pandurang	Studies on omega-3 rich functional bread with flax-seed	SSA
5	Kolekar Parag	Biofuels from germinated wheat	RSS
6	Sonawale Shaila *	Studies in preparation and utilization of enzyme active grain flours	LA
7	Gupta Rati *	Studies on edible coatings for food preservation	LA
8	Arora Richa *	Enzymatic extraction of natural colours	USA
9	Verma Ashu	Studies on gelatin	USA
10	Kadam Deepak	Product and process development of ash gourd	SSL

M.TECH. (BIOPROCESS TECHNOLOGY)

Sr. No.	Name of the Student	Title	Guide
1	Waingankar Onkar	Studies in bioactive peptides	USA
2	Revankar Vishal	Enzymatic biotransformation of polyunsaturated fatty acids	USA
3.	Joshi Amol	Fermentative production and downstream processing of succinic acid	RSS
4.	Shaikh Shafiq	Fermentative production of prebiotics	LA

PH.D. (TECH)

[Food Engineering and Technology (FET)/ Bioprocess Technology (BPT)]

Sr. No.	Name of the Student	Title	Guide
1	Phule Asmita	Studies in deep-fat fried foods (FET)	USA

PH.D. SCIENCE (BIOTECHNOLOGY)

Sr. No.	Name of the Student	Title	Guide
1	Tilak Ashwini	Study on metabolism of thiopurine drugs- identification of normal and non-normal metabolizers on the basis of gene variants and phenotype (BT)	RSS
2	Jayakar Shilpa	Studies in fermentative production and downstream processing of lipoicacid (BT)	RSS
3	Iyer Sandhya	Identification of genetically determined slow metabolizers of pyrimidine anti-metabolites used in chemotherapy of solid tumors (BT)	RSS
4	Budhkar Yoginee	Metabolic engineering for biosynthesis of isoprenoids in *Escherichia coli* (BT)	RSS
5	Bhagat Anupam	Fermentative production and downstream processing of thermozyme-thermophilic protease (BT)	SSL
6	Chougle Jyoti	Production and downstream processing of ketocarotenoid (BT)	RSS
7	Baadkar Shruti V.	Genetic basis of adult-type hypolactasia in Indian subjects (BT)	SSL
8	Mali Amol	Studies in utilization of fruit and vegetable waste for nutraceutical applications (BT)	SSL

SPONSORED PROJECTS

GOVERNMENT AGENCIES

Sr.	Sponsor	Title	Duration	Amount	Principal Investigator	Co-investigator
1.	DST Govt. of India	Holistic approach for commercial processing of fruits and vegetables grown in western Maharashtra	2013-2016	Rs.129.89 lakhs	Professor Smita S. Lele	
2.	DBT, Govt. of India	DBT JRF Regional Meet	2013	Rs. 9.89 lakhs	Professor Smita S. Lele	
3.	UGC Govt. of India	Studies in development of low glycemic index *bhakri*	2012-2014	Rs.1, 85,000/-	Dr. Shalini S. Arya	
4.	DST/SERB-MOFPI, Govt. of India.	Studies in physico-chemical properties of plasma processed rice grains	2013-2014	Rs.22.18 lakhs	Dr. Uday S. Annapure	Dr. R. R. Deshmukh

5.	Centre of Excellence under TEQIP	Process intensification for extraction of turmeric and pepper oleoresin by enzyme-assisted supercritical carbon dioxide	2013-2014	Rs. 27.00 lakhs	Professor Rekha S. Singhal	
6.	University Grants Commission (UGC), Govt. of India	UGC-BSR one time grant for augmenting research facilities	2013-2014	Rs. 7.00 lakh	Professor Rekha S. Singhal	

PRIVATE AGENCIES

Sr.	Sponsor	Title	Duration	Amount	Principal Investigator
1.	Himedia Laboratories Pvt. Ltd.	Studies in probiotics	2013-2014	Rs.3.60 lakhs	Dr. Uday S. Annapure
2.	QPIC Products Pvt. Ltd.	Studies in extrusion Processing	2013-2014	Rs. 50,000/-	Dr. Uday S. Annapure
3.	Unilever Industries Pvt. Ltd, Bangalore	Microbial fermentation	Jan 20, 2014 to Jan 19, 2015	Rs. 10.39 lakhs	Professor Rekha S. Singhal
4.	Tata Chemical Services	Studies on development of low GI multigrain *atta*	2013-14 (6 months)	Rs. 1, 20, 000/-	Dr. Shalini S. Arya
5.	Rutgers Centers for Global Advancement and International Affairs	Taste response study of amaranth-quinoa snacks by Indian population	February 2014 to December 2015	$ 8000	Professor Mukund V. Karwe and Professor Rekha S. Singhal

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

Collaborating University/Institute	Topic of Investigation	Name of the student
Paul Ehrlich Institute, Langden, Germany	Studies on legume allergens (LA)	Anuja Kulkarni
Bhabha Atomic Research Centre, Mumbai	Studies on benzene formation in Indian pickles (RSS)	Mahesh Kharat
Rutgers Centre for Global advancement and International affairs	Taste response study of amaranth-quinoa snacks by Indian population (RSS)	Amruta Bawane
Queen's University, Belfast, Ireland	Stress tolerant osmolytes (RSS)	Jayranjan Kar/ Chirag Desai

PROFESSOR REKHA S. SINGHAL

Publications		
Title	**Author**	**Journal**
Co-conjugation vis-à-vis individual conjugation of α-amylase and glucoamylase for hydrolysis of starch	Swati B. Jadhav and Rekha S. Singhal	Carbohydrate Polymers, 98: 1191-1197 (2013).
Polysaccharide conjugated laccase for the dye decolorization and reusability of effluent in textile industry	Swati B. Jadhav and Rekha S. Singhal	International Biodeterioration & Biodegradation, 85: 271-277 (2013)
Laccase-gum Arabic conjugate for preparation of water-soluble oligomer of catechin with enhanced antioxidant activity	Swati B. Jadhav and Rekha S. Singhal	Food Chemistry, 150: 9-16 (2014)
Poly-ε-lysine amylase conjugates to increase the stabilityof enzyme	Sandip B. Bankar, Swati B. Jadhav and Rekha S. Singhal	Food Biosciences, 5: 85-90 (2014)
Empirical predictive modeling of poly-ε-lysine biosynthesis in resting cells of *Streptomyces noursei*	Sandip Bankar, Vivek Dhumal, Devshri Bhotmange, Sunil Bhagwat and Rekha S. Singhal	Food Science and Biotechnology, 23: 201-207 (2014).
Purification and characterization of poly-ε-lysine from *Streptomyces noursei* NRRL 5126	Sandip B. Bankar, Sandeep A. Chaudhary and Rekha S. Singhal,	Journal of Scientific and Industrial Research, 73: 33-40 (2014).
Pullulan-complexed α-amylase and glucosidase in alginate beads: Enhanced entrapment and stability	Swati B. Jadhav and Rekha S. Singhal	Carbohydrate Polymers, 105: 49-56 (2014)
Process optimization of enzyme catalyzed production of dietary diacylglycerol (DAG) using TLIM as biocatalyst	Rupali Dhara and Rekha S. Singhal	Journal of Oleo Science, 63(2): 169-176 (2014).
Continuous lignocellulosic ethanol production using *Coleus forskohlii* root hydrolysate,	Shirish M. Harde, Sandip B. Bankar, Heikki Ojamo, Tom Granström, Rekha S. Singhal and Shrikant A. Survase,	Fuel, 126: 77-84(2014).
Recovery of astaxanthin from *Paracoccus* NBRC 101723 using ultrasound assisted-three phase partitioning (UA-TPP)	Jyoti A. Chougle, Rekha S. Singhal and Oon-Doo Baik,	Separation Science and Technology, 49: 811-818 (2014).
A green process for the production of butanol from butyraldehyde using alcohol dehydrogenase: process details	Swati B. Jadhav, Sandip B. Bankar, Tom Granström, Heikki Ojamo, Rekha S. Singhal and Shrikant A. Survase	RSC Advances, 4: 14597-14602 (2014).
Enzyme-polysaccharide interaction: A method for improved stability of horseradish peroxidase,	Lalit Kagliwal and Rekha S. Singhal	International Journal of Biological Macromolecules, 69:329-335 (2014).

Book Chapters		
Title	**Authors**	**Reference**
Preservatives: permittedpreservatives - nitrites and nitrates.	Jayashree H. Subramanian, Lalit D. Kagliwal and Rekha S. Singhal	Encyclopedia of Food Microbiology, Batt, C.A., Tortorello, M.L. (Eds.), Vol 3. Elsevier Ltd, Academic Press, pp. 92–98 (2014). ISBN: 9780123847300
Preservatives: permitted preservatives - hydroxybenzoic acid	Shirish M. Harde, Rekha S. Singhal and Pushpa R. Kulkarni	Encyclopedia of Food Microbiology, Batt, C.A., Tortorello, M.L. (Eds.), Vol 3. Elsevier Ltd, Academic Press, pp. 82–86 (2014). ISBN: 9780123847300
Preservatives: permitted preservatives - propionic acid	Lalit D. Kagliwal, Swati B. Jadhav, Rekha S. Singhal and Pushpa R. Kulkarni	Encyclopedia of Food Microbiology, Batt, C.A., Tortorello, M.L. (Eds.) Vol 3. Elsevier Ltd, Academic Press, pp. 99–101 (2014). ISBN: 9780123847300
Milk and milk products: microbiology of cream and butter	Yoginee A. Budhkar, Sandip B. Bankar and Rekha S. Singhal	Encyclopedia of Food Microbiology, Batt, C.A., Tortorello, M.L. (Eds.) Vol 2. Elsevier Ltd, Academic Press, pp. 728–737 (2014). ISBN: 9780123847300
Radiation processing for sprout inhibition of stored potatoes and mitigation of acrylamide in fries and chips	Jyoti Tripathi, Prasad S. Variyar, Rekha S. Singhal and Arun Sharma	Processing and Impact on Active Constituents in Foods,Preedy, V. R. (Ed.), 1st edition, Academic Press, pp.89-96 (2014).ISBN: 9780124046993

PROFESSOR S. S. LELE

Publications		
Title	**Authors**	**Reference**
Insoluble vegetable fiber as a potential functional ingredient: *in vitro* studies on hypoglycemic and hypocholesterolemic effect	Dhiraj Gohil and S. S. Lele	American Journal of Food Science and Technology, 2: 48-52 (2014)
Production of flavonol quercetin from cultured plant cells of banyan (*Ficus benghalensis* L.)	Harshali, B. S. S. Lele.	International Journal of Innovative Research in Science, Engineering & Technology, 3(5): 12150-12157 (2014)
Application of EPR spectroscopy and DSC for oxidative stability studies of *Nigella sativa* and *Lepidium sativum* seed oil	Azza Silotry Naik and S. S. Lele	Journal of the American Oil Chemists' Society, 91: 935-941 (2014).
Re-utilization of ash gourd (*Benincasa hispida*) peel waste for chromium (vi) biosorption: equilibrium and column studies	K. M. Sreenivas, M. B. Inarkar, S. V. Gokhale and S. S. Lele	Journal of Environmental Chemical Engineering, 2: 455–462 (2014).
Biocalcification using B. pasteurii for strengthening brick masonry civil engineering structures	Supriya H. Raut, D. D. Sarode, and S. S. Lele	World Journal of Microbiology and Biotechnology, 30(1): 191-200 (2014).
Freeze drying for microencapsulation of alpha-linolic acid rich oil: A functional ingredient from *Lepidium sativam* seeds.	Azza Naik, Meda, V. S. S. Lele.	European Journal of Lipid Science & Technology, 116: 837–846 (2014)

Betalain content and antioxidant activity of beta vulgaris: effect of hot air convective drying and storage	S. V. Gokhale and S. S. Lele	Journal of Food Processing and Preservation, 38: 585–590 (2014).
Studies on banyan (*Ficus benghalensis* L) characterization of fruit and callus induction	Harshali and B. S. S. Lele.	Journal of Scientific and Industrial Research, 72: 553-557 (2013)
Optimization of medium components using orthogonal arrays for γ-Linolenic acid production by *Spirulina platensis*	Srinivasa Reddy Rond, S. S Lele	Korean Journal of Chemical Engineering, 1: 1-6 (2013)
Phytosynthesis and characterization of silver nanoparticles using callus of *Jatropha curcas*: A biotechnological approach	AG Demissie, S. S Lele	International Journal of Nano science, 12: 1-7 (2013)
Kinetic modeling and implementation of superior process strategies for beta-galactosidase production during submerged fermentation in a stirred tank bioreactor	Huzaifa S. Choonia, S. S. Lele	Biochemical Engineering Journal, 77: 49–57 (2013)
Release of intracellular β - galactosidase from *Lactobacillus acidophilus* and l-asparaginase from *Pectobacterium carotovorum* by high-pressure homogenization	Huzaifa S. Choonia ,Supriya D. Saptarshi and S. S. Lele	Chemical Engineering Communications, 200:1415–1424 (2013)
In vitro cultivation of *jatropha curcas* l. cells for growth kinetic and total fatty acid determination	Demissie A.G. and S. S. Lele	Advances in Bioresearch, 4 (3): 64-72 (2013).
Release of β-galactosidase by permeabilization of indigenously isolated *Lactobacillus acidophilus* using lysozyme	Huzaifa S. Choonia and S. S. Lele.	Chemical & Biochemical Engineering Quarterly, 27 (4): 449–456 (2013)
Process optimization for foam mat-tray drying of Passiflora edulisflavicarpa pulp and characterization of the dried powder	S. A. Ambekar, S. V. Gokhale, and S. S. Lele.	International Journal of Food Engineering, 1-11 (2013).
Three phase partitioning of β-galactosidase produced by an indigenous *Lactobacillus acidophilus* isolate	Huzaifa S. Choonia and S. S. Lele	Separation and Purification Technology, 110: 44–50 (2013).

Book Chapters		
Title	**Authors**	**Reference**
Neutraceuticals and bioactive compounds from seafood processing waste	Smita S. Lele and Venugopal V.	Springers Handbook of Marine Biotechnology edited by Kim, Se-Kwon ISBN 978-3-642-53970-1, 2014.

DR. U. S. ANNAPURE

Publications		
Title	**Authors**	**Reference**
Studies in rheological behavior of rice flour dough prepared with varied amount of water used to prepare extruded products and rice cakes	Samyapriya S. Ray, Pravin G. Kadam, Vedprakash D. Surve, Shashank T. Mhaske and Uday S. Annapure	International Journal of Agricultural and Food Science 4(1): 31-35 (2014)
Studies in rheological behavior of rice flour dough prepared with carried amount of water – used to prepare extruded products and rice cakes	Samyapriya S. Ray, Pravin G. Kadam. Vedprakash D. Surve, Shashank T. Mhaske and Uday S. Annapure	International Journal of Agricultural and Food Science, 4(1): 31-35 (2014)
Combined effect of chemical treatment and/or modified atmosphere packaging (MAP) on quality of fresh-cut papaya.	R. B. Waghmare and Uday S. Annapure	Postharvest Biology and Technology, 85: 147-153 (2013)
Effect of coating of hydrocolloids on chickpea (*Cicer arietinum* L.) and green gram (*Vigna radiata*) splits during deep fat frying.	Asmita S. Phule and Uday S. Annapure	International Food Research Journal, 20(2): 565-573 (2013)
Effect of extrusion process parameters and particle size of sorghum flour on expanded snacks prepared using different varieties of sorghum (*Sorghum bicolour* L.)	Manisha V. Jadhav and Uday S. Annapure	Journal of Agricultural Science and Technology B (Earlier title: Journal of Agricultural Science and Technology), 3:71-85 (2013)
Modelling the effect of time and temperature on respiration rate of selected fresh-cut produce	R.B. Waghmare, P.V. Mahajan, Uday S. Annapure	Postharvest Biology and Technology, 80: 25–30 (2013)
Inactivation of *Escherichia coli* population on fruit surfaces using ultraviolet-C light: Influence of fruit surface characteristics	R.M. Syamaladevi, S. Lu, S. S. Sablani, S. K. Insan, A. Adhikari, K. Killinger, B. Rasco, A. Dhingra, A. Bandyopadhyay and Uday S. Annapure	Food and Bioprocess Technology, 6(11): 2959-297 (2013)
Studies in rheological behavior of wheat batter prepared from fermented wheat grains.	Vedprakash D. Surve, Pravin G. Kadam, Shashank T. Mhaske and Uday S. Annapure	Acme International Journal of Interdisciplinary Research, I(XII): 7-11 (2013)
Optimization of complex media for the production of lutein from *Chlorlla pyrenoidosa*	Shashee B. and Annapure U.S.	International Journal of Biotechnology and Bioengineering Research, 4(4): 283-290 (2013)

Review papers		
Title	**Authors**	**Journal (Year)**
Approaches for delivery of heat sensitive nutrients through food systems for selection of appropriate processing techniques: A review.	Mahesh Satpute and Uday Annapure*	Journal of Hygienic Engineering and Design, 4:71-92 (2013)

Book Chapters		
Title	Authors	Publisher
Skill development in the indian food processing sector, in: 'Evolving corporate education strategies for developing countries: the role of universities'	Prabodh Halde, Uday Annapure, Subhaprada Nishtala, K A Anu Appaiah and D. N. Kulkarni. Edited by B. PanduRanga Narasimharao, S. Rangappa Kanchugarakoppal, Tukaram U. Fulzele	Editors: B. PanduRanga Narasimharao, S. Rangappa Kanchugarakoppal, Tukaram U. Fulzele/ Publisher: Information Science Reference (IGI Global)/ USA/ ISBN 978-1-4666-2847-2

DR. LAXMI ANANTHANARAYAN

Publications		
Title	**Authors**	**Publisher**
Identification of putative and potential cross-reactive chickpea (*Cicer arietinum*) allergens through an *in silico* approach	Anuja Kulkarni, Laxmi Ananthanarayan, Karthik Raman.	Computational Biology and Chemistry 47:149-55 (2013).

DR. S. S. ARYA

Publications		
Title	Authors	Publisher
Effect of flaxseed flour addition on physicochemical and sensory properties of functional bread.	Pandurang Marpalle, Sachin K. Sonawane and S. S. Arya	LWT-Food Science and Technology, 58: 614-619 (2014).
Use of *jambhul* powder in the development of bioactive components enriched milk *kulfi*.	Sachin K. Sonawane, S. S. Arya and Sonali Gaikwad.	Journal of Microbiology, Biotechnology and Food Sciences, 2 (6): 2440-2443 (2013).
Antioxidant activity of *jambhul*, wood apple, *ambadi* and *ambat chukka*: an indigenous lesser known fruits and vegetables of India.	Sachin Sonawane, Arya S.S.	Advance Journal of Food Science and Technology, 5(3): 270-275 (2013)..
Technical Reviews (International)		
Use of nanomaterials in the detection of food contaminants	Sachin K Sonawane, Shalini S. Arya, Jean Guy LeBlanc, Neetu Jha.	European Journal of Nutrition & Food Safety, 4(4): 301-317 (2014)
Flaxseed: a nutrition booster and its role in quality of food	Pandurang N. Marpalle, Sachin K. Sonawane and S. S. Arya	Agro FOOD Industry Hi Tech, 25(1): 20-23 (2014).
Technical Review (National)		
Antioxidant protein and peptides	Mustafa Kazi, Sachin K. Sonawane and S. S. Arya	Food Marketing and Technology of India, 5 (4): 20-22 (2014).
Omega-3: Health & food applications	S. S. Arya and Sachin Sonawane	Food Marketing & Technology, 26-27 (2013).
Saturated fats: Challenges and opportunity in healthy lifestyle.	Joshna Badgujar, Sachin Sonawane and S. S. Arya	Indian Food Industry, 32(5): 30-38 (2013)
Health benefits & novel uses of multigrains	S. S. Arya, Sheetal Chavan, Sachin Sonmawane, Rishah Baldi	Indian Food Industry, 32(4): 25-37 (2013)
Flaxseed: Health benefits and applications	Sachin Sonawane and S. S. Arya	Food Marketing and Technology, 3 (10): 24-28 (2013).

PROFESSOR SMITA S. LELE

Department Level Responsibility:

- Summer Training and Campus (IPT and Placement cell)

Institute Level Responsibility:

- Controller of Examination
- TEQIP Finance Coordinator
- Member, Legal Cell,Appellate Comitee and other Eaxm related committee

PROFESSOR REKHA S. SINGHAL

Department Level Responsibility:

- Head, FETD
- Departmental TEQIP coordinator

Institute Level Responsibility:

- Member, Students' Welfare
- TEQIP coordinator, Faculty Activities

DR .UDAY S. ANNAPURE

Institute Level Responsibility:

- Head Warden & Warden, Hostel No.5
- Co-Chair, UG Admission Committee
- Chair, Warden Committee
- Member, Anti-Ragging Committee
- Member, Standing Committee for SC/ST
- Member, Institute Review Committee (DTE)
- Academic Nodal Officer – TEQIP

DR. LAXMI ANANTHANARAYAN

Institute Level Responsibility:

- Coordinator, M.Tech Food Biotech
- Member, Welfare of Support Staff

DR SHALINI S. ARYA

Department Level Responsibility:

- Co-ordinator : Departmental Activities

Institute Level Responsibility:

- Warden, ICT Hostel
- Nodal Officer, District Social Welfare Office
- Member, Equal Opportunity Cell (EOC)
- Member, Unfair Means in Examinations and Vigilance squad committee Member,
- Member, Cultural Activity Committee,
- Member, Hostel committee
- Member, Anti-Ragging Committee
- Member, Senate Body, Board of Governors

SEMINARS/LECTURES/CONFERENCES/WORKSHOP/SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS

SEMINARS ATTENDED

PROFESSOR REKHA S. SINGHAL

- Attended 7th International Food Convention (IFCoN) "NSuRE HEALTHY FOODS" (Nutritional security, Safety, Sustainable development through Research & Education for Healthy Foods) organized by Association of Food Scientists and Technologists, India (AFSTI), Mysore, along with CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysore, National Institute of Food Technology, Engineering & Management (NIFTEM), Kundli and DRDO-Defense Food Research Laboratory (DFRL), Mysore, December18-21, 2013
- Attended CARBO XXVIII, Dehradun, January 20-22, 2014
- National conference on Bioactive Compounds and Functional Foods in Health and Disease Management (BFHDM-2013), organized at National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Kundli, Haryana, November 16, 2013

PROFESSOR S. S. LELE

- Conducted Session on "Holistic Life Style" for SME participants (78) on May 7 and 14, 2014.
- Conducted workshop 'Fun Science' for about 20 school children on 1st May 2014 at Swaraj Nagari, Talegaon.
- Chief Guest and speaker at Mumbai Grahak Panchayat Goregaon Branch on "Holistic approach for food nutrition", March 22, 2014.
- Delivered a talk in CHEMCON 2013 on "Preservation and processing of fruits and vegetables using sustainable technologies" at Institute of Chemical Technology dated December 28, 2013.
- Delivered a talk on 'Holistic approach for complete utilisation of ash gourd (*Benincasa hispida*)' in National Conference on 'Current Trends in Science and Technology', organized by Indian Women Scientists Association, Pune, November 28-30 2013.
- Delivered a talk on "Quality assurance in foods " October 2, 2013 at m/s V.P Bedekar & Sons company during employees training program.
- Attended International Conference on Sustainable Packaging For Development February 11, 2014, Mumbai

DR. UDAY S. ANNAPURE

- Participated in Technical Workshop on "Recruitment Rules and Reservation in Services" organized by Integrated Training and Policy Research, New Delhi, February 20-22, 2014.
- Attended National Conference on "TEQIP II: Best Policies and Practices" jointly organized by State Project Facilitation Unit, TEQIP II. Maharashtra State and SGGS Institute of Engineering and Technology, Nanded, January 10-11, 2014.
- Attended 7th International Food Convention (IFCoN) "NSuRE HEALTHY FOODS" (Nutritional security, Safety, Sustainable development through Research & Education for Healthy Foods) organized by Association of Food Scientists and Technologists, India (AFSTI), Mysore, along with CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysore,

National Institute of Food Technology, Engineering & Management (NIFTEM), Kundli and DRDO-Defense Food Research Laboratory (DFRL), Mysore, December18-21, 2013

- Attended a training programme on "Stress and Time Management, Focus: Managerial Effectiveness" Ooty, September 23-27, 2013.
- Attended a workshop on "Codex: Principles and Procedures" organized by Food Safety and Standards Authority of India, Ministry of Health and Family Walfare, Govt. of India, New Delhi at Indian Habitat Centre, August 2, 2013

DR. LAXMI ANANTHANARYAN

- Compered inaugural session and attended 'Traditional Foods seminar' at ICT, September 28, 2013.

DR SHALINI S ARYA

- Food Biotechnology Training Course for Developing Countries, November 20 - December 5, 2013, Beljium, China.
- Hand on Training for Teachers of Biological Sciences, Khalsa College of Arts, Science and Commerance, March 10-15, 2014, Matunga Mumbai – 400 019.
- HONING MENTORING SKILLS -- A HOLISTIC APPROACH during May 5-9, 2014 at Department of Pharmaceutical Sciences and Technology (DPST), ICT, Mumbai – 400 019

SPECIAL LECTURES / VISITS

PROFESSOR REKHA S. SINGHAL

- Functional foods: an overview, a lecture delivered at G. N. Khalsa College of Arts, Science and Commerce, Mumbai, August 2, 2013.
- Food technology: opportunities and challenges, a lecture delivered at 9th J&K Congress, University of Kashmir, Srinagar, October 2, 2013.
- Nutraceuticals: safety and bioavailability issues, a lecture delivered at National conference on Bioactive Compounds and Functional Foods in Health and Disease Management (BFHDM-2013), organized at National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Kundli, Haryana, November 16, 2013 (also chaired a session during the same).
- Spiceuticals: an overview, a lecture given at Saturday Meet, Department of Microbiology, University of Pune, November 30, 2013.
- Bioavailability of nutraceuticals: some insights, a lecture delivered at 7th International Food Convention-2013 (IFCON-2013) on NSURE-Healthy Foods (Nutritional Security through Sustainable Development, Research & Education for Healthy Foods), CSIR-Central Food Technological Research Institute, Mysore – 570 020, December 18-21, 2013.
- Three phase partitioning for eco-friendly extraction of lipophilic constituents from bioresources, a lecture given during CHEMCON-2013, Institute of Chemical Technology, Mumbai, December 29, 2013.
- Safety and bioavailability of nutraceuticals: some insights, a lecture delivered at St. John Institute of Pharmacy and Research, Palghar, January 17, 2014.
- Carbohydrate-based materials for innovative industrial applications: some perspectives, a lecture delivered at CARBO XXVIII, Dehradun, January 20-22, 2014.
- Igniting young minds for innovation and discovering unmet needs of India, a lecture delivered at The Summer School 2014, Kalina Campus, University of Mumbai, May 7, 2014.

PROFESSOR S. S. LELE

- Delivered a talk on 'Quality assurance in foods' at V.P.

Bedekar and sons company for thier employees during a training program, October 2, 2013

- Delivered an invited talk on 'Holistic approach for complete utilisation of ash gourd (*Benincasa hispida*)' in National Conference on 'Current Trends in Science and Technology', organized by Indian Women Scientists Association, Pune, November 28-30 2013.

DR. UDAY S. ANNAPURE

- New Technological trends in processed foods, an invited talk delivered at AGRIVISION-2014, a Conference organized by "Marathwada Association of Small Scale Industries and Agriculture (MASSIA)" held at Conference Hall, Garware Stadium, Aurangabad, January 4, 2014.
- Plasma Processing Technology, an invited talk delivered at DST-PURSE Scheme Sponsored seminar on 'Recent Trends in Processed Foods and Nutraceuticals (RTPFN-2013) organised by Department of Food Science and Technology, Shivaji University, Kolhapur, October 5, 2013

ORAL/POSTER PRESENTATIONS

PROFESSOR REKHA S. SINGHAL

- Following posters were presented at Annual Conference of Canadian Society for Bioengineering, Canada, Saskatchewan, Saskatoon, July 7, 2013
  - Optimization of ultrasound-assisted extraction of fucoxanthin from dried biomass of Sargassum muticum, J. Subramanian, O. D. Baik and R. S. Singhal
  - Ultrasound- assisted extraction of polysaccharide from dried biomass of Sargassum muticum, J. Subramanian, O. D. Baik and R. S. Singhal
  - Ultrasound assisted three phase partitioning (UA-TPP): A novel technique developed for extraction of astaxanthin from Paracoccus NBRC 101723, J. Chougle, R. S., Singhal and O. D. Baik
- Continuous lignocellulosic ethanol production using *Coleus forskohlii* root hydrolysate, S. M. Harde, S. B. Bankar, H. Ojamo, T. Granström, R. S. Singhal, and S. A. Survase, poster presented at International Congress on Energy Efficiency and Energy Related Materials (ENEFM)" held on October 9-12, 2013, Kemer/ Antalya-TURKEY.
- Following posters were presented at at 7th International Food Convention-2013 (IFCON-2013) on NSURE-Healthy Foods (Nutritional Security through Sustainable Development, Research & Education for Healthy Foods), CSIR-Central Food Technological Research Institute, Mysore – 570 020, December 18-21, 2013:
  - Structural modification of catechin for enhanced bioactivity, Mahesh M. Kharat, Apoorva Gupta and Rekha S. Singhal
  - Antioxidant and antimicrobial activity of arecanut and its inhibitory mechanism, Yogita V. Chavan and Rekha S. Singhal
- Glycosaminoglycans from bacteria isolated from biofilm: its characterization and fermentative production, Devshri Bhotmange and Rekha S. Singhal, oral presentation at International Conference on Biotechnology and Human Welfare, Organised by SASTRA University and M S Swaminathan Research Foundation, Tamilnadu, December 6-8, 2013.
- Water-soluble oligomer of catechin for enhanced antioxidant activity using gum Arabic laccase conjugate: process details, Swati B. Jadhav and Rekha S. Singhal, poster presented at International

Conference on Advances in Biotechnology & Bioinformatics, organized by Dr. D. Y. Patil Vidyapeeth Pune and The Biotech Research Society, India, November 25-27, 2013.

- Non-covalent vis-à-vis covalent interaction of alcohol dehydrogenase with carbohydrate: potential applications, Swati B. Jadhav and Rekha S. Singhal, poster presented International Carbohydrate Conference, held at FRI, Dehradun, January 20 - 22, 2014.

PROFESSOR S. S. LELE

- Following posters werev presented at International Conference on Emerging Food Safety Risks: Challenges for Developing Countries, NIFTEM, January 9-10, 2014.
  - Utilisation of oilseed meal to overcome nutritional deficiency, Prakriti Shah and S. S. Lele
  - Kokum Jelly as a vehicle for calcium fortification, Rupini S.P. and S. S. Lele
  - Shelf life extension of mango *burfi* by *khoa* replacement, Tripti Pandey and S. S. Lele
- Gelatin production & optimisation from chicken feet, Rajan Kumar and S. S. Lele, poster presented at 7th International Food Convocation (IFCON 2013) on NSURE healthy Foods, organized by AFST(I) at CSIR-CFTRI Mysore, December 18 - 21, 2013. (Award Winning presentation by Mr. Rajan.)
- Genetic study of lactose mal-absorption in Indian subjects and validation of lower lactose dose in phenotype test, Shruti V. Baadkar and S. S. Lele, poster presented at International Conference on Advances in Biotechnology & Bioinformatics & X Convention of The Biotech Research Society, India , organized by Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune, November 25 - 27 , 2013.
- Effect of *Bacillus coagulans* on lactose utilization in human subjects, Chetan Arekar, S. V. Baadkar and S. S. Lele, poster presented at 7th Asian Conference on Lactic Acid Bacteria, organized by Asian Federation of Societies for Lactic Acid Bacteria (AFSLAB) and Translational Health, Delhi, September 6-8, 2013.
- Development of functional foods for personalized nutrition against inflammation, Azza Naik, V. Meda and S. S. Lele, poster presented at IFT-2014, New Orleans, USA (also won 3rd place in the IFT Graduate Student Writing Competition),

DR. UDAY S. ANNAPURE

- Following posters were presented at 7th International Food Convocation (IFCON 2013) on NSURE healthy Foods, organized by AFST (I) at CSIR-CFTRI Mysore, December 18-21, 2013.
  - Development and characterization of expanded product made from lentil and rice blend, Rahul Rathod and Uday S. Annapure
  - Studies in effect of enzyme on the rheological behaviour of rice flour dough, Samyapriya Ray, Pravin Kadam, Vedprakash Surve, Shashank Mhaske, Uday S. Annapure
  - Rheological characterization of fermented wheat batter, Vedprakash Surve, Samyapriya Ray, Pravin Kadam, Shashank Mhaske, Uday S. Annapure
  - Effect of cold plasma processing on the physico-chemical parameters of basmati rice, S. Chaitanya, T. Rohit and Uday S. Annapure.
  - Effect of gamma irradiation on pysicochemical, microbiological and storage studies of walnutn kernels,

Yamuna Devi R, Suheel Hamid, Uday S Annapure

- ❖ Development of baked *kachori*, Rahul Rathod and U.S.Annapure, a poster presented at 'Conference on "Traditional Foods: Challenges and Innovation', organized by Food Engineering and Technology Department and Association of Food Scientists and Technologists (India), held at Mumbai, September 28, 2013.
- ❖ Effect of complex media on the production of lutein from *chlorella pyrenoidosa*, Shashee Bheron and Uday Annapure, poster presented at Agriculture, Food Technology and Environment New Approaches, organized by Jawaharlal Nehru University, New Delhi, October 19-20, 2013,
- ❖ Following posters were presented at 'Emerging Food Safety Risks: Challenges for Developing Countries – 2014, organized by National Institute of Food Technology Entrepreneurship and Management, January 9 – 10, 2014:
  - Effet of cold plasma on physico-chemical, microbial properties of walnut, S. Chaitanya, Suheel Hamid, Uday S Annapure.
  - Effet of gamma irradiation on physico-chemical, microbial properties of walnut, Yamuna Devi R, Suheel Hamid, Uday S Annapure.
- ❖. Enzymatic biotransformation of polyunsaturated fatty acids using tomato lipoxygenase, Vishal Revanvar, Vaishali Bagul, Vinit Bajaj and Uday S. Annapure, poster presented at 10th BRSI Convention and International Conference on advance in Biotechnology and Bioiformatics, Nov 23 -26, 2013.

DR. LAXMI ANANTHANARAYAN

- ❖ Dehydrated backstopping for acceleration of *idli* batter fermentation, Neha S. and Ananthanarayan L., poster presented at the Traditional Foods Seminar, ICT (Ist prize in poster presentation)
- ❖ Following posters were presented at at 7th International Food Convention-2013 (IFCON-2013) on NSURE-Healthy Foods (Nutritional Security through Sustainable Development, Research & Education for Healthy Foods), CSIR-Central Food Technological Research Institute, Mysore - 570 020, December 18-21, 2013:
  - Effect of extrusion cooking on physicochemical, phytochemical and antioxidant capacity of expanded extrudates prepared from rice-horse gram blend, Yogesh Gat and Laxmi Anathanarayan (Best poster Award).
  - Effect of method of cooking and time of storage on glycemic index of commonly consumed staple foods, Shital Giri and Laxmi Ananthanarayan
  - Formation of ACE inhibitory peptides in germinated matki (vigna aconitifolia), Bincy Bhaskar and Laxmi Ananthanarayan
  - Effect of thermal processing and ultrasonication on custard apple peroxidase activity and on vitamin C retention, Mugdha Dabir and Laxmi Ananthanarayan
  - Development of biochemical method for detection of Oryza Sativa (rice) flour as an adultrant in vigna mungo (blackgram) flour, Dhanashree Amane and Laxmi Ananthanarayan

- Studies in development of milk-fruit juice blend beverages, Madhulekha Rakshit, Sumit Pandey and Laxmi Ananthanarayan (Ist prize in poster presentation)

❖ Preservation of bottle guard/*dudhi halwa*, poster Swati Sonawane and Laxmi Ananthanarayan, poster presented at International Conference on Emerging Food Safety Risks: Challenges for Developing Countries, NIFTEM, January 9-10, 2014.

❖ Comparative study of cellulose production in solid state and submerged fermentation using Trichoderma ressei, Prashant Jha and Laxmi Ananthanarayan, poster presented at ICCBP, NIT Waragal, October 16-18, 2013.

❖ Seed storage proteins from selected Indian legumes as potential precurssors of bioactive peptides- as *in silico* approach, Bincy Bhaskar and Laxmi Ananthanarayan, poster presented at DBT JRF Regional Meet, organized at ICT, November 21-22, 2013.

DR. SHALINI ARYA

❖ Use of millets in the development of multigrain value added *khakra*, Sonal Patil, Ranesh Kumar Narwade, Shital Chauhan and Shalini S. Arya, poster presented at 'Emerging Technology in Processing and value addition of Millets for better utilization', Tamilnadu Agricultural University, Madurai, March 13-14, 2014 (Award Winning presentation by Sonal Patil).

❖ Studies on omega-3 enriched *khakhra*, Dattatray Khemnar & Shalini Arya, Poster presented at International Conference on Emerging Food Safety Risks: Challenges for Developing Countries, NIFTEM, January 9-10, 2014.

❖ Following posters were presented at poster presented at 7th International Food Convention (IFCON) on NSURE healthy foods, organized by AFST (I) at CSIR-CFTRI Mysore, December 18 – 21, 2013.

- Optimization and nutritional characterization of Thalipeeth: An Indian multi-grain pancake, Sonali Gaikwad & Shalini S. Arya,
- Effect of legume flours on quality and protein digestibility of Dhirde – sorghum-based Maharashtrian pancake, Narwade R & Shalini S. Arya.

❖ Low GI *thepla*: An Indian traditional vegetable flat bread (unleavened), Sonal Patil & Shalini S. Arya poster presented at National workshop on Traditional foods, Institute of Chemical Technology, Matunga, Mumbai, Sepember 28, 2013.

SEMINARS / WORKSHOPS ORGANIZED

❖ The FET Department Jointly with PFNDAI (Protein Foods & Nutrition Development Association of India) Organized 'Nutrition Week Activity 2013' on September 07, 2013 at ICT, Matunga.

❖ The FET Department organized a seminar on 'Traditional Foods' with funding from TEQIP and monumental support from AFST (I), Mumbai Chapter, on September 28, 2013 at ICT, Matunga.

❖ The FETD jointly with AFST (Association of Food Scientist &Technologist, India), Mumbai Chapter organized World Food Day Celebration Seminar, October 18, 2013 at ICT, Matunga.

ENDOWMENT AND OTHER LECTURES ORGANIZED IN THE DEPARTMENT

Sr.	Date	Fellowship	Distinguished Speaker / Affiliation	Title of Lecture
1	July 22, 2013	Golden Jubilee Visiting Fellowship	Dr. Shyam Sablani, Associate Professor of Food Engineering Biological Systems Engineering	Smart packaging technologies
2	August 16, 2013	Marico Industries Visiting Fellowship	Professor Jayant R. Bandekar, Professor Homi Bhabha National Institute(Deemed University), Head, Radiation Biology & Health Sciences Division (BARC)	Microbiological aspects of radiation processing of food
3	August 31, 2013	Organized under TEQIP	Dr. S. K. Samant, Vice President, R & D, Cadbury India Ltd.	Recent advances in chocolate manufacuring
4	September 07, 2013	Guest lecture jointly with PFNDAI	Mr.U. Purnachand, Solae	Advantages of soya in sports & other physical activities
6	September 07, 2013	Guest lecture jointly with PFNDAI	Ms. Madhavi Trivedi, Kelloggs	Breakfast cereals for active & sports persons
7	September 07, 2013	Guest lecture jointly with PFNDAI	Mr. Anek Arora, Roquette India	Newer ingredients in sports & weight management
8	September 16, 2013	Organized under TEQIP	Professor Stephen Knabel Professor of Food Science, Department of Food Science, Pennsylvania State University, USA.	Bacterial growth curves and their implications for food safety
9	September 16, 2013	Organized under TEQIP	Dr. Sara LomonacoAssistant Professor of Food Safety, Department of Animal Pathology, University of Torino, Italy	*Listeria monocytogenes:* A unique foodborne pathogen
10	September 23, 2013	-	Mr. Dave Advisor, FSSAI	Significance of CODEX and other related aspects
11	September 27, 2013	Organized under TEQIP	Professor Chincholkar, North Maharashtra University, Jalgoan	A tiny microbe can chelate iron: siderophore
12	October 18, 2013	Guest lecture Jointly with AFST(I) Mumbai	Aarti Karkhanis, Applications Manager, M/s Thermo Fisher Scientific India Pvt. Ltd., Mumbai	Applications of GC-GCMS/MS in food safety
13	November 18, 2013	Organized under TEQIP	Dr. V. Malathy	Newer applications of enzymes in food processing
14	April 4,2014	Marico Industries Fellowship Lecture	Dr.Shobha Rao	Food technology challenges ahead
15	April 5,2014	Golden Jubille Visiting Lecture	Dr.R. Rangaprasad	Innovative packaging technologies
16	April 10	Golden Jubille Visiting Fellowship	Dr. Shikha Swamy	Improvement of wine quality in tropics
17	May 15, 2014	Professor B. D. Tilak Visiting Fellowship Lecture	Dr. A. J. Varma	Towards a sustainable world economy using biomass technologies
18	May 28, 2014	Lupin Visitng Fellowship for Bioprocess Technology	Dr. Debasis Mitra	The fight against HIV/ AIDS: Novel molecules and strategies targeting the virus

19	May 30, 2014	Professor J. V. Bhat Memorial Lectuire	Dr. Deepa Bhajekar	Prebiotics and probiotics
20	May 30, 2014	Professor A. Sreenivasan Memorial lecture	Dr. N. Ramasubramaniam	Food industry today

INDUSTRIAL CONSULTANCY

Name of the Company	Area of Advice	Period
Kamani Oil Mills (RSS)	Fat powder	June 2013-June 2014
Unilever Industries Pvt. Ltd, Bangalore	Microbial fermentation	January 2014-January 2015
Kelloggs India Pvt. Ltd. (RSS)	Product evaluation for food safety	One time consultancy
Godfrey Phillips Ltd. (USA)	Product evaluation for food safety	One time consultancy
Roquette India Pvt. Ltd. (USA)	Product evaluation for food safety	One time consultancy
Marico Ltd (USA)	Product evaluation for food safety	One time consultancy
General Mills India Ltd. (USA)	Product evaluation for food safety	One time consultancy
Heinz India Pvt. Ltd. (USA)	Product evaluation for food safety	One time consultancy
Tata Chemical Services (SSA)	Low glycemic index *atta* formulation	Ad-hoc

DETAILS OF MASTERS/Ph.D STUDENTS SUPERVISED

Ph.D. (TECH) (FOOD ENGINEERING AND TECHNOLOGY/BIOPROCESS TECHNOLOGY/FOOD BIOTYECHNOLOGY)

Research Scholar:
Chavan Yogita V.
Research Supervisor:
Professor Rekha S. Singhal

Extraction, Separation and Purification of Arecanut Polyphenols

Arecanut or betel nut (*Areca catechu* L.) is an important commercial crop grown in humid tropics of India. Commercially, it is used in gutka and pan masala industries and its consumption is intimately associated with religious, social and cultural ceremonies. It is traditionally used in masticatory purposes and also in ayurvedic and veterinary preparations. Arecanut is a rich source of polyphenols but also contains toxic alkaloids, mainly arecoline. Polyphenols of various forms have attracted attention in recent times due to its multifarious properties such as antioxidant and associated therapeutic effects. The widespread consumption of arecanut or its products raises concerns on the health consequences, in particular oral cancer. This is attributed to arecoline which metabolizes to nitroso compounds that are known to be cytotoxic and genotoxic to human buccal epithelial cells. Hence, separation of these bioactive polyphenols from toxic constituents could propel the safe and beneficial use of arecanut, and enable arecanut processing industries to produce arecoline-free products. The present work was undertaken in this direction:

Part I: Various extraction techniques were evaluated and optimized with the aim of extracting maximum polyphenols and minimum arecoline. These included conventional solvent extraction, ultrasound-assisted extraction (UAE), microwave-assisted extraction (MAE), and extraction using ionic liquids. Solvent extraction under optimized conditions (80% acetone at pH 4 for 90 min with 10% w/v substrate at shaking) gave maximum extraction of TPC (40%), good antioxidant activity and highest TPC: arecoline ratio (289) with minimum extraction of arecoline (0.17%). The process parameters of UAE and MAE were optimized using response surface methodology (RSM). RSM optimized conditions of

UAE (SP-30W, DC- 50%, Et- 50 mins) gave 36% of TPC, 0.3% of arecoline, maximum TPC: arecoline ratio (116) and good antioxidant activity (ABTS, FRAP, Hydroxyl radical scavenging activity). MAE reduced the extraction time for extraction of the arecanut constituents to just 12 min. Effect of gamma irradiation on the extraction of arecanut bioconstituents was also evaluated but was not very promising. Use of ionic liquids for development of an eco-friendly extraction method to get arecoline-free extract is in progress.

Part II: For separation and purification of polyphenols from arecoline, ion-exchange and silica column chromatography were performed. Among the five resins, Indion 130 (strongly acidic resin) was selected and data were fitted in Langmuir adsorption isotherm, Qmax (0.514 moles of arecoline adsorbed/ kg of resin) were calculated. 48% adsorption of arecoline and 11% of TPC was observed with 75% of bed height at flow rate of 0.25 ml/min. Breakthrough was achieved after 40 mins at optimized conditions. Further, polyphenolic extract were purified using silica column chromatography and 70 fractions were obtained. Bio-fraction guided assay was performed to separate the major antioxidants from column fractions for potential utilization of the same. Complete phytochemical profile was done by TLC, HPLC and LC-MS of crude extract and 20 new compounds were identified for the first time in arecanut.

Part III: Polyphenols rich extract from arecanut (APE) was spray dried and added in amla juice at 0.1, 0.2, 0.3%w/v and evaluated and confirmed for its potential to protect ascorbic acid, antioxidant activity and colour loss during storage at temperature (32±2°C) and 4oC. The results were evaluated on the basis of first order kinetics from which the rate constant, k, and half-life, $t_{1/2}$ for 50% loss of the quality parameter were evaluated. Antimicrobial profile of APE against Gram- positive and Gram- negative bacteria, yeast and fungal strains was carried out. Maximum zone of inhibition were observed with *S.aureus* (3 cm) *followed by S.typhi, E.coli and B.subtilus*.The mechanism of inhibition was investigated using fluorescent and confocal microscopy and was shown to be due to loss of cell membrane. MIC optimized concentrations of APE were added in meat and tested at 37°C. APE treated meat samples reduce the number of cell count at least than 30 h when compared with untreated samples for each organism.

Research Scholar: **Waghware Roji**

Research Supervisor: **Dr. Uday S. Annapure**

Consumer demand for fresh, nutritious, and convenient fruits and vegetables has spurred the growth of fresh-cut products. It is difficult to preserve fresh-cut produce for long storage period because of respiration, transpiration, enzymatic activity of the living tissue and microbiological safety. The higher the respiration rate of fresh produce, the shorter will be the shelf life, and vice-versa. Modified atmosphere packaging (MAP) is a technique which successfully prolongs the shelf-life of fresh or minimally processed foods. For the design of MAP it is necessary to know the influence of time and temperature on the respiration rate (RR) of fresh produce. Mathematical modelling is being used for prediction of RR as a function of both time and temperature.

Respiration rate (RO_2 and RCO_2) of each fresh produce was measured at 10, 20 and 30 °C for storage time of 1 to 5 days under aerobic condition using the closed system method. RO2 of coriander, cluster bean, beet root, fresh fig and diced papaya ranged from 39.2 to 177.8, 29.5 to 111.9, 8.4 to 101.5, 16.2 to 45 and 25.5 to 114.9ml kg-1 h-1 respectively and RCO2 ranged from 42.9 to 170.6, 27.9 to 113, 17.7 to 110.4, 11.5 to 51.9 and 23.9 to 113 ml kg-1 h-1 respectively over the three storage temperatures tested. Temperature and the interaction

of time and temperature had the significant effect on RR. The dependence of respiration rate of fresh-cut produce on temperature and time was well described by an Arrhenius and Weibull models.

The efficacy of chemical dip and MAP, alone and in combinations, on the quality of fresh-cut papaya were studied throughout 25 days at 5°C. Significant difference was found between the chemically treated and non-treated fresh-cut papaya. Chemical treatment followed by MAP, showed the best results among the treatment in terms of retaining quality characteristics. Effect of irradiation and MAP, alone and in combinations, on the quality of fresh figs were observed. The results indicated that MAP followed by low dose irradiation (0.5 and 1kGy), showed the best results for extending the shelf-life of 15 days for fresh fig. Effect of hydrogen peroxide (H_2O_2) and sodium hypochlorite on cluster beans and fresh-cut coriander leaves with MAP were examined. It was found that the combined effect was more useful for preserving the quality of fresh produce than the single treatment.

Research Scholar: **Harde Shirishkumar Manikrao**
Research Supervisor: **Professor Rekha S. Singhal**

Extraction of Forskolin from *Coleus Forskohlii* Roots and Utilization of Its Spent Biomass

Coleus forskohlii Briq, a herbal plant belonging to the Lamiaceae family, is indigenous to India and is recorded in Ayurvedic Materia Medica under the Sanskrit name Makandi and Mayini. With the current annual production of about 100 tons from 700 ha in India, cultivation of *C. forskohlii* is picking up due to its economic potential. Many of the beneficial effects of *C. forskohlii* have been attributed to the pharmacological actions of forskolin (FSK), a major diterpene isolated from the root of *C. forskohlii*. FSK is known to increase cyclic adenosine monophosphate (cAMP) and cAMP mediated functions by activating the enzyme adenylate cyclase. FSK is useful in the treatment of asthma, glaucoma, cardiovascular diseases and certain types of cancer. The above therapeutic benefits indicate FSK to have a potential nutraceutical effect. Thus present work was undertaken to extract FSK from *C. forskohlii* roots using green processes, utilize the residual biomass remaining after extraction of FSK, and evaluate its pharmacological activity.

Part I: Various extraction techniques were evaluated and optimized with the aim of extracting maximum FSK. These included enzyme assisted three phase partitioning (EATPP), supercritical fluid extraction (SFE) and ionic liquid based ultrasound-assisted extraction (ILUAE). Enzyme pretreatment with commercial enzyme preparation of stargen® 002 and Accellerase® 1500 followed by TPP gave 83.85% recovery of FSK within 4 h as compared to 12 h in Soxhlet extraction. The solubility parameter of FSK, CO_2, and entrainer solvents was calculated and validated with experimental results. A maximum of 50.32% recovery of FSK was obtained after SC-CO_2 extraction at 40 °C, 250 bar and extraction time of 60 min. Use of methanol as an entrainer at 20% v/w of dried *C. forskohlii* roots under optimized conditions improved the recovery of FSK to 74.29%. Ionic liquid based ultrasonic-assisted extraction (ILUAE) as a green approach was successfully applied to extract FSK from *C. forskohlii* roots corresponding to an extraction efficiency of 87.4%.

Part II: Root biomass of *C. forskohlii* obtained after extraction of FSK constitutes more than 95% of the raw material that is rich in carbohydrates. It was therefore used as a substrate for the production of biofuels. Continuous production of ethanol was carried out using wood chips immobilized cells of *Saccharomyces cerevisiae* in packed bed reactor. The maximum ethanol productivity (15.88 g/l.h) was obtained at

a dilution rate of 1 (1/h) with nitrogen supplementation and aeration. *C. forskohlii* root hydrolysate was successfully utilized for batch fermentation of acetone, *n*-butanol, and ethanol (ABE) using cells of *Clostridium acetobutylicum* NCIM 2877. Detoxification of *C. forskohlii* root hydrolysate (calcium hydroxide and Amberlite XAD-4) increased the production of total solvents from 0.55 g/L to 5.33 g/L.

Part III: *C. forskohlii* root extract was evaluated for the treatment of Alzheimer's disease. Medium dose (150 mg/kg) of *C. forskohlii* root extract showed positive anti-Alzheimers activity. This study was performed by using Elevated plus maze and Morris water maze models. FSK was successfully purified by using silica column chromatography with 79.24% of HPLC purity and characterized by using IR, NMR and LCMS.

Research Scholar: **Sardar Bikash Ranjan**

Research Supervisor:
Professor Rekha S. Singhal

Encapsulation of sensitive and bioactive food ingredients

Encapsulation is a technique by which sensitive and bioactive ingredients are entrapped as a core within protective wall materials. Selection of encapsulating agent plays a key role in monitoring functional properties of core material, whereas methods of encapsulation are primarily based on the application. There is tremendous scope for introducing multiple coated and/or protective wall materials for encapsulation in food industries. Various techniques like co-crystallization, spray drying and co-extrusion were employed for encapsulation in the present study. The present study was undertaken with the aim of encapsulation of cardamom oleoresin and black tea extract by co-crystallization in a sucrose matrix, spray drying encapsulation of flaxseed oil in wall materials composed of individual or protein-polysaccharide combination(s), and double encapsulation of fish oil by spray drying followed by extrusion.

Part I: Co-crystallization was attempted for the first time for encapsulation of cardamom oleoresin with sucrose. The cardamom flavoured sugar cubes was optimized for sensory acceptability using three variables such as sugar concentration, flavour concentration and amount of sugar cube for 50 ml of tea. Characterization of flavoured sugar cubes was done in terms of hygroscopicity, solubility, water activity and sorption isotherms. Surface microstructure was observed by SEM while the degree of crystallinity was evaluated through XRD and DSC analysis. Samples were kept for storage studies in two different packaging materials under three different conditions of temperature (5°C, 25°C, 45°C), each at three levels of relative humidity (33%, 63%, 93%) for five months. Stability of co-crystallized flavoured sugar cubes was evaluated by quantifying 1,8-cineole and α-terpinyl acetate.

Part II: Co-crystallized instant black tea sugar cubes were made by optimizing three factors, viz. sugar concentration, concentration of instant tea extract and amount of instant tea sugar cube for 50 ml of milk/water. These cubes were characterized for physicochemical characteristics as in Part I. Storage studies of co-crystallized instant tea sugar cubes was carried out at 25°C and 45°C, each at relative humidities of 52%, 75% and 93% in control and two-layer co-extruded packaging material for three months. The stability was evaluated in terms of quality parameters such as total phenolic compounds, tannins and caffeine.

Part III: Spray drying microencapsulation of flaxseed oil was extensively studied by screening of wall material among Hicap, capsul and gum Arabic (GA), optimization of oil loading (20 to 100% on the basis of wall material), and concentration of wall material (20 to 30%) was initially carried out. Hicap and GA individually

and their blends with whey protein concentrate (WPC), maltodextrin of DE 9 (MD-9) and maltodextrin of DE 19 (MD-19) was finally optimized by augmented simplex centroid design to select a wall material combination showing maximum encapsulating efficiency. The microcapsules were packed in three layer metalized laminate and stored at 45°C and 75% RH for 6 weeks. Oxidative stability of flaxseed oil in the microcapsules was monitored by quantifying free fatty acids, peroxide and value the oxidation-sensitive ω-3 α-linoleic acid (ALA) during storage.

Part IV: Microencapsulation of fish oil was studied and its application and stability explored in food products. The microcapsules showing maximum stability were obtained using a wall material blend composed of Hicap with MD (9+19), WPI and Na-caesinate. These microcapsules were used for co-extrusion with corn starch to make noodles containing fish oil. Extrusion parameters such as moisture content of the feed, barrel temperature, and screw speed were optimized for best acceptability, cooking time, cooked weight, cooking loss, and firmness of noodles. Stability of microencapsulated fish oil during extrusion and subsequent storage at 45°C & 75% RH was evaluated by packaging the noodles in a two-layer laminate for 60 days. The stability was evaluated in terms of the content of oxidation-sensitive ω-3 EPA & DHA, and compared with a control batch having free fish oil.

Research Scholar: **Surve Vedprakash Devrao**
Research Supervisor: **Dr. Uday S. Annapure**

Studies in Traditional Fermented Food

Fermented foods are one of the important items of the human diet. These traditional fermented food products are a household art prepared by using relatively simple procedures and equipments. Fermented foods like *idli, dosa, ambali, kanji, vadai, papad, kurdi, jelabi, kharode, bhaati jaanr, seera* etc, are some of the items largely consumed in Indian Subcontinent. Traditional fermented food products prepared in varied parts of India, have been well studied and recognized. However, there is no detailed study reported for foods like *kurdi*,jowar *papad* and *kharode* an indigenous food item prepared largely in state of Maharashtra, India. Hence, present work was undertaken to develop a scientifically sound, commercially viable and socially useful cereal based traditional fermented food products.

Part 1: *Kurdi* is prepared by fermenting wheat grains by soaking in water and subsequent crushing which is then thermally gelatinized, hand extruded and dried. Efforts were made to find out the effect of indigenous fermentation at varied time and temperatures on the physicochemical characteristics, optimization of process technology and nutritional characterization with respect to starch, amylose, reducing sugars, in-vitro protein and starch digestibility, mineral and phytic acid content of *kurdi* prepared from two cultivars of wheat. Study was also undertaken on changes in microflora during indigenous fermentation process of this food. Isolation and identification of micro flora responsible for fermentation of *Kurdi* was carried out. Study also deals with Rheological, textural, pasting property, flavor profile, WSI, WAI and swelling power. The sensory attribute of the final product was done.

Part 2: Jowar *Papad* was prepared from prepared from two cultivars of fermented sorghum flour. The similar studies were carried out as mentioned in part 1.

Part 3: *Kharode* also called *rabadi* was prepared from fermented pearl millet (Bajra) flour. Two varieties of pearl millets (Bajra) cultivars were used for this entire study. Similar characteristic studies were carried out for this product as mentioned for *Kurdi*.

Research Scholar: **Sarkar Shatabhisa Sarkar**
Research Supervisor:
Professor Rekha S. Singhal

Microencapsulation of sensitive food ingredients

Microencapsulation is defined as a technology of packaging solids, liquids and gaseous materials in miniature, sealed capsules that can release their contents at controlled rates under specific conditions. Gum Arabic is an industrial standard as wall material for spray drying encapsulation due to its emulsifying and film forming ability, low viscosity at high concentration and very high water solubility. However India imports gum Arabic to meet its demand. Due to over dependency on gum Arabic and constraints related thereto such as fluctuations in availability, price and quality, continuous search for newer wall materials is in progress. Guar gum is native to India and 80% of global need is met by India. Hence this study was undertaken to develop guar gum-based wall material for microencapsulation of water soluble and insoluble core material. An account of the work done is given below:

Part I - Enzymatic hydrolysis of guar gum by α-galactosidase and β-mannase: Enzymatic hydrolysis of native guar gum studied to match the viscosity profile of gum Arabic, and evaluated in terms of intrinsic viscosity of the hydrolyzed guar gum. The optimized concentration of α galactosidase and β-mannase were 5.20 x 10^{-4} U/ml and 1.16 x 10^{-3} U/ml, respectively, which yielded a partially hydrolyzed guar gum or Guar gum hydrolysate (GGH) with intrinsic viscosity of 1.34 after 2 h of hydrolysis. GGH was evaluated for microencapsulation of ascorbic acid using a simplex centroid design where different blends of gum Arabic (GA), maltodextrin (MD) and GGH were extensively studied to optimize maximum retention of ascorbic acid in microcapsules. Ideal blend of GA:MD:GGH: in the ratio of 4/6: 1/6:1/6 showed maximum retention of ascorbic acid in the capsules.

Part II - Esterification of GGH and GA with n-octenyl succinic anhydride (n-OSA) and oleic acid and its evaluation as wall material in microencapsulation of mint oil: GGH esterified with OSA and oleic acid was optimized using three parameters in the esterification process, viz. concentration of the acid, temperature, and time of reaction by response surface methodology (RSM). The reaction was monitored in terms of degree of substitution (DS), and optimized for maximal DS. The maximum DS of GGH oleate, GGH-OSA, and GA-OSA were found to be 0.061, 0.072, and 0.070, respectively. These wall materials were successfully used for encapsulating mint oil and were comparative to GA in its performance.

Part III - Irradiation to depolymerise guar gum as partial replacement of GA for microencapsulation of mint oil: In this study, spray dried microcapsules of mint oil were prepared using GA alone and its blends with radiation or GGH as wall materials. Microcapsules were evaluated for retention of mint oil during 8-week storage during which qualitative changes in encapsulated mint oil was monitored using principal component analysis. These wall materials were better retention of mint oil both in terms of quality and quantity after analyzing by GC-MS.

Part IV- Evaluating OSA derivatives of guar gum and GGH as a dual functional additive in food formulations: Since esterification induced emulsification in both guar and GGH, attempts were made to study it as a dual functional additive in cereal based formulations – as an emulsifier and as an agent for reducing glycemic index.

Ph.D (TECH) (FOOD BIOTECHNOLOGY)

Research Scholars: **Silotry Naik Azza**
Research Supervisor:
Professor S. S. Lele

Studies in Development

of Functional Foods for Inflammatory Disorder

Functional food is a natural or fortified food product containing active components that deliver some specific physiological benefit apart from general nutrition. Incorporating bioactive molecules as a part of our diet can be a natural and cost effective way of managing lifestyle disorders. Spices and oilseeds hold prominence in Indian cuisine hence the focus of the current study was to evaluate the bioactive molecules from *Linum usitatissinum* (LU), *Lepidium sativum* (LS), *Nigella sativa* (NS) and *Guizotia abyssinica* (GA) seeds and develop a possible functional ingredient targeting inflammation.

The four seeds were characterized for fatty acids, antioxidant capacity, phenolic compounds, dietary fiber and anti-nutritional factors. GC-MS analysis of the seeds revealed LU and LS to be a rich source of α-linolenic acid (41.85 ± 0.33%, 26.71 ± 0.63%). NS seeds demonstrated highest antioxidant ability (61.68 ± 0.21 TEAC/ 100 gm DW) due to the presence of phenolics as assayed by Mass spectral analysis. Further, LS seeds and NS seeds were explored for antioxidant and anti-inflammatory molecules through invitro and invivo assays. At an oil concentration of 5% (w/v) complete quenching of the DPPH free radicals was seen thereby establishing the antioxidant nature of the seed oils. Rat paw edema model was utilized to ascertain anti-inflammatory activity of the chosen oils. Oral administration of the seed oils at 300 mg/ kg body weight of the albino wistar rats was seen to reduce carageenan induced edema significantly ($p < 0.01$) as compared to the control group.

Lipids rich in polyunsaturated fatty acids (PUFA) are of great importance to the food industry. Thus α-Linolenic acid (ALA) rich LS seed oil was stabilized through microencapsulation by freeze drying. The encapsulation procedure was optimized by the Central Composite Design, through variation of parameters such as the ratio between gum and soy protein isolate (SPI), wall and core and the speed of homogenization. The response was measured in terms of microencapsulation efficiency (MEE) with the maxima of 81.11%. Thus a functional ingredient was developed for incorporation in food products.

To comprehend differences in fatty acid metabolism and the underlying genetic variability a case control study was undertaken. A SNP (rs174611,T<C) in FAD-2 gene was identified and healthy individuals and asthmatic patients were screened for the same. On screening 200 healthy and 100 diseased samples, significant differences were seen in the genotypes at $p = 0.016$. A study with larger sample size needs to be undertaken to further corroborate the present findings.

Ph.D. (SCI) (BIOTECHNOLOGY)

Research Scholar: **Raut Supriya**
Research Supervisor: **Professor S. S. Lele**

Studies in Carbonate Degrading and Precipitating Microorganisms in materials

The project has 2 parts, favorable effect of calcium carbonate precipitation by microbes and unfavorable effect of calcium carbonate degradation by microbes in civil structures.

Biocalcification phenomenon, also known as microbiologically induced calcite precipitation (MICP), occurs in the environment due to the metabolic activity of microbes, especially urease-producing organisms. This naturally occurring phenomenon, if employed as a novel technique for remediation of damaged civil engineering structures, can result in selective microbial plugging of the cracks and thereby re-consolidating the distorted structure. Part I studies are on this aspect.

Calcium carbonate is a natural component of rocks and has been classically used

as tiling and flooring material in constructions. Natural degradation of $CaCO_3$ through biological and chemical means is of concern. However in boilers and heating equipments, deposition of $CaCO_3$ leads to loss of energy and hence technologists are investigating environmental friendly solutions to dislodge these scales. Part II studies are on this aspect.

Part I: Carbonate precipitating microorganisms

The biocalcification ability of *Bacillus pasteurii* (NCIM 2477) was initially studied at flask level in a media especially optimized for urease production (OptU) and a standard media, nutrient broth (NB). *Bacillus pasteurii* grown in OptU media precipitated 86% $CaCO_3$ as compared to only 34.1% in NB. The impact of biocalcification efficiency of *Bacillus pasteurii* in OptU media and NB was further investigated on various civil engineering structures such as bricks, concrete cubes and cement mortars. The curing process was allowed to occur and at the intervals of 7, 14, 21 and 28 days, specimens were removed, dried and tested.

Effect of biocalcification activity on compressive strength and water absorption capacity of bricks was investigated over a period of 28 days. Biocalcification by *B. pasteurii* in OptU resulted into 83.9% increase in strength of the bricks as compared to only 24.9% with NB. Bricks treated with B. pasteurii grown in OptU resulted in 48.9% reduction in water absorption capacity as compared to control bricks. Efficiency of B. pasteurii to form high-quality concrete in OptU media and that in NB was investigated in terms of compressive strength and water impermeability of concrete cubes. At the end of 28 days, the results showed 20% increase in strength of cubes cured in Bacillus inoculated OptU media as compared to only 4.3% increase with NB. The water impermeability of cubes treated in Bacillus inoculated OptU media was increased by 44.3% compared to control cubes. The compressive strength of cement mortars cured in *B. pasteurii* inoculated OptU media and NB, increased by 54.71% and 32.9% respectively as compared to control specimens. Majority of the precipitate deposited by *B. pasteurii* in both OptU and NB media constitutes of calcium carbonate in the form of calcite.

Part II: Carbonate degrading microorganisms

The objective of this study was to isolate and identify microbes that are able to survive in nutrient deficient as well as starving conditions for prolonged durations and also have $CaCO_3$ dissolving ability. Deteriorated rocks and titles were selected as specimens for screening such microorganisms. Methodology involved enrichment of microbes with ability to withstand prolonged starvation conditions for 3 weeks in minimal media broth supplemented with $CaCO_3$. Out of the 18 isolates that survived in this starved condition, only 7 isolates showed $CaCO_3$ dissolving ability on minimal media agar. The $CaCO_3$ degrading ability and survival duration of these 7 isolated microbes was further studied under prolonged starved conditions for 3-6 months in minimal media broth without any nutrient replenishment. These 7 isolates were further identified as *Acinetobacter* (2 isolates), *Klebsiella, Microbacterium* (2 isolates) and *Bacillus* (2 isolates) based on biochemical identification test and 16S rRNA sequencing. Further antimicrobial activity of metal ions against these degraders was investigated.

Research Scholar: **Jadhav Swati Bharat**

Research Supervisor:**Professor Rekha S. Singhal**

Enzyme-Polysaccharide Interactions: Effects on Enzyme Activity and Stability

Proteins and polysaccharides are natural biopolymers that can interact under the environmental conditions existing in the food and influence functional properties such as solubility, denaturation

temperature and/or pH, surface active properties such as foaming and emulsification, as well as gelling profiles. These biopolymer interactions have been very creatively used to develop new functional ingredients as well as fat substitutes for use in food products. Enzymes being proteinaceous in nature would be expected to behave similarly as food proteins but which would be manifested as alterations in enzyme activities and/or stabilities. Enzyme-polysaccharide interactions and their effects on structural and functional characteristics of enzymes are not well reported in the literature. Enzymes are important for many industrial applications that are eco-friendly. However, their limited stability under process conditions is often a constraint in using them commercially. Among the many techniques to stabilize enzymes, one of the simple ways is interaction of enzymes with polysaccharides through covalent or non-covalent binding. This work was therefore undertaken to look in to the effect of these interactions on commercially important enzymes.

Part I: Conjugation of polysaccharides with amylases

The process of covalent conjugation of α-amylase to dextran was optimized to achieve good retention of activity with enhanced thermal and pH stability. The polysaccharides were oxidized with sodium periodate under optimized process conditions and then used for conjugation with α-amylase below its pI. The conformational changes were evaluated through circular dichroism spectra. Nine polysaccharides were screened for this purpose of which dextran showed best retention of activity along with thermal and pH stability. An interesting phenomenon observed was a significant reduction of aerobic flora in enzyme solutions challenged with Gram-positive and Gram-negative bacteria without addition of any preservative. Further, two enzymes viz. α-amylase and glucoamylase were individually conjugated and co-conjugated to pectin by covalent binding for the purpose of one-step hydrolysis of starch to glucose. Individually conjugated enzymes showed an increase of 56.48 K.J/mole and 38.22 kJ/mole in activation energy for denaturation than the free enzymes and co-conjugated enzymes, respectively. Enhanced entrapment of α-amylase and glucoamylase was found in alginate beads through non-covalent interactions achieved by addition of pullulan to the enzyme mixture. Hydrolysis of starch and reusability study showed better applicability of beads of enzymes-pullulan conjugate as compared to the free enzymes.

Part II: Conjugation of polysaccharides with laccase

Laccase is an industrially important enzyme used to decolorize textile dyes. However, the textile effluent cannot be reused in such applications owing to laccase present in the effluent. The effect of laccase-polysaccharide interactions was therefore probed to check for the possibility of reusing textile effluent. Covalent conjugation of laccase with gum Arabic showed negative effect on thermal stability at 50^{o}C and 60^{o}C and pH stability, and slowed the rate of decolorization of Remazol brilliant blue R in the textile effluent without any microbial growth. This was in total contrast to the effluent treated with free laccase. Further, effluent treated with conjugated laccase enabled its reuse as liquor for the dyeing to get the desired shade. In another study, laccase-gum Arabic conjugate was used in organic solvents for the preparation of water-soluble catechin oligomer showing high antioxidant and anti cancerous activity.

Part III: Conjugation of polysaccharides with alcohol dehydrogenase (ADH)

A new strategy wherein butanol was produced from butyraldehyde using ADH and NADH as a co-factor was developed. The substrate coupled reaction gave yield of 74.63% whereas enzyme coupled reaction showed

24.24% yield of butanol production. Non-covalent and covalent interactions of ADH with carbohydrate(s) were studied to develop a suitable catalyst for the butanol production. While covalent interaction inhibited ADH, non-covalent interaction enhanced the thermal and pH stability. These could have industrial applications in alcohol de-addiction and one-step production of butanol, respectively.

M. TECH. (FOOD ENGINEERING & TECHNOLOGY)

Research Scholar: **Pandey Sumit**

Research Supervisor: **Dr. Laxmi Ananthanarayan**

Studies on Development of Milk based Healthy Products

Novel functional foods containing different food components may give health benefits beyond those arising from individual food components. Fruit and milk is one such mixture in which the antioxidant property of fruit constituents can be delivered in combination with the health benefits of milk. It comes under the diverse group of acidified milk drink (AMD). Optimum consistency and homogeneous texture for good mouth feel and no serum separation are desired characteristics of such type of drinks. The final product usually has viscosity similar to that of unprocessed milk. It is well proven that both adsorbing and non-adsorbing hydrocolloids are capable of stabilizing such system. The term ''adsorbing'' is related to charged polysaccharides, that can interact with proteins via electrostatic forces. The objective of this study is to explore and evaluate the effectiveness of these types of drinks. It is observe that high methoxy pectin (HMP) reduced serum separation by 75% at concentration of 0.5%. While Low methoxy pectin (LMP) and Tragacanthen (T) effectively reduced the serum separation by 57% and 67% respectively. Similarly Carboxyl methyl cellulose (CMC), Gum tragacanth (GT) and sodium alginate reduced serum separation by 46%, 41% and 62% respectively. The flow behaviour index is find to be highest for HMP followed by LMP, GT, T, CMC and SA. Consistency coefficient is observed to be highest for CMC followed by SA, GT, LMP and HMP.

While applying the AMD model in different milk-fruit juice model. It is observed that stabiliser taste is masked in all four drinks containing milk with apple, *kokum*, and *amla* and guava juice. Hence the stabiliser having low sedimentation and high flow behaviour index (HMP) is used for further sensory analysis. During sensory analysis milk-apple fruit juice blend (MSNF-4.32%), milk-guava fruit juice blend (MSNF-8.65%), milk-*kokum* fruit juice blend (MSNF-8.65%) and milk-amla fruit juice (MSNF-8.65%) is found to be most acceptable. The microbiological test shows pasteurised milk-fruit juice variant have high colony count, then blends added with preservative. The ascorbic acid retention is high in milk-amla and milk-guava even at four week of storage, whereas milk-apple and milk-kokum shows negligible ascorbic acid content after 2 week of storage.

Research Scholar: **Shah Nirali**

Research Supervisor:

Professor Rekha S. Singhal

Hydrophobic Modification of Food Hydrocolloid(s) for Novel food Application

Food hydrocolloids are used for their ability to impart texture to the foods by holding water at specified conditions of pH, temperature, or total soluble solids. This hydrophilic behaviour can be altered by hydrophobic modifications. Introduction of lypophilic moiety can be performed by either etherification using halogen derivatives, etherification using epoxide derivatives, esterification using carboxylic acids or their derivatives or alkylation using isocyanate derivatives. Esterification of many such polysaccharides is already performed and studied. Acetylation of hydrocolloids like pectin, gellan gum,

n-octenyl succinic anhydride (n-OSA) esterification of guar gum hydrolysate, gum Arabic, starches of various botanical source, cholesterol, maleate, acrylate esterification of pullulan have been successfully performed and novel properties have been observed. In such modifications novel properties such as emulsifying, fat replacing, colon targeting has been observed. In the present project work, n-OSA esterification of pectin, pullulan and gellan gum was attempted. Pullulan could be successfully esterified by n-OSA under alkaline-alcoholic conditions. A maximum degree of substitution (DS) of 0.062 was achieved. The modified pullulan was compared for its film forming property with unmodified one. It was observed that, at the maximum DS the water vapour permeability decreased by 30% of unmodified one. A two-fold decrease in tensile strength was also observed. The modified and unmodified coating was applied to almonds and cherries. With almonds, it was observed that both the coatings had similar effect on rancidification of almond fat. With cherries, it was observed that modified pullulan should lower weight loss compared to un-coated and unmodified pullulan coated samples. Hence, hydrophobic modifications of hydrocolloids have a promising future and many tailor made properties can be obtained.

Research Scholar: **Rathi Kunal**
Research Supervisor:
Professor S. S. Lele

Combination Process for Preservation of Gourd Family Vegetables

Process for preparation of ash gourd preserve with reduced sugar content has been developed using combination process. The process of vacuum impregnation for low methoxyl pectin impregnation, osmotic dehydration using sucrose solution (containing calcium lactate, citric acid and potassium meta bisulfate) and mild heat treatment of the optimized product has been employed to ensure quality preservation and safety of the preserve. Calcium lactate conc. and citric acid conc. were optimized at 1 % and 0.1 % respectively. Further pectin conc. in vacuum impregnation solution and osmotic dehydration parameters sucrose conc., temperature and time of immersion were optimized using response surface methodology. Process parameters pectin conc., sucrose conc., temperature and time of immersion were optimized at 1.48 %, 55.9° Brix, 69.9 °C and 120.0 min respectively for maximizing water loss and overall acceptability while minimizing solid gain, aw, TSS and sucrose content. Pectin impregnation process was not found significant on water loss but has shown significant effect on reducing the solid gain during osmotic dehydration treatment, which was helpful in decreasing the sucrose content and TSS of the ash gourd preserve. Optimized ash gourd preserve contains 28.42 % sucrose, whereas market petha contains 65.43 % sucrose. This shows about 56 % sucrose content reduction in developed ash gourd preserve was obtained successfully with the consumer acceptability near to the market petha. Shelf life study of 6 weeks has shown that ash gourd preserve can be consumed with high consumer acceptability even after 6 weeks of storage at 5°C and 25°C and after 5 weeks of storage at 45°C.

Research Scholar: **Chauhan Sheetal**
Research Supervisor:
Dr. Shalini S. Arya

Studies on Multigrain *Khakra*

Low moisture traditional snack i.e. *khakra*, containing multigrain was developed as a functional food. Multigrain khakra contained a combination of whole wheat flour and flours of pearl millet, finger millet, sorghum and maize. Studies were done over the effect of incorporation of these flours on the overall quality parameters viz. sensory, textural, color and dough parameters. It was found using one factor optimization that

the acceptable level of flours was 10% in the mix with whole wheat flour. These results were further used to design a formulation mix result obtained by studying the effect of various formulations on the critical responses viz. sensory scores, crispness of *khakra*, color of *khakra* and dough responses viz. stickiness and subjective dough rollability.

It was found that a mix containing whole wheat flour (70.71%),maize flour (10%),finger millet flour (7.94%),sorghum (6.34%) and pearl millet flour (5.01%) was the best formulation. Further, this multigrain *khakra* was evaluated for its nutritional quality (proximate composition, dietary fiber content, resistant starch content, glycemic index and *in vitro*-protein digestiblity).It was found that multigrain *khakra* had a low GI (51.94±0.015), high protein digestibility (84.82%) and higher dietary fiber content (2.44±0.19%) in comparison to whole wheat *khakra*. The multigrain *khakra* was later stored under accelerated conditions at 90% R.H. at 25 and 45°C.It was found that the rate of crispness loss was higher at 45°C.The predictive shelf life of *khakra* was found based on the concept of loss of crispness as well as Critical moisture (Mc). Based on both the evaluations it was found that *khakra* samples can survive a minimum of two months at optimal conditions. Other attributes like change in color and sensory scores were also evaluated.

Research Scholar: **Hamid Suheel**

Research Supervisor: **Dr. Uday S. Annapure**

Studies In Walnut Processing

Walnuts are receiving increasing interest as a healthy foodstuff because their regular consumption has been reported to decrease the risk of coronary heart disease. They have been proved as good sources of essential fatty acids and tocopherols with 40 to 500 times greater omega-3 fatty acid content than most other nuts. Walnuts (Juglans regia) are widely distributed all over the world and India falls among the top 10 largest walnut producers of the world. But the poor post harvest handling processes adopted result in high microbial infestation rendering walnuts unfit for human consumption and therefore unacceptable to the quality conscious markets. Many of the post-harvest fumigants that serve the purpose, such as ethylene dibromide, methyl bromide and ethylene oxide are either banned or to be phased out because of their adverse impact on human health and environment. Research conducted world-wide in the past four decades has shown that radiation processing of dried products could be an effective alternative to chemical treatment of foods. Considering this walnuts were subjected to different doses (1, 3 and 5) of gamma irradiation and effect of each irradiation dose on microbiological, physiochemical and sensory quality of walnuts was evaluated. There was significant reduction in microbial count and percentage reduction was found to be function of irradiation dose. Highest reduction was achieved at a dose of 5.0 kGy however irradiation at high doses promoted oxidation (increase in PV from 1.6±0.2 to 3.7±0.3 at 5kGy) but not to an unacceptable level (which is PV>10). Irradiation up to a dose of 5.0 kGy had no significant effect on three colour parameters: lightness (*L**), redness (*a**) and yellowness (*b**). Also there was negligible effect on texture but the taste and odour were dramatically affected by 3 and 5kGy doses. Total polyphenols and antioxidant activity (DPPH) increased with maximum increase at 3kGy (1016 ± mgGE/100g and 1640mg TE/100g respectively). Walnuts were also subjected to Low Pressure Plasma Treatment using atmospheric air gas mixture at different voltage (40kv, 60kv) and time (10, 20 and 30 min). Plasma treatment led to significant reduction in

artificially inoculated strains of *E. Coli* and *Aspergillus flavus* without having any detrimental effect on quality parameters. Finally effect of storage conditions on keeping quality of irradiated walnut kernels for two months was studied after every fifteen days and 100% vacuum at 40C was found to be most suitable in maintaining the quality characteristics of walnut kernels.

M. TECH. (FOOD BIOTECHNOLOGY)

Research Scholar: **Kumar Pavitra**
Research Supervisor: **Dr. Shalini S. Arya**

Characterization and Quantification of Biomolecule(s) produced by Microbes Isolated from *kurdai*- a Traditional Indian Fermented Snack food

There has been little scientific awareness on indigenous traditional fermented foods. Since fermented foods are a rich hub of natural microflora, systematic study of indigenous fermented foods would be of great benefit in addressing the rising issue of food security. *Kurdai* is a traditional wheat fermented food, native to Maharashtra and parts of Gujarat. The microbes responsible for kurdai fermentation have been successfully isolated and characterized. Seven microbes have been found to be responsible for *kurdai* fermentation-*Leuconostoc lactis, Pedicoccus pentosaceus, Enterococcus faecium, Klebsiella pneumonia, Staphylococcus hominis, Lactobacillus plantarum and Saccharomyces cerevisiae*. These indigenous strains can be explored as potential sources of biomolecules, with widespread applications in food systems. Natural antimicrobials from microbial sources have the potential to be included in food systems as edible components. Of the above mentioned isolates, *Pediococcus pentosaceus* appears to be of great interest for food preservation, due to the production of antimicrobial peptide pediocin, a potent bacteriocin. The objectives of the present work are- production and recovery of pediocin and its applications in suitable food systems. Production parameters were optimized by One Factor At a Time method for optimum pediocin activity- seed age (18 h), production media (MRS), inoculums density (5%), initial media pH (6.2), production time (21 h), production temperature (37^{o}C), 2% glucose as carbon source, 2.5% ammonium citrate as inorganic nitrogen source and 2% organic nitrogen source (Peptone: Yeast extract: Beef extract:: 1: 1: 0.5). The optimized activity was found to be 4.93 + 0.16 Activity Units/ mL. Solvent extraction using cold acetone followed by dialysis against 10 mM/ l Tris HCl (20 kDa MWCO) helped recover 47.66% pediocin activity. The partially treated pediocin could destroy 26.68% target cells. Commercial bacteriocin was employed for biopreservation studies on paneer. The color index, texture properties and microbial quality of *paneer* were studied at different temperatures for different concentrations of applied bacteriocin and for a period of fifteen days. It can be inferred that refrigeration aided in storage of bacteriocin containing paneer samples.

Research Scholar: **Nagavekar Nupur**
Research Supervisor: **Professor S. S. Lele**

Food Biotechnological Study on fruits of *Ficus Benghalensis*

Ficus Benghalensis the increase in world population over the last few decades has led to shrinking of the available food and the phyto-resources. Utilizing alternate food sources which are currently underutilised may help in keeping pace with this demand. The aim of our study was to explore fruits of *Ficus benghalensis* as a possible source of nutrition and hence introduce a novel food source. *Ficus benghalensis* is also commonly known as "Indian banyan tree". It belongs to

'Moraceae' family and bears small, bright red fruits which are a specially adapted type of syconium inflorescence. They are a rich source of polyphenolic compounds, flavonoids, which are potent antioxidants. But just as they provide nutrients, fruits may also contain anti nutrients. The chemical composition, presence and the concentration of anti nutritional factors are the determining components deciding the nutritional quality of the fruits. Proximate analysis showed fruits to be rich in ash content (2.83%), carbohydrates and soluble fibre content (9.07%). The elemental composition showed fruit to be rich in elements like K, Cu, Ca, Mg, Al and Zn. Anti nutritional factors interact with proteins, vitamins, and several minerals of the human and animal nutrition thereby restricting their bioavailability. Fruits were tested for presence of 6 anti nutrients namely tannins, alkaloids, saponins, oxalates, cyanogenic glucosides and phytates of which tannins (1.8%), alkaloids (9.7%), saponins (4.5%) were found in high concentration. These anti nutrients are heat labile and can be decreased by thermal treatments and processing techniques. Varied heat treatments were employed to decrease the anti nutrients. Blanching proved to be effective to decrease the alkaloids (2mins), pressure cooking decreased the saponin (10,20,30 mins) and tannins (30mins). Total polyphenol content (20.85mg GAE/g DW) and anti oxidant capacity (2.84mg ACAE/g DW) of the fruits were higher than anjeer. However, total anthocyanin content (1.21mg cyanindin-3-rutinoside/g FW) was found to be less. The bright red colour of fruits indicates the presence of anthocyanins. Anthocyanins are the pigments found in the fig family, which have been reported in the common edible fig viz. *Ficus carica*. Explants of Ficus benghalensis were used as a source of callus culture for in vitro production of anthocyanins by plant tissue culture techniques. A callus culture was developed using data from parallel studies previously conducted in our lab. This callus was used for production of anthocyanin on anthocyanin production media using elicitors like methyl jasmonate and hormones like BAP and kinetin. But no production of anthocyanin was observed. Further optimization of the anthocyanin production media is thus needed.

Research Scholar: **Marpalle Pandurang**
Research Supervisor:
Dr.Shalini S. Arya

Studies on Omega-3 rich functional Bread with Flax-Seed

The importance of polyunsaturated fatty acids (PUFA) in health and nutrition is well recognized. Flaxseed (*Linum usitatissimum*) has recently gained attention as a functional food because of its unique nutrient profile. In the present work efforts were made to develop omega-3 enriched functional bread using raw and roasted ground flaxseed. Initially optimisation of each bread ingredient viz., salt, sugar, and shortening, GMS, yeast and water was carried on the basis of sensory overall acceptability score. The standardised bread was incorporated with raw and roasted ground flaxseed (5, 10, and 15%). The effect of flaxseed incorporation on bread dough rheology parameters viz., dough stickiness and water absorption was studied. Increase in water absorption and dough stickiness was observed with increased flaxseed level. Further breads were evaluated for sensory parameters, colour and texture. The crumb softness increased with increased flaxseed level. Bread was optimised at 10% flaxseed level based on sensory evaluation. Further nutritional evaluation (soluble and insoluble fiber, in vitro protein digestibility, in vitro GI, in vitro antioxidant activity, ALA content) of optimized bread was carried out. Protein digestibility of flaxseed enriched bread decreased than control. This may be due to phenolic content in flaxseed. In vitro

glycemic index decreased up to 51.26. This is due to soluble fiber content in flaxseed. Alpha-linolenic acid i.e. omega 3 content of optimized bread was determined using GC-MS, which was about 1.51gm per 100 gm of bread. Omega-6 (linoleic acid) content was about 0.15 gm per 100 gm of bread. Further oxidative stability of ALA and shelf life study of optimized bread was investigated. For oxidative stability peroxide value, anisidine value and FFA were used as parameters.

Research Scholar: **Gupta Rati**
Research Supervisor: **Dr. Laxmi Ananthanarayan**

Studies on Edible Coatings for Food Preservation

The increased consumer demand for high quality, extended shelf life, ready to eat foods, fresh cut fruits has initiated the development of several innovative techniques like edible coatings and films to keep their natural and fresh appearance as long as possible and at the same time render them safe.The present study was undertaken to evaluate the effects of different percentage of alginate edible coating on fresh cut watermelon quality during refrigerated conditions storage. The alginate (1, 1.5 and 2%) coatings being hydrophilic resulted into greater loss of water and quality during storage where as control showed better quality retention till 7 days of storage. Guava, referred to as poor man's apple, is a rich source of antioxidants and fibre. However, its perishable nature due to softening, limits its storage and commerce to distant markets especially during transportation. The purpose of the study was to evaluate the efficacy of edible coatings in increasing the post harvest shelf life of guava. Therefore, guava fruits were coated with gum arabic (GA) (10%, 15%, 20%), hydroxypropyl methyl cellulose (HPMC) (1%, 2%) and their effect on quality characteristics of guava fruits stored at 25 ± 2°C, 80-90% RH for 12 days was evaluated. The results suggest that by using either 1% HPMC or 15 % GA as an edible coating, the ripening process can be delayed and the storage life of guava can be extended. Post harvest shelf life of 1% HPMC coated guavas at 10 °C can be extended to 28 days where as control maintained quality till 14 days.

Research objectives were to evaluate effectiveness of gluten addition and transglutaminase enzymatic modification in improving properties of soy protein-based films.The effects of SPI/Gluten ratio, concentration of glycerol, pH and heat-treatment temperature on the properties of SPI/wheat gluten composite films were researched. SPI/Gluten (3:1) was found out to be the best protein ratio in terms of good tensile strength, moderate % elongation and minimum water vapour permeability (WVP). The results showed that tensile strength increased and WVP decreased on increasing pH and heating temperature of solution but elongation (E) first increased and then decreased. The effects of amount of microbial transglutaminase (MTGase) and pH of film-forming solution on the properties of MTGase-treated SPI/Gluten (3:1) films were. This enzyme modified SPI/gluten (3:1) film was applied on walnuts and pine nuts to check its efficacy in inhibiting lipid oxidation

Research Scholar: **Verma Ashu**
Research Supervisor: **Dr. Uday S. Annapure**

STUDIES ON GELATIN

Extraction of fish gelatin was optimized from the waste of Indian mackerel (*Rastrelliger kanagurta*) by optimal design for different concentration of NaOH, H_2SO_4 followed by citric acid and finally extracted in water at 50◦C for 6 h. The best result found at 0.1% NaOH, 0.15% H_2SO_4 and 1.5% citric acid gives the yield of 6.86%. ANOVA for response shows that suphuric acid is not signifant for the process, even Principal compound analysis. The bloom strength of extracted fish gelatin (EFG) gel at 6.67% (w/v) was 115 g which was lower

than commercial pork gelatin (PG) (240g). The pH, melting temperature and hydroxyproline of the EFG was 4.76, 16.8°C and 3.52% respectively while pH, melting point and hydroxyproline of PG was 5.44, 29.21°C and 6.9% respectively. To improve the gelatin strength, the transglutaminase enzyme was used at different concentration, pH and time on commercial fish gelatin. It was even found that enzyme even depend on concentration of additional substrate (gluten and glutamine). Enzyme transglutaminase was added in the amounts of 20, 40, 60, 80,100 and 120 mg/g gelatin to modify the gel properties of the extracted fish gelatin. The modified EFG gels obtained had higher gel strengths of 128.38 g with added transglutaminase of 100mg/g. The enzyme modified EFG gels with substrate, gluten, had higher gel strengths of 238 g with added gluten of 120mg/g. The enzyme modified EFG gels with substrate, gluten, had higher viscosity 4049.5cP and higher melting point 81.35 °C. The rheology of enzymatically modified CFG shows the elastic nature. In conclusion, practical application is about to change the fisheries waste into useful edible component (Gelatin) so that gelatin will be used for food industries and other industries such as pharmaceutical and photographic.

Research Scholar: **Gupta Apoorva**
Research Supervisor:
Professor Rekha S. Singhal

Structural Modification of Polyphenols for Enhanced Bioactivity

Polyphenols form a large part of our daily diet. Present in fruits, vegetables, legumes etc., they exert a wide variety of biological effects ranging from anti-oxidant to anti-tumour. But these benefits are seldom fully realized as they are metabolized to a large extent before they can reach the target tissue. This is mainly due to the hydrophilic nature of the polyphenols which hampers their passage through the lipophilic cell membrane, thus influencing bioavailability. In the present work, catechin was modified using different acyl donors such as fatty acids and vinyl esters. Till now, tea, red wine and chocolate have been the most prominent sources of catechin. An emerging source is arecanut which is a rich source of flavan3,4 diols and catechins. Till date, it has been utilized majorly in '*gutkha*' and '*supari*'. Hence, use of catechin monomers and oligomers extracted from arecanut can expand its range of applications. Catechin was studied as a model compound due to its presence in arecanut. Synthesis of catechin esters was carried out by both chemical and enzymatic methods. In the chemical method, catechin was reacted with palmitoyl, myristoyl, and stearoyl and oleoyl chloride at varying ratios of 1:1 to 1:5 (Catechin: Acyl chloride). The antioxidant activity of these partially esterified derivatives measured using DPPH, ABTS & FRAP methods was found to decrease to a large extent. Thus, enzymatic esterification was attempted using *Pseudomonas cepacia* lipase. Transesterification using vinyl acetate and vinyl palmitate was carried out in two different solvents: acetonitrile and *tert*-butanol. When vinyl acetate was used as acyl donor in acetonitrile as solvent, the derivatives so formed did not differ significantly in their antioxidant activity as compared to the native compound. But vinyl palmitate was used as an acyl donor in tert-butanol as solvent, a 33% reduction of antioxidant activity was found out. Catechin was also extracted from arecanut using solvent extraction with 80% acetone. The processed arecanut extract (ANE) was esterified using vinyl acetate in both acetonitrile and tert-butanol. Antioxidant activity of the extract was not affected when vinyl acetate was used in acetonitrile and was reduced by 4-5% when *tert*-butanol was used. Thus, the esterified arecanut extract can also be utilized as nutraceuticals.

Research Scholar: **Kolekar Parag**
Research Supervisor:
Professor Rekha S. Singhal

Biofuels from Sprouted Wheat

Recently the bioethanol and biobutanol attained very much importance due to depletion of fossil fuels. To overcome the burden on fossil fuels and issues related to environmental impacts these are two main reasons for biofuels production from biomass. Every year in India there was huge wastage of wheat grains due to improper storage conditions due to that sprouting of grains occurred. This wheat after sprouting undergoes various biochemical changes due to that they are infected by various types of microorganisms and resulted in not fit for food application for humans as well as animals. So attempt was made to use these sprouted wheat for bioethanol and biobutanol production. In present study sprouting was made at laboratory level for 24 h (S2) and 48 h (S3) and compare with control i.e. un-sprouted normal wheat (S1) for the bioethanol and biobutanol (Acetone-Butanol-Ethanol) production. The proximate analysis and carbohydrate profiling shows normal and sprouted wheat contains major percentage of carbohydrates mainly starch. The proximate analysis showed carbohydrate content in S1, S2 and S3 samples were 77-78 % (w/w) whereas carbohydrate profiling shows majorly starch as 67.06% (w/w), 66.13% (w/w) and 65.13% (w/w) in S1, S2 and S3 respectively. The hydrolysis of starch was done by enzymatic hydrolysis using Stargen 002 (α-amylase and glucoamylase) enzyme under optimized conditions such as pH 4.5, temperature 50°C, 0.8U/g of substrate and 15% w/w of substrate load, 5 h incubation time. The maximum of starch hydrolysis under aforesaid conditions were 71.40% (w/w) in S1, 84.92% (w/w) in S2 and 87.91% (w/w) in S3. Finally, reducing sugars from three samples were fermented to ethanol and butanol (Acetone-ethanol-Butanol) by using *Saccharomyces cerevisiae* NCIM 3095 and *Clostridium acetobutylicum* NCIM 2337 (Optimized) respectively. The ethanol fermentation showed 30.75 g/l of ethanol in S1, 42.67 g/l of ethanol in S2 and 49.86 g/l of ethanol in S3 under optimized conditions (pH 5, seed age 12h, inoculum size 10% v/v, incubation time 48 h). The butanol (ABE) yield in three wheat sample (S1, S2 and S3) was 2.34 g/l, 4.16 g/l and 5.15 g/l respectively.

Research Scholar: **Arora Richa**
Research Supervisor: **Dr.Uday S. Annapure**

Enzymatic Extraction of Natural Colours

Beta vulgaris (red beetroots) are rich source of betalain pigments, which are divided into betacyanins (predominating in red beetroots) and betaxanthins. Betalains because of its red-violet color are widely used as natural food colorant. Also betalains have been shown to have nutraceutical benefits because of its high antioxidant and anti-inflammatory activities. Traditional methods of extraction of betalains from red beetroot are based on solid–liquid extraction. The amount of the compounds released into the external liquid is characterized by the degree of cell disintegration, which influences the efficiency of the extraction process. Enzyme preparations can improve the yield of betalains by breaking the cell wall matrix. In the present study pectinase and cellulase were used to increase the extraction of betalains from red beetroot. The optimal conditions for pectinase enzyme were found out to be 2200U/100 g of fresh beetroot for 60 minutes at pH 3.5 and 55°C which resulted in 52% increase in betalain content as compared to control (untreated sample), whereas when cellulase was employed degradation of betalains was observed. The spray drying studies of the beetroot extract using different encapsulating materials were carried out. The betalain stability of the

powders spray dried using maltodextrin 19 DE was found to be highest. Combination of maltodextrin 12 DE and gum arabic significantly affected the TG values (increased) and hygroscopicity (decreased) of the spray dried powders but adversely affected the storage stability to the powder.

Research Scholar: **Kadam Deepak**
Research Supervisor: **Professor S.S.Lele**

Product and Process Development of Ash Gourd

Ashgourd (*Benincasa hispida*) and carrot (*Daucus carota*) juice was formulated by optimizing different parameters using one factor optimization at a time method and storage studies was investigated. All the physico-chemical parameters, microbiological studies and sensory characteristic of Ashgourd-carrot juice were optimize to obtain a beverage that have functional property as well as nutritional value. Storage studies for two months at 40C and 280C were evaluated with physico-chemical parameters, microbiological studies and bioactive components of the juice. No significant difference was found for sensory score of the juice during storage. The optimized formulation leads to the development of nutritious juice with low calorific value and hence it is healthier for consumption. The ash gourd fruit pulp for medicinal properties was studied. Antioxidant activity by DPPH and total phenolic content were evaluated. Lupeol and β-sitosterol compounds were documented and quantified by HPTLC. Both the compounds are promising for its anti-inflammatory activity. In- vitro and in-vivo anti-inflammatory assay was conducted for methanolic and petroleum ether extract of Ashgourd fruit and was found to be promising therapeutic treatment. Toxicity study for methanolic extract and petroleum ether extract of fruit of *Benincasa hispida* are found to be safe. The recent trend of consumer demand is nutritious, health food, and hence the Ashgourd fruit juice and fruit pulp makes it overall acceptability for the consumer.

M.TECH. (BIOPROCESS TECHNOLOGY)

Research Scholar: **Revanwar Vishal B.**
Research Supervisor: **Dr.Uday S. Annapure**

Enzymatic Biotransformation of Polyunsaturated Fatty acids

Biotransformation deals with use of natural and recombinant microorganisms (e.g., yeast, fungi and bacteria), enzymes, whole cells, etc., as catalysts in organic/biological synthesis. Biotransformation (metabolism) may be chemical and biological. Biotransformation may be brought about by constitutive or inducible enzymes, or they may be due to the broad substrate specificity of essential enzymes in microorganisms. Advantages of biotransformations over chemical processes may be summarized as follows:

1. Biotransformation takes place under mild conditions. Therefore, chemicals can be converted into desirable products without decomposition. With mild reaction conditions, bioprocesses save not only operational energy, but also capital investment.
2. A bioprocess can produce stereospecific products by attacking a specific site on the substrate molecule.
3. Several reactions can be combined into one transformation step, and may actually be programmed to occur in a specific sequence, reduced environmental pollution.

Enzyme of interest was lipoxygense that was used for biotransformation of free polyunsaturated fatty acids such as linoleic and linolenic acid into hydroperoxide and hydroperoxide lyase convert it into flavours such as hexanal, hexenal. In overall project firstly I have designed hydrolysis study for linseed oil on column and optimized all parameter

for free fatty acid production. Parameters are flow rate, temperature, water content; substrate concentration .Since oil contains PUFA in the form of triglycerides. Then I have partially purified lipoxygenase from tomato which contain both lipoxygenase and hydroperoxide lyase. Optimized reaction conditions for production of hydroperoxides and finally flavour. Development of analytical methods and characterization of hydroperoxide, flavour.

Research Scholar:
Waingankar Onkar
Research Supervisor: **Dr. Uday S.Annapure**

Studies in Bioactive Peptides

Fish waste (head, fins, tail and scales) of four fish varieties namely, Giant thread fin (Rani), Bombay duck (Bombil), Indo-Pacific king mackerel (Surmai), Sea eel (Vaam) were selected for the study. Proximate composition (moisture, total protein, and oil content and ash value) of each of these fish wastes was carried out. The fish waste was treated and preliminary protein extraction was carried out using buffers from pH 1 to 13. Protein estimation was done using Biorad Protein Assay Dye Reagent Concentrate. Indo-Pacific king mackerel waste (IPKMW) was selected for further study. Proteins were extracted from IPKMW using Tris HCl buffer. Sonication was also used to increase the extractability of the proteins.

Six enzymes namely trysin, bromelain, papain, pancreatin 3X, protease from *Bacillus amyloliquefaciens* and protease from *Bacillus licheniformis* were studied for the production of protein hydrolysate of IPKMW. Parameters of enzymatic hydrolysis like enzyme: substrate ratio, time, temperature, pH, RPM were optimized for each enzyme by one factor at a time (OFAT) method.

The enzymatic hydrolysis process was optimized using DPPH assay as method of analysis. The optimized parameters for each enzyme, activity of each enzyme, degree of hydrolysis obtained and antioxidant activity obtained for each parameter optimized. Casein as a substrate (Sigma Aldrich) was used to measure the activity of the enzymes. The radical scavenging activity was measured using DPPH method with some modification. Protein estimation was done using Biorad Protein Assay Dye Reagent Concentrate. The degree of hydrolysis was measured using OPA method.

A single protease enzyme was then selected and enzymatic hydrolysis of the proteins obtained from IPKMW was carried out under the optimized conditions. The protein hydrlolysate was then concentrated using ultrafiltration. HPLC analysis was carried out for antioxidant peptide fraction and determination of amino acid composition of the antioxidant peptide fraction was done.

Research Scholar: **Shaikh Shafique**
Research Supervisor: **Dr. Laxmi Ananthanarayan**

Fermentative Production of Prebiotic

Prebiotic are digestion resistant carbohydrate which are selectively utilized by health promoting microorganism and hence stimulate their growth when ingested. Lactulose posses all criteria required to be fulfilled by prebiotic. Enzymatic synthesis of lactulose was preferred over chemical isomerization this is because in later there are many side products and hence requires extensive purification. Therefore enzymatic synthesis of lactulose was performed and the factor influencing it was optimized. The optimized parameters for enzymatic synthesis of lactulose was found to be lactose to fructose ratio of 1:4, temperature-50°C, pH-4.5, enzyme concentration of 5 Units/ml and reaction time of 180 min. The optimum yield of lactulose was found to be 24.21% w/w when free enzyme was used and 20.53% w/w when cross linked enzyme aggregate (CLEA) of β-galactosidase was used

for lactulose synthesis. 85.21 percent purity of lactulose was obtained by preparative TLC. The solid state fermentation (SSF) of β-galactosidase was also performed from Aspergillus oryzae MTCC 3567. The optimum condition for SSF was found to be 5% w/w of lactose, 1% w/w of yeast extract, pH-4.0 and temperature 30°C and initial moisture content of 40% w/w. The specific activity of β-galactosidase was obtained as 9.53 U/mg when SSF was carried out using optimum fermentation condition. 3.3 fold purity (specific activity of 31.45 U/mg) and 4.26 fold purity (specific activity of 40.50 U/mg) of β-galactosidase was obtained when purification was carried out by ammonium sulphate precipitation (80 % saturation) and DEAE Sephadex A-50 respectively. The molecular weight of purified β-galactosidase was found to be 109 KDa as determined by SDS-PAGE. The optimum pH and temperature of purified β-galactosidase was found to be 4.5 and 40°C. There was no change in optimum pH and temperature when β-galactosidase was immobilized by CLEA method. The Km value of free and CLEA of β-galactosidase was found to be 6.77 and 15.36 mM respectively. The Vmax value of free and CLEA of β-galactosidase was found to 56.64 and 52.08 μmole/min respectively. There was 19.75% loss of enzyme activity when enzyme was immobilized by CLEA method when compared with free enzyme. The CLEA of β-galactosidase could retain its activity even after ten uses.

REPORT OF WORK DONE BY SUMMER RESEARCH FELLOW AND C. V. RAMAN POST-DOC FELLOWS

1. **Ms. Mitali Kapoor Synbiotic' dahi containing added chikoo (Manilkara zapota) pulp**

   In the project, Nestle 'Actiplus' probiotic dahi was taken as the standard, and FOS (fructooligosaccharide) and chikoo (*Manilkara zapota*) were added to increase the shelf life of probiotic dahi. FOS being a prebiotic is a non-digestible food ingredient and is helpful for the growth of probiotic bacteria. Chikoo is being used to enhance the taste and flavour of the curd. It also provides fibres which will further be helpful in the growth of probiotic bacteria. By the chemical tests like acidity, pH and synerisis, and by microbiological enumeration, it showed that the prepared dahi (with FOS and chikoo pulp added) is of superior quality with a longer shelf life. Hence it can be concluded that the addition of FOS along with the fruit pulp (chikoo) has a synbiotic effect and promotes the growth of probiotic bacteria.

2. **Dr. Minah M. Mosele,** from National Food Technology Research Centre (NFTRC) Botswana, was selected on CV Raman Post-Doc Fellowship with financial support of Federation of Indian Chambers of Commerce and Industry through The Government of the India, Ministry of Science and Technology, in collaboration with the Ministry of Science, Communication and Technology (Botswana). She worked at Institute of Chemical Technology, Mumbai under the supervision of Professor Rekha S. Singhal. The topic of her work was 'Physico-Chemical and Functional Characterisation of Raw and Germinated Sorghum and Cowpea Commonly Consumed in India'.

   The Ministry of Health in Botswana provides fortified cereal-legume flours to children under the age of five to supplement the daily nutritional requirements. One of the products has soya beans as an ingredient, which is expensive and also

imported. NFTRC has embarked on a project to study sorghum and legume varieties in the country with the aim of developing products and processes to make cereal-legume products that are affordable to the government and local entrepreneurs without compromising the nutritional value. This work was undertaken to characterise the physico-chemical and functional properties of raw and germinated sorghum and cowpeas commonly consumed in India.

Germination conditions for sorghum and the two cowpeas varieties were successfully standardised, with out-of-moisture favourable for all the three samples, with cowpeas preferring germination in light while sorghum preferred darkness. The increased amylase activity in sorghum and the increased protease activity in small and large cowpeas confirmed that germination took place under the standardised conditions. Germination was effective in improving the nutritional value of sorghum and cowpeas by increasing protein content of sorghum and large cowpeas; and increasing the carbohydrate content and caloric value of all the three samples. Oil absorption capacity and bulk density increased for all the samples, while the water absorption capacity only increased in sorghum, which correlates with the increased amylase activity.

3. **Dr. Boitshepo Miriam Keikotlhaile,** Senior Research Scientist – Food Chemistry Department, National Food Technology Research Centre, Botswana, was also selected on CV Raman Post-Doc Fellowship with financial support of Federation of Indian Chambers of Commerce and Industry through The Government of the India, Ministry of Science and Technology, in collaboration with the Ministry of Science, Communication and Technology (Botswana). She worked at Institute of Chemical Technology, Mumbai under the supervision of Professor Rekha S. Singhal. The topic of her work was 'Antioxidant activity of selected sorghum and cowpeas varieties consumed in India'.

   Antioxidant activity showed higher results in raw sorghum than in germinated sorghum for all the assays conducted, thus, DPPH, FRAP and ABTS. Raw cowpeas showed less antioxidant activity than germinated cowpeas for the 3 assays. The cowpeas findings are consistent with the results from other studies conducted on various sprouts and legumes.

ANY OTHER RELEVANT ADDITIONAL INFORMATION

AWARDS & SCHOLARSHIPS

- Anuja Kulkarni [Ph.D Tech (FBT)] received fellowship under the program 'Research grants for Doctoral Candidates' from DAAD (German Academic Exchange Service) from June 1, 2014 to November 30, 2014.
- Azza S Naik [Ph.D Tech (FBT)] received Shri G. M. Abhyankar Students Travel Assistance Award of Rs. 2500/- for the Poster presentation at IFT-2014, New Orleans, USA.
- Azza S. Naik [Ph.D Tech (FBT)] received DST Travel grant including full airfare, registration and visa fees for Poster presentation at IFT-2014, New Orleans, USA.
- Pooja V Sharma [B.Tech] Received Ratan Tata Scholarship of Rs. 15,000/- for academic excellence.
- Ammar Babar [B.Tech (3rd year)] received AFST (I) Award of Rs. 2000/- for securing highest marks in Sem-IV.
- Shalini Shashi [B.Tech (3rd year)] received Shri B. A. Paravatibai Award of Rs. 500/- on basis of merit.
- Gautam Samdani [B.Tech (3rd year)] received Sir Dorabji Tata Trust Scholarship of Rs. 15,000/- on

SEMINAR/CONFERENCE/WORKSHOP ATTENDED BY RESEARCH STUDENTS

Dattatray K Bedade is attended workshop for Science Academies two day lecture workshop on "Molecular Diagnostics and Therapeutics" organized by Department of Biotechnology and Bioinformatics, Padmashree Dr. D. Y. Patil University, CBD Belapur, Navi Mumbai.

ACADEMIC PERFORMANCE AWARDS

Sr.	Name of Student	Class	Endowment	Criteria	Prize
1	Sahastrabudhe Shreya*	Final Year B.Tech	Dr. K. U. Naram Award	-	1st
2	Samant Shilpa*	Final Year B.Tech	Dr. K. U. Naram Award	-	2nd
3	Shreeya Ravisankar*	Final Year B.Tech	Dr. K. U. Naram Award		3rd
4	Mangalvedhe Ankita*	Third Year B.Tech	Dr. K. U. Naram Award	-	1st
5	Shalini Shashi Kumar*	Second Year B.Tech	Dr. K. U. Naram Award	-	1st

SCHOLARSHIPS

Sr.	Student	Class	Endowment	Criteria	Scholarship
1	Pooja V Sharma	B.Tech	Ratan Tata Scholarship for academic excellence	Merit	Rs.15,000
2	Ammar Babar	B.Tech (3rd year)	AFSTI Award for securing highest marks in Sem-IV	Merit	Rs.2,000
3	Shalini Shashi	B.Tech (3rd year)	Shri B.A.Paravatibai Award	Merit	Rs.500
4	Gautam Samdani	B.Tech (3rd year)	Sir Dorabji Tata Trust Scholarship	Merit	Rs.15,000
5	Abhishek Gupta	M.Tech (1st Year)	Bayer Scholarship	Merit followed by written test and personal interview	Rs. 50,000

COCURRICULAR AWARDS

Sr.	Name of Student	Class	Event	Activity	Prize
1	Isha Joshi	B.Tech	Sportsaga 2014	Girls Volley Ball Tournament	Rs.2500 1st Prize
2	Pooja Sharma	B.Tech	Sportsaga 2014	Girls Volley Ball Tournament	Rs.2500 1st Prize
3	Ammar Babar Ria Nisar Shalini Sashi	B.Tech (3rd Year)	Vortex 2013	Industrial Defined Problem-Bigrefinery for production of Beta glucan	Rs.25,000 1st Prize
4	Ashish Godghate	B.Tech (3rd Year)	Sportsaga 2014	Winner Tennis Ball Cricket	Rs.8000 1st price
			SFIT 2014KJ Somaiya Sion 2014	Winner Seasonball Cricket	Rs.5000 1st price
				Winner Football Tounament	Rs.12000 1st price
5	Saket Lote	B.Tech (3rd year)	ICT Sportsaga 2014 SFIT	Winner Tennis Cricket	Rs.8000 1st price
				Winner Seasonball Cricket	Rs.5000 1st price
6	Akhil Eashwar Aiyar	B.Tech (3rd year)	KJ Somaiya sion 2014	Winner Football Tournament	Rs.12000 1st price
7	Shubhangi Khanvilkar	B.Tech (3rd year)	Vortex 2013	Entrepreneurship	Rs.2000 3rd price

(* Indicates woman student)

PLACEMENTS

The FETD actively attempts to place the graduates in various national and multinational industries in the field of food and biotechnology. Various companies visit the campus to select best of the students.

PLACEMENT OF B.TECH. (FOOD ENGINEERING & TECHNOLOGY)

Year	Passed	Graduates Employed	Higher Studies	
		Industry	India	Abroad
2010	15	7	-	5
2011	19	3	1	8
2012	19	8	1	1
2013	17	5	1	3
2014	18	12	2	3

PLACEMENT OF M. TECH. (FOOD ENGINEERING & TECHNOLOGY)

Year	Passed	Masters Employed	Higher Studies	
		Industry	India	Abroad
2010	9	3	-	-
2011	10	2	-	-
2012	15	12	-	-
2013	15	07	-	-
2014	21	08	-	01

PLACEMENT OF M. TECH. (FOOD BIOTECHNOLOGY)

Year	Passed	Masters Employed	Higher Studies	
		Industry	India	Abroad
2010	-	-	-	-
2011	5	2	2	-
2012	10	9	2	-
2013	9	5	2	-
2014	11	4+1 academics	-	-

PLACEMENT OF PH.D. (TECHNOLOGY / SCIENCE)

Year	Passed	Doctorates Employed	Higher Studies	
		Industry	Academics	Abroad
2010	9	4	2	3
2011	7	6	1	-
2012	7	6	1	-
2013	3	1	-	-
2014	9	4	2	-

CAMPUS PLACEMENTS 2012-13

Sr.	Name of the Company	Name of the Student	Degree
1	Nestle India	Nisharg Golash	B. Tech
		Shriraj Thatte	B. Tech
2	General Mills, Mumbai	Kazi Mustafa	B. Tech
3	Mapro Foods, Wai	Sachin Aher	B. Tech
4	Synthite, Kerala	Pavitra K.*	M. Tech, Foodbio Tech.
5	IFFCO, Dubai	Suheel Hamid	M. Tech, Food Tech.
6	Cadbury India Ltd.	Rati Gupta*	M. Tech, Foodbio Tech.
		Richa Arora*	
7	Pepsico India	Apoorva Gupta*	M. Tech, Foodbio Tech.
		Haran G.	B. Tech
8	Godrej India	Anupam Bhagat	Ph.D. Biotech.
9	Evalueserve, Gurgaon	Sheetal Chauhan*	M. Tech, Food Tech.
10	Stellarix Consultancy Services Pvt. Ltd., Jaipur	Kunal Rathi	M. Tech, Food Tech.
		Ashu Verma	M. Tech, Foodbio Tech.

CAMPUS PLACEMENTS 2013-14

Sr.	Name of the Company	Name of the Student	Degree
1	Alfa Laval, Pune	Rahul Mandre	B. Tech
2	Nestle India, Gurgaon	Nidhi Gupta	B. Tech
3	Nestle India, Gurgaon	Arun Dev	B. Tech
4	General Mills, Mumbai	Namrata Rao	B. Tech
5	Piramal Enterprises, Mahad	Saurabh Phalke	B. Tech
6	Piramal Enterprises, Mahad	Ayushi Awad	B. Tech
7	Piramal Enterprises, Mahad	Gautam Jadhav	B. Tech
8	Mondelez International, Mumbai	Anu Puthoor	B. Tech

9	Mondelez Inernational, Mumbai	Pooja Sharma	B. Tech
10	Evalueserve, Gurgaon	Virendra Singh	M. Tech (FBT)
11	Evalueserve, Gurgaon	Abhishek Anand	M.Tech (FBT)
12	Evalueserve, Gurgaon	Pradeep Kumar Gupta	M.Tech (FET)
13	Agilent Tech, Manesar, Gurgaon	Shiva Kumar	M.Tech (FET)
14	Mondelez Inernational, Mumbai	Prakriti Shah	M.Tech (FET)
15	Ph.D at Dublin Institute of Technology, Ireland	S. Chaitnya Krishna	M.Tech (FET)
16	PGDM in Agribusiness Management at IIIM, Ahmedabad	Anmol Chandhok	B.Tech
17	PGDM in Agribusiness Management at IIIM, Ahmedabad	Nidhi Gupta	B.Tech
18	Pepsico (India), Gurgaon	Tripti Pandey	M.Tech (FET)
19	Pepsico (India), Gurgaon	Swati Sonawane	M.Tech (FET)
20	MS at University of Illinois Urbana-Champaign	Ankita Mangalvedhe	B.Tech
21	MS in Chemical and Biochemical Engineering at Technical University of Denmark	Spardha Jhamb	B.Tech
22	ITC Limited Foods Division	Samyapriya Ray	M.Tech (FBT)
23	ITC Limited Foods Division	Swapnil Vispute	B.Tech
24	General Mills	Madhuri Gosavi	B.Tech
25	MS at Rutgers University, New Jersey	Isha Joshi	B.Tech
26	ITC Limited Foods Division	Rajan Kumar	M.Tech (FBT)
27	MIT, Aurangabad	Madhulekha Rakshit	M.Tech (FBT)
28	Overseas for Ph.D	Mahesh Kharat	M.Tech (FET)
29	Nationalized Bank	Sartaj Singh	M.Tech (FBT)

SUMMER PLACEMENT

Sr.	Name of the student	Class	Place	Period
1	Shweta Deshaware	Ph.D (Tech) (Food Biotechnology)	Juva Truffle Centre, Finland	July1, 2014 to September 30, 2014
2	Vaibhav Vinaykumar Jain	S. Y. B. Tech	Standardisation and evaluation of jamun smoothie for bioactive constituents (Dr. Shalini S. Arya, ICT, Mumbai)	June 2, 2014 to July 2, 2014
3	Ajinkya Arun Atkare	S. Y. B. Tech	Standardisation and evaluation of jamun powder for bioactive constituents (Dr. Shalini S. Arya, ICT, Mumbai)	June 2, 2014 to July 2, 2014
4	Sawali Suhas Navare	S. Y. B. Tech	Standardisation and evaluation of jamun leather for bioactive constituents (Dr. Shalini S. Arya, ICT, Mumbai)	June 2, 2014 to July 2, 2014
5	Poornima Vijayan	S. Y. B. Tech	Studies on low GI *bhakari* (Dr. Shalini S. Arya, ICT, Mumbai)	June 2, 2014 to July 2, 2014
6	Rohit Digambar Suroshe	S. Y. B. Tech	Processing treatment on red lentils (*masoor* daal) (Dr. Uday S. Annapure, ICT, Mumbai)	May 26, 2014 to June 30, 2014

7	Shounak Joshi	S. Y. B. Tech	Rheological properties of tamarind kernel powder, extraction and rheological properties of tamarind seed polysaccharide (Dr. Uday S. Annapure, ICT, Mumbai)	June 9, 2014 to June 30, 2014
8	Malhar Kadam	S. Y. B. Tech	Microbial analysis of breads (Dr. Uday S. Annapure, ICT, Mumbai)	May 26, 2014 to June 30, 2014
9	Bageshree O. Barure	S. Y. B. Tech	Understanding *iggery* manufacturing process and product quality analysis (Dr. Narendra G. Shah, IIT Bombay)	May 30, 2014 to June 30, 2014
10	Aishwarya Badiger	S. Y. B. Tech	Porous carbon materialfor supercapacitors (Dr. Satishchandra Ogale, NCL, Pune)	May 30 2014 to June 30, 2014
11	Anjali Chahal	S. Y. B. Tech	Effect of pH and homogenization on suspension stability and viscosity on milk, cereal and fruit based smoothies	May 28, 2014 to June 28, 2014
12	Sayali Sawant	M.Tech (FBT)	Development of mid-day snack for children going to BMC school	June 1, 2014 to July 7, 2014
13	Sneha Kusmode	M.Tech (FBT)	Pickle production- processing and quality control	June 1, 2014 to June 30, 2014

CO-CURRICULAR EVENTS AND PERSONNEL TRAINING

MICROBIOLOGICAL ASPECTS OF RADIATION PROCESSING OF FOOD

Dr. J. R. Bandekar, Head, Radiation Biology & Health Science Division, Bhabha Atomic Research Centre, Mumbai on August 16, 2013 delivered a lecture on the topic of Microbiological aspects of radiation processing of food. In his lecture, he talked about the Ionizing radiations (IR) are high energy radiations which when absorbed by atoms or molecules cause ejection of electron leading to ion pair formation. Ionizing radiations are harmful to living organisms. Deoxyribonucleic acid (DNA), which constitutes the genetic material of the cell, is most sensitive to the effect of ionizing radiations. Damage to DNA can lead to cell killing or mutations. Radiation sensitivity of living organisms varies inversely with their size and complexity. Thus, the viruses are much more resistant than the higher organism. The sensitivity also depends on the ability of the organism to repair damage to DNA. Some bacteria such as *Deinococcus radiodurans* can tolerate very high doses of IR. Extrinsic factors such as temperature, presence/ absence of Oxygen and water activity also determine the radiation sensitivity. Perishable foods such as meat and fish are rapidly spoiled by microorganisms. Many food-borne outbreaks such as cholera, dysentery and typhoid are also caused by microbial pathogens. Radiation processing, which involves controlled exposure of food to IR, can be used to selectively eliminate the spoilage organisms; thereby, extending the shelf life of food. Radiation processing is also highly effective in ensuring safety of food by elimination of bacterial pathogens. Radiation processing of food is a cold process and does not affect the sensory qualities of food. It has been approved by Codex Alimentarius and is being commercially used in many countries including India.

THE FIGHT AGAINST HIV/AIDS: NOVEL MOLECULES AND STRATEGIES TARGETING THE VIRUS

Dr. Debashis Mitra, National Centre for Cell Science, NCCS Complex, Pune-411007, India, gave a lecture on the

above topic under the auspices of Lupin Visiting Fellowship on May 28, 2014. Human immunodeficiency virus type 1 (HIV-1) has created a global pandemic of acquired immuno-deficiency syndrome (AIDS) with major epicenters currently being Africa and South-east Asia including India. The current strategy for the management of HIV infection is Highly Active Antiretroviral Therapy (HAART), a combination of reverse transcriptase and protease inhibitors. Although HAART has reduced death from AIDS-related diseases remarkably, it is still an expensive regimen, often not well tolerated and leads to drug resistance. Thus HAART is not the ultimate answer for AIDS patients and there is a need to identify novel therapeutic strategies. As an effective vaccine for human use still seems to be years away, serious efforts have been initiated globally to develop an effective microbicide preparation from new lead molecules and existing anti-virals for prevention of new infections. One of the strategies to look for new lead molecules has been to identify anti-HIV compounds in natural resources that include both terrestrial and marine flora and fauna. The enormous biodiversity of nature is reflected in the molecular diversity of the compounds found in the organisms. They are an important source of a variety of bioactive compounds with different modes of action. These natural product derived compounds can be used in conjunction with existing anti-HIV agents and thus possibility of drug resistance could be minimized in novel formulations both for therapeutic and preventive use. We have screened marine bivalves available in Indian coastline for anti-HIV activity followed by fractionation and identification of the active molecule from one of the bivalve showing potent antiviral activity. Our studies have led to identification, synthesis and characterization of a novel HIV-1 reverse transcriptase inhibitor with a potential for further evaluation as a lead therapeutic candidate. Furthermore, various medicinal plants or plant-derived natural products have shown strong anti-HIV activity and are under various stages of clinical development in different parts of the world. We have attempted to comprehensively evaluate anti-HIV activity of Indian medicinal plants and to identify anti-HIV principles from their active extracts. Based on the reported anti-HIV activity of Indian plant extracts and derived compounds, we have screened a series of plants and novel structurally related synthesized compounds. Our studies have led to identification of several active molecules, few of which have potential to be used as microbicidal candidates. Finally, our continuing efforts with plant derived molecules have also led to identification of a virucidal molecule, with a potential for development of anti-HIV microbicide.

NUTRITION WEEK ACTIVITY 2013

Protein Foods & Nutrition Development Association of India (PFNDAI) organizes Nutrition Week Activity every year. This year, Nutrition Week was organized by PFNDAI in collaboration with Food Engineering and Technology Department (FETD) of Institute of Chemical Technology (ICT) on Saturday September 7, 2013 at Institute of Chemical Technology, Matunga, Mumbai.

The day-long program was divided in two sessions. The morning session included intercollege poster, quiz and recipe competitions. It saw the participation of students of various colleges specifically from **Food & Nutrition** streams. The event was organized by M.Tech Students at FETD, ICT under the guidance of Professor Rekha S. Singhal.

The event saw an unprecedented participation, where almost 150 students – both undergraduates and postgraduates participating in the events. On-the-spot Poster Competition under the theme of 'Food Safety in Preparing Foods' brought out the on-the-

ball thinking and creativity of young minds. The next event was the Quiz Competition organized in K.V Auditorium. A fierce competition amongst the fifteen participating teams had the audience sitting on the edge of their seats. Khalsa College bagged the quiz competition prize. The last event of the session was Recipe Competition where students were asked to depict their ingenuity on "Iron enriched recipes". Method of preparation and nutritional information were the parameters to judge the winner. Around 30 participants presented their concepts and beyond the nutritional value, their dishes stood out for their presentation too! Breakfast and working lunch was provided for students, faculty and judges.

The second session was dedicated to an intellectually stimulating seminar on the topic, **'Nutrition for Sportspersons & Active People'**. It saw eminent speakers from food industry sharing the most cutting-edge know-how from their respective work. The seminar was attended by students and teachers of Food & Nutrition, health professionals including nutritionists, dieticians, doctors and food industry professionals.

Nutrition week activity 2013 celebration at FETD, ICT

The seminar started with a welcome speech by Professor Rekha Singhal, followed by introduction to Nutrition Week Programme by Dr. J. S Pai, Executive Director, PFNDAI. Other speakers included Mr. U. Purnachand (Solae), Ms. Madhavi Trivedi (Kelloggs), Mr. Anek Arora (Roquette India) followed by a presentation from final year students of ICT.

Concluding remarks were delivered by Mr. R. D. Shenoy, Chairman PFNDAI followed by Prize Distribution (Mr. R. D. Shenoy & Professor Rekha Singhal). The session concluded with a vote of thanks from Ms. Umme, PFNDAI followed by high tea. PFNDAI sincerely appreciated the efforts put in by students of FETD, ICT. The event was a great success and nutrition week celebration ended on a happy and positive note.

ABSTRACTS OF LECTURES CONDUCTED UNDER TEQIP

BACTERIAL GROWTH CURVES AND THEIR IMPLICATIONS FOR FOOD SAFETY

Professor Stephen Knabel, Professor of Food Science, Department of Food Science, Pennsylvania State University, USA on September 16, 2013 delivered a lecture on the topic bacterial growth curves and their implications for food safety. In his lecture he talked about the understanding bacterial growth curves is essential for ensuring food safety. Pathogens in foods become dangerous when they reach high levels, where (depending on their nature) they can either directly cause infections or produce toxins in the foods, which subsequently cause food poisoning. Most microbiology textbooks claim there are four phases in the bacterial growth curve: lag, log, stationary and decline. However, growth only occurs in one of these phases – the log phase, therefore we now think it is more accurate to call it a "life cycle". Research in my laboratory has actually allowed us to identify ten phases in the life cycle of bacteria and we have identified a new phase,

which we now call the "long-term-survival" (LTS) phase. Bacteria in the LTS phase become dormant and tolerant to many different stresses, including heat, high pressure and antibiotics. We have also demonstrated that cells react to their own cell density to enter this phase, not to lack of nutrients or production of waste products as previously thought. We have also demonstrated that these LTS phase cells rapidly germinate (awaken) when placed in fresh growth media and then resume growth. Control of foodborne pathogens relies on keeping pathogens in the lag phase and/or LTS phase, and by doing so keep them from growing rapidly to reach high dangerous levels.

Listeria monocytogenes: A UNIQUE FOODBORNE PATHOGEN

Dr. Sara Lomonaco, Assistant Professor of Food Safety, Department of Animal Pathology, University of Torino, Italy on September 16, 2013 delivered a lecture on the topic *Listeria monocytogenes*: A Unique Foodborne Pathogen. In her lecture she talked about the *Listeria monocytogenes* has many unique characteristics that make this bacterial pathogen widespread, versatile, dangerous and difficult to control. Most cases of food-borne illness due to this pathogen are caused by a limited number of globally dispersed epidemic clones. This pathogen has a dual life style, because it cycles between being a saprophyte in nature and in food processing plants and a pathogen in wild and domestic animals, including humans. Factors that allow it to survive and grow as a saprophyte include its ability to grow at refrigeration temperatures in many different ready-to-eat foods such as dairy products, meat products and vegetables and also its ability to enter the LTS phase and survive for long periods of time within biofilms. Factors that allow it to reproduce successfully as a pathogen include its many virulence genes and also its ability to efficiently regulate expression of these virulence genes when they are needed inside host animals. Listeria monocytogenes is a strict intracellular pathogen that mostly affects at-risk individuals that have weakened immune systems, such as infants, the elderly and anyone who is immune-compromised. Thanks to its unique virulence genes it has the ability to invade host cells and transmit between different cells within the body. Due to its versatile and rugged nature, its frequent presence in animals and food processing plant environments and its ability to grow in refrigerated ready-to-eat foods, this pathogen is widespread around the world and very difficult to control. Control strategies include rigorous cleaning and sanitizing of food processing equipment, as well as use of processes and ingredients that destroy the pathogen in foods and keep it from growing there.

DEVELOPMENTS IN CHOCOLATE TECHNOLOGY

Chocolate & confectionary products provide joy to us. Traditionally products made using cocoa & sugar, along with other food ingredients are found to be very indulgent and uplift mood when consumed. Review of scientific literature indicate that over years the technology of manufacturing chocolate has undergone a great change, both in terms of ingredients/additives used and process of manufacturing applied to it. Combinations of ingredients and new manufacturing processes have led to development of various new formats of chocolates & confectionary in market place. This has not only enabled to generate new taste experiences but also helped to manage costs and counter constantly rising costs of commodities. In a lecture conducted by Dr. S. K. Samant, R & D, Choc &Tech Servbices, Cadbury India Ltd, Mumbai – 400 026, an overview of various developments in case of ingredients and technologies were covered as three main topics-

- Science & Technology of chocolate making- It takes overview of chocolate

technology from cocoa beans to bar experienced by consumer. It covers various steps on chocolate processing technology and science involved in it. Scope covers from fermentation of cocoa beans, manufacture of liquid chocolate, role of ingredients and additives, cocoa butter substitutes and other important process steps in choc making like refining and conching.

- Chocolate application technologies- In addition to basic choc making it is equally important to know how the chocolate can be applied to other products which can generate different product formats, taste experiences leading to various combination products. Application technologies such as moulding, enrobing, panning etc are also covered in application section.
- Recent trends- Finally new emerging trends in chocolate technology & products were covered with various examples.

SEMINAR ON TRADITIONAL FOODS 2013

Traditional foods from India are gaining recognition all over the globe, but according to Shri Ashok Sinha, former secretary, Ministry of Food Processing Industries (MoFPI), they need innovations for their growth. He was in Mumbai for a seminar titled 'Traditional Foods: Challenges and Innovations' held at the Institute of Chemical Technology (ICT), Matunga, on September 28, 2013. At the seminar, which was co-organised by ICT and the Mumbai chapter of the Association of Food Scientists and Technologists, India (AFSTM), and supported by the second phase of the Technical Education Quality Improvement Programme (TEQIP-II), Shri Sinha appreciated the country's rich cultural background, of which a host of traditional foods, containing a variety of herbs and spices, are a part.

A book entitled 'Nutrition in Tradtional Therapeutic Food' and co-authored by G Subbulakshmi and M Subhadra, was launched at the event by Shri Sinha, Dr. K. D. Yadav, All India President, Association of Food Scientists and Technologists, India [AFST(I)]; Shri A. I. S. Kumar, Deputy Director, Food Safety and Standards Authority of India (FSSAI); Shri N. P. Kawale, Director, Bureau of Indian Standards (BIS), and other members of AFST(I).Concurring with Sinha's observation that traditional foods have always been appreciated across the country, Dr. Yadav said, "In the past, the kitchen was the domain of women, and they experimented with a number of things there. Now, we are faced with a number of challenges while reviewing the traditional foods." Shri Kumar said the focus was on the safety standards for these foods, and if the international standards are adhered to, Indian traditional foods would go a long way. And terming Indian cuisine colourful and flavourful, Shri Kawale said it was necessary to bring about a lot of innovations in traditional foods to face the challenges.

ICT'S Role

Professor Rekha Singhal, Head, Food Engineering and Technology Department (FETD), ICT, spoke about the institute's work on traditional foods. Quoting Thomas Merton, she said, "Tradition, which is always old, is at the same time ever new, because it is always reviving, born again in each new generation, to be lived and applied in a new and particular way." "This describes the status of traditional Indian foods as they exist in the present times. Surviving thousands of years of civilisation, getting modified in the natural course of time, spreading its taste, flavour and a feeling of warmth to millions of its savourers all over the world, traditional Indian foods have stood the test of time," Singhal added.

Technical sessions

The seminar featured two technical sessions. In first technical session, the first of

these was titled 'Innovations, Technology and Processing Aspects'. It was chaired by Dr. Ashutosh Upadhyay, Associate Professor and Head, Department of Food Science and Technology, National Institute of Food Technology Entrepreneurship and Management (NIFTEM), and co-chaired by Harpal Singh Sokhi, chef and television anchor. The panel comprised four members, viz. i) Ms. Samana Tejani, Director, Production, Gits Foods Products Pvt Ltd (who spoke about technology updates), ii) Dr. Prathap Shetty, Associate Professor and Head, Department of Food science, Pondicherry University [who spoke about research and development (R&D) innovations], iii) Sunil Patel, Associate Professor, Dairy Engineering Department, College of Dairy Science, Anand Agricultural University (AAU), who spoke about equipment innovations, and iv) Shri Sanjay Idnani, QSAFE Consultants, who spoke about quality certification.

In second technical session on 'Traditional Food: Challenges and Opportunities'. It was chaired by Dr. S. B. K. Warrier, retired scientist, Bhabha Atomic Research Centre (BARC), and co-chaired by Professor P. N. Shastri, AFST(I), Nagpur Chapter. The four-member panel comprised of i) Shri Girish Chitale, Partner, Chitale Dairy (who spoke on marketing and consumer needs), ii) Dr. Shashank Mhaske, Assistant Professor, Department of Polymer and Surface Engineering, ICT (who spoke on packaging), ii) Dr. J. I. Lewis, food consultant (who spoke on regulatory challenges), and iv) Dr. Priti Amritkar, Director, Envirocare Labs (who spoke about analytical challenges).

Group discussion

Shri Prabodh Halde, Head, Regulatory, Marico Ltd, was the moderator of a group discussion. The panel comprised i) Shri Rajesh Awchat, Managing Director, Actchawa Ready-to-Cook Food; i) D. Iravati Barsode, Director, Relief Phytopharmaceuticals; iii) Shri K. U. Methekar, Food Safety Officer (FSO), Food and Drug Administration (FDA) Maharashtra; iv) Shri Girish Pai, Director, Natural Ice creams, and v) Shri V. G. Pendse, Consultant.

Seminar on Traditional Foods 2013: some glimpses

A collage of the photographs of the Dasara celebrations in the Department

DASARA POOJA 2013

We celebrated 'Dasara' in our department with great splendour and pomp on October 12, 2013. Colourful rangolis made by all the lab members adorned the labs. Like every year, the dasara pooja was performed in the Processing lab of Food Engineering and Technology Department to seek the blessings of the deity. All the students were dressed in traditional attires for the function which began at 10.30 am. We started the function with an aarti devoted to goddess Saraswati. Professor G.D. Yadav, Vice Chancellor, ICT, paid his visit to the function. This was followed by enthusiastic performances by many department students wherein they sang songs from different genre. The auspicious occasion concluded with hearts filled with happiness and peace

INAUGURATION OF FOOD BIOTECHNOLOGY LAB

On the auspicious occasion of Dasara celebrations at ICT, the newly renovated Food Biotechnology laboratory in FETD was inaugurated at the hands of our VC Professor G. D. Yadav who was accompanied by Professor S. R. Shukla, Registrar and other administrative officials of ICT. All the FETD faculty members, support staff and research students participated in the inauguration function and endowed the laboratory with their blessings.

WORLD FOOD DAY 2013

AFST(I) Mumbai Chapter celebrated World Food Day on October 18, 2013 at K.V. Auditorium, Institute of Chemical Technology, Matunga, Mumbai 400 019. Dr. Uday Annapure, President, AFST(I), Mumbai Chapter welcomed the august gathering and briefed about the various AFST(I), Mumbai Chapter activities. Inaugural Address was given by the Chief guest Professor G.D.Yadav, Vice-Chancellor, ICT. On this occasion, Dr. K.U Naram Memorial Lecture was delivered on "Applications of GC-GCMS/MS in Food Safety" by Aarti Karkhanis, Applications Manager, M/s Thermo Fisher

Scientific India Pvt. Ltd., Mumbai. The programme was sponsored by M/s Thermo Fisher Scientific India Pvt. Ltd., Mumbai. Dr. K. U. Naram Awards were given to the top rankers of the various diploma/degree holders in the area of Food and Nutrition from the colleges and institutes in Mumbai. These awards were sponsored by Naram's Food Products and K. R. Naram Parivar Trust. The programme was ended with the vote of thanks by Dr. K.U. Naram, Hon. Secretary, AFST(I), Mumbai Chapter

DBT – JRF REGIONAL MEET - 2013

Institute of Chemical Technology (ICT) hosted the 1st DBT-JRF Regional Meet (DJRM) on November, 21-22, 2013. Professor S. S. Lele, as the convenor, along with a highly motivated team, with her systematic, meticulous and highly organised planning, made this event, the first of its kind, a grand success.

It was an honour to have Dr. Suman Govil (Advisor, DBT, Ministry of Science and Technology, Govt. of India), Dr. J. K. Pal (Former National Coordinator, DBT-JRF Program, Pune University) and Dr. Debashis Mitra (National Coordinator, DBT-JRF Program, National Centre for Cell Science, Pune) as our distinguished guests. We also had Dr. Padma Devarajan (Head, Dept. of Pharmaceutical Sciences and Technology, ICT) and Dr. Savita Kerkar (Associate Professor, Department of Biotechnology, Goa University) as our keynote speakers. There were 60 delegates from 5 states (Maharashtra, Goa, Gujarat, Karnataka and Kerala) comprising the western zone. DBT-JRF fellows and supervisors from 15 institutes/universities participated in this meet.

Dr. Padma Devarajan opened the first day of the conference with the keynote address focusing on the "Opportunities and Challenges in Pharma Biotech". Following it was the technical session where research excellence was reflected by the breadth and depth of oral and poster research presentations at this meet. Presentations encompassed the broad areas of environmental science and water borne viruses, pharmacology, cell biology, bioinformatics and cancer biology. Two best oral and

poster presentations were awarded based on the opinion poll by our distinguished guests and supervisors. The day concluded with a panel discussion where we had presentations by Dr. Suman Govil, Dr. J. K. Pal and Dr. Debhashis Mitra emphasizing on genesis and background of the DBT-JRF program, updates on fellowship disbursement and related financial and administrative issues and suggestions for improvement of the program. After the panel discussion the DBT- JRF fellows were given an opportunity to interact and brainstorm about the DBT scheme.

The second day started with an interesting talk on 'Exploration of the Arctic for biodiversity' by Dr. Savita Kerkar, inciting an inspiration to take up challenging places for our prospective studies. Next we had a networking session where fellows had a very fruitful interaction with the dignitaries. After the active and productive sessions with brainstorming on various issues regarding disbursement of fellowships, contingency, administrative issues, also taking into consideration the queries and concerns of DBT- Fellows and the supervisors Dr. Suman Govil gave the final recommendations that sealed the DJRM – 2013.

This meet mobilized as well as channelized thoughts and inputs regarding the improvement of DBT- JRF scheme. It was considered a great success and received very positive feedback from all the delegates.

BCIL SITE VISIT TO FETD, ICT ON APRIL 15, 2014

This was the first site visit of BCIL to evaluate the progress of the DBT supported M. Tech. in Food Biotechnology Course at FETD, ICT. Following was the schedule of the BCIL site visit to FETD, ICT:

1) 1.30 to 2.30 p.m.: Interaction with Course Coordinator and presentation by Coordinator (LA)
2) 2.30 to 3.00 p.m.: Interactive session with the core faculty members of FETD
3) 3.15 to 3.45 p.m.: Tour of FETD facilities, classrooms, other facilities, new FBT Lab
4) 3.45 to 4.45 p.m.: Interactive session with the current two batches of FBT students
5) 4.45 to 5.00 p.m.: Meeting with the Head of the University/ Institute or suitable representative

Members present for the meeting included Professor Laddha, i/c VC, all FETD Faculty members, and visiting team comprising of Dr. B. J. Rao, TIFR, Mumbai, Dr. Debi P. Sarkar, Delhi, Mr. Dilip Joy, Senior Project Executive, BCIL, Delhi.

The FBT Course Coordinator, Dr. Laxmi gave a presentation on the progress made by the DBT supported M. Tech. FBT program being conducted at FETD, ICT. There was a lot of discussion on various aspects of the presentation and all present at the meeting actively participated in the discussion. The visiting team was interested in knowing about various research activities being undertaken by the FETD faculty members. All the FETD faculty members described at length their research interests and projects undertaken.

The visiting team then interacted with the current two batches of M. Tech. (FBT) students. Based on this they gave valuable feedback about the course and indicated some areas for improvement such as the

A snapshot of the visit of BCIL Committee to evaluate the M.Tech (FBT) course

need to introduce accessory courses/ topics such as business management to develop necessary skills in students and prepare them for the Industry, the need to strengthen basic analytical skills and knowledge of food chemistry and food analysis, the need to incorporate basic entrepreneurship skills, the need to emphasize importance of innovation and encourage interaction of the students with the entrepreneurs in order to develop some vision for food business. The visiting team also complimented the teachers for their excellent contributions to the courses being taught and research undertaken.

The visiting team was then taken for a visit to the FETD research labs and was shown the newly made M. Tech. (FBT) Lab.

INAUGURATION OF RENOVATED LAB NO. 237

On the occasion of silver jubilee grand finale of the UDCT Alumni Association (UAA) held on May 11, 2014, the newly renovated lab no. 237, known earlier as the PTC Lab of Food Engineering and Technology Department (FETD) was inaugurated at the auspicious hands of Mr. Lalit Chaddha at 4.30 pm. Mr. Lalit Chaddha is a 1965-batch pass out from BSc. (Tech) in Food Technology. He is currently the Managing Director at Goodwill Groups of Companies, Mumbai.

Mr. Lalit Chaddha expressed his gratitude towards his Alma

Mater. He admired the progress of the Institute and inspired the students through his thoughts. On this occasion many other dignitaries like Professor M.M. Sharma, Professor G.D. Yadav, and several distinguished alumni were present along with the faculty and students of ICT.

Professor Rekha Singhal delivered the vote of thanks. She described the previous and current working conditions in the laboratories. The renovation resulted in proper space utilization of the laboratory, enabling working of 30 research students as against 12 working previously. The renovation included reconstruction of working platforms, replacement of electric wires, electric boards, tube lights, fans, etc. Professor Rekha Singhal appealed for more such gestures of goodwill and funds for renovation of other laboratories as well in the FETD

All the inmates of the FETD are thankful to Mr. Chaddha and others for their cordial financial support in up-grading the laboratory. This is a reflection of their keen interest for research and gratitude towards the Institute.

LAB SAFETY WORKSHOP

There was a two-day laboratory safety workshop on March 18-19, 2014 which was organized by the Department of Chemistry, ICT. Talks by eminent professors and experts in aspects of fire safety, electrical safety, first aid, handling hazardous chemicals, waste minimization strategies and chemical waste disposal were undertaken. Precautions to be undertaken while handling of hazardous chemicals were discussed. There was a session on the importance of personal protective equipment and lab safety devices as well as on first aid procedures in case of emergency. Discussion about chemical waste management and disposal was noteworthy. There was a hands-on session on the use of different types of fire extinguishers. The overall experience of the workshop proved to be informative to the students and made them aware about the issues regarding safety while working in a lab.

The following students attended the safety workshop

- Aarti Ghanate
- Dhanashree Amane
- Manvi Vernekar
- Ashlesha Bhagwat
- Aniruddha Vaidya
- Pulkit Purohit
- Nirali Shah
- Bincy Bhaskar
- Shweta Deshaware
- Suprama Datta
- Anuradha Deorukhkar
- Dattatray Bedade
- Madhura Janve
- Momin Bilal

PERSONNEL TRAINED

Students from various institutes visited the FET Department. A Departmental tour to various labs was organized by our faculty. Food processing equipments and other facilities were shown to them. The details of the institutes and number of students who visited the Department are given below.

Sr. No.	Institute	Date of Visit	Background of the students	Students
1	V. G. Vaze College of Arts, Science & Commerce, Mulund, Mumbai	July 31, 2013	S.Y.B.Sc	05
2	Tamilnadu Agricultural University, Madurai	September 13, 2013	B.Sc. (Final Year Home Science)	21
3	VJTI Matunga, Mumbai	October 19, 2013	Post Graduate Diploma in Food Drugs and Chemical Analysis	30
4	VJTI Matunga, Mumbai	March 14, 2014	Post Graduate Diploma in Chemical Technology(Food and drugs and cosmetics Analysis) Sem II	22
5	Tamil Nadu Agricultural University	March 18, 2014	B.Tech (Agrl.Engg.)	48

ACKNOWLEDGEMENT

We thankfully acknowledge the following Industries and Institutes for accommodating our Food Engineering and Technology students for summer training.

In-Plant Training: T. Y .B. Tech (Food Engg. & Tech.) May-June 2013

Sr.	Name	Company For IPT	Place
1	Gautam Samdani	TATA Chemicals Limited	Pune
2	Shalini Shashikumar Shankar	TATA Chemicals Limited	Pune
3	Ammar Babar	Cadbury India Pvt Ltd (Mondelez International)	Thane
4	Ria Nisar	Cadbury India Pvt Ltd (Mondelez International)	Thane
5	Anuj Gopalkrishna Shanbhag	Cadbury India Pvt Ltd (Mondelez International)	Thane
6	Rasika Manjrekar	General Mills India	Powai
7	Shreyasi Bhagwat	General Mills India	Powai
8	Akhil Eashwar Aiyar	Roquette India Pvt. Ltd	Powai
9	Rajan D Jaykar	Jain Irrigation Systems Ltd	Jalgaon
10	Shubhangi k	Sarjena foods (Bakers Street)	Bhiwandi
11	Saket Lote	Glaxosmithkline Pharmaceuticals Ltd	Gurgaon

12	Akarsha V Ambagade	Sarjena foods (Bakers Street)	Bhiwandi
13	Rani S. Dahake	Mapro Foods	Satara
14	Anushka Naik	Sensient India	Andheri
15	Karan Jolly	Marico Limited	Jalgaon
16	Ashish A Godghate	Mapro Foods	Satara
17	Darshan D Borse	Marico Limited	Jalgaon
18	Uddhav Pradhan	Frolic Foods	Mumbai

We would also like to thank the following persons/organizations for their generous support through donation to the FETD.

DONATIONS

Sr.	Person/Company	Amount (Rs.)
1	Professor Rekha S. Singhal	10,000/-
2	Professor Smita S. Lele	10,000/-
3	Dr. Uday S. Annapure	10,000/-
4	Dr. Laxmi Ananthanarayan	10,000/-
5	Mr. Nikhil Gharat	10,000/-
6	Mr. Paresh Udeshi	10,000/-
7	Navneet Satpute + Dipti Sugandh + Pranita Joshi + Nimisha Mehrotra + Hema Rajwani	9300/-
8	Ms. Chenab Impex Pvt Ltd, Mumbai	10,000/-
9.	Mr. Anil Mangalvedhe	10,000/-
10.	(Late) Dr. A. S. Gholap	10,000/-
11	Dr. Anupam Bhagat	10,000/-
12	Mr. Sudarshan Narwade	5000/-
13	Dr. S. V. Bhalkar	25,000/-
14	Mrs. Archana Ashutosh Awade	10,000/-
15	Mr. Vijaykumar Sharma	11,000/-
16	Mr. Girish Narayan Joshi	10,000/-
17	Mr. Virendra Jhamb	10,000/-
18	Mr. Neeraj kamath	5,000/-
19	Mr. Nilesh Amritkar	1,600/- (cash)
20	Dr. D. R. Ranganath	5,000/-
21	Dr. Girish Mahajan (M: 9821628179)	15,000/-
22	Dr. S. B. K. Warrier	5,000/-
23	Ms. Kavita Jadhav	10,000/-
24	Mr. G. D. Shanbhag	25,000/-
25	DSM Nutritional Products India Private Limited (Ms. Rupali Jadhav)	25,000/-
26	Envirocare Labs Pvt Ltd	50,000/-
27	Nihal Parkar	10,000/-
28	Roha Dyechem Pvt Ltd, Mumbai (extraction.mumbai@rohagroup.com, bs.kalakoti@rohagroup.com)	5000/- (cash)
29	AFST (I) Mumbai Chapter	3,15,000/-

30	Dr. Rajesh Bhosale	10,000/-
31	Vidyutt K. Naram	5,000/-
32	Neeta Naram	5,000/-
33	FETD (cash from the sale of raddi)	1000/-
34	Dr. N. Ramasubramaniam & Dr. Ashlesha Parchure	25,000/-

MAJOR GRANTS RECEIVED IN THE LAST FIVE YEARS

Sr.	Sponsoring Agency	Amount / Year	Title
1	DST Govt. of India	Rs.130 lakhs 2013-2016	Holistic approach for commercial processing of fruits and vegetables grown in western maharashtra
2	DST-MOFPI, Govt. of India	Rs.22 lakhs 2013-2014	Studies in physicochemical properties of plasma processed rice grains
3	UGC	Rs. 7 lakhs 2012	Augmenting of research facilities to further facilities in research work under the scheme of UGC-BSR One time grant
4	UGC	Rs.30 lakhs 2009	Infrastructures refurbishment
5	UGC	Rs.100 lakhs 2008-2013	UGC CAS Phase – I
6	DBT	Rs. 148 lakhs 2008-2011	M.Tech (Food Biotechnology) course
7	Rajiv Gandhi Science and Technology Commission (RGC)	Rs. 189 lakhs 2007-2012	Preservation and processing of fruits and vegetables using sustainable technologies
8	Ministry of Food Processing Industries, New Delhi	Rs. 48 lakhs 2006-2011	Creation of infrastructure facilities for existing B.Tech. M.Tech. and Ph.D. (Tech) courses in Food Technology
9	UGC, New Delhi	Rs.12 lakhs 2006-2009	Studies in acrylamide formation in traditional Indian processed foods

RESEARCH GROUP

PROFESSOR REKHA SINGHAL RESEARCH GROUP

From Left to Right: (Front Row) Nupur Nagavekar, Swati Jadhav, Professor Rekha Singhal, Amruta Bhawane, Madhura Janve, Manvi Vernekar **(Middle Row)** Nirali Shah, Jayashree HS, Shatabisha Sarkar, Devshri Bhotmange **(Back Row)** Virendra Singh, Dattatray Bedade, Sandeep Chaudhari, Jayaranjan Kar, Umesh K. V., Pradeep Gupta

PROFESSOR SMITA LELE RESEARCH GROUP

From Left to Right: (Front Row) Prajakta Insulkar, Professor Smita Lele, Anamika Banerji **(Middle Row)** Majeed Jamkhani, Mangesh Inarkar, Deepak Kadam, Mihir Desai **(Back Row)** Pulkit Purohit, Chetan Arekar

DR. UDAY ANNAPURE RESEARCH GROUP

From Left to Right: (Front Row) Ashlesha Bhagwat, Manisha Jadhav, Rachana Mishra, Swarali Hingse **(Second row)** Shashee Bheron, Suprama Datta, Dr. Uday Annapure, Yamuna Devi **(Third Row)** Aniruddha Vaidya, Praveen Bhushete, Momin Bilal Ajaykumar **(Fourth Row)** Samyapriya Ray, T. Rohit, Rahul Rathod **(Last Row)** Bhpinder Singu and Vishal Rathod

DR. LAXMI ANANTHANARAYAN RESEARCH GROUP

From Left to Right: (Front Row) Harsha Pore, Sayali Savant, Rachana Pathak, Priti Wagh, Dr. Laxmi Ananthanarayan, Sneha Kusmode, Pratipanna Dash, Gayatri Bakshi **(Middle Row)** Anuradha Deorukhkar, Swati Sonawane, Neha Srivastav, Anuja Kulkarni **(Back Row)** Chandrahas Vishwasrao, Baburaj Regubalan, Rupesh Tupe, Abhishek Anand

DR. SHALINI ARYA RESEARCH GROUP

From Left to Right: (Front Row) Sonali Gaikwad, Ketaki Kanbargi, Dr. Shalini Arya, Monali Patil, Sonal Patil, **(Back Row)** Akshata Salve, Dattatray Khairnar, Sachin Sonawane, Shivkumar T, Akshay Gharde, Ashsish Waghmare, Rangeshkumar Narwade

PREFACE

PROFESSOR P.R. VAVIA
Ph. D. (Tech.)
I/c, Head of the Department

This Department was started as Division of Oils, Fats and Waxes in 1943 offering a 2-year course B.Sc. (Tech.) [Technology of Oils, Fats and Waxes] after B.Sc. (Chemistry). The duration of this course was increased to 3years from 1965. In 1998, this Division was renamed as Division of Oils, Oleochemicals and Surfactants. The undergraduate course was changed to a 4-year course, namely B. Chem. Tech. [Technology of Oils, Oleochemicals and Surfactants]. Students are admitted on the basis of MHCET and AIEEE after 12th Grade. The course is a combination of theory, practicals, seminars, inplant trainings, industrial visits and project work. The course syllabus has been designed keeping in mind the requirement of the industry and international institutions. It is updated from time to time. Nearly 30% of our undergraduate students choose to pursue further education in top most universities abroad. Some of them opt for jobs in the edible oils, surfactants, cosmetics, perfumery, paints, and related industries. A few of them start their own industries. Students are generally well placed before the completion of their graduate course. The Department also offers a Post Graduate and Doctoral Program. The Department has done pioneering work in the field of Oil Technology. From the time of its inception, faculty members have maintained a close interaction with industry and have been associated with the development of the

DEPARTMENT OF OILS, OLEOCHEMICALS AND SURFACTANTS

"Alumni of this Department have reached very senior and responsible positions in the Indian oil and surfactant industry"

oil industry. Several short and long term projects instituted by sponsoring bodies for process/product development at this Department have been supervised by faculty as part of their routine research activity. Alumni of this Department have reached very senior and responsible positions in the Indian oil and surfactant industry.

The Department has excellent facilities for research and is equipped with advanced instruments such as: Gas Chromatograph GE17A. Gas Chromatograph-4890D, UV-Spectrophotometer, Automatic Tensiometer, Karl Fischer Titrino, HPLC, HPTLC, Spray Dryer LSD-48, Lab Pervaporation Unit, Glycerol Evaporation pilot plant, Toilet Soap Plant, Refining Plant, Filtration Plant, High Pressure Autoclave, Short Path Distillation Unit, Batch Solvent Extraction Plant, Turg-O-Tometer, Rotary Vaccum Evaporator, CEC Biodegradability test, Brookfield Viscometer, Pour Point Apparatus, Shear Stability Testing Unit, Rancimate.

MAJOR THRUST RESEARCH AREAS ARE:

- Edible oils and their products
- Oil seed processing and Utilisation
- Biodegradable Lubricants and Specialty Products
- Natural Products
- Surfactants and Applications
- Perfumery and Cosmetics

DR. AMIT P. PRATAP
Ph. D. (Tech)
Assistant Professor

RESEARCH INTEREST AND EXPERTISE:
Vegetable oil based lubricants, additives, biosurfactants and specialty products

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Hon. Treasurer of The Oil Technologists' Association of India – Western Zone.
- "Life member" of Oil Technologists' Association of India – Western Zone
- "Life member" of Alumni Association of UDCT
- "Life member" of Indian Society for Surface Science and Technology (ISSST)
- "Life member" of Indian Association Nuclear Chemists' and Scientists (IANCAS)
- "Life member" of Chromatographic Society of India

PUBLICATIONS (PEER REVIEWED) SO FAR : 22

CONFERENCE PROCEEDINGS/PAPERS: 02

SEMINARS/LECTURES/ ORATIONS DELIVERED : 25

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE :
02 as coguide

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 16

AWARDS/HONORS : 05

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.) :

SURFACTANTS

Reaching the benefits of Technology to rural and urban population through understanding science at work and designing products to meet the needs of the masses

One of the aims of our Institution has been to help the chemical industry to maximize their output so that the benefits finally reach the end user. A case in point is the pioneering work done by this division several years ago in understanding non-traditional oil as a source not only as an oleochemical for use in the soap and allied industries but also for edible purposes. The author believes that the division can contribute significantly to the industry and society at large by taking up technical issues relevant to the surfactant and related industry by helping provide innovative solutions to problems peculiar to this and other developing geographies. This is illustrated. in the following example:

Some decades ago a quiet revolution took place in our daily lives when the soap used in washing was replaced by synthetic detergents. This had two consequences. It freed up scant resource of oil for edible / toilet soaps and took the level of cleaning broadly to a higher level. However, these benefits did not reach grass roots of the society till someone came along to make it affordable to the masses.

The success of this transformation was in part due to the "helping hand" of the government and more importantly a clearly visible benefit to the consumer through a change in the existing habit. Today there are 5000 small scale units engaged in the manufacture of synthetic detergents in our country1! It will be recognized for those in the business that a predominant number of these products are simple, having surfactant and

a significant amount of Soda ash (that acts as a precipitating builder and provides alkalinity). Opportunities exist in the improvement of these types of products with consequent savings by focusing (initially) in three-four areas.

1. By having a non-ionic / cationic co-surfactant a significant reduction in overall surfactant concentration of up to ten per cent is possible through improved hardness tolerance and soil removal. Assuming about ten thousand tons of LAS is replaced this works out to a saving of -Rs. 400 M.
2. Through Polymers that can help prevent crystal growth of the inorganic Carbonate in hard water, leading to significant reduction in the total soda ash used. Unfortunately current manufactures "can not" afford these materials as cost benefit is not immediately seen. However, by incorporating the polymer in Soda ash at the manufacturers end (as in Iodized salt) and making it mandatory for small scale manufacturers to use this material, a significant change can be visualized.
3. Polymers that are of natural origin and specific to this country such as Guar gums are available in significant quantities. Several modifications can be envisaged for making polymers that could be viscosity modifiers, soil dispersing agents, soil release polymers for use in detergent formulations in different forms. Such modifications can add huge value to these natural polymers and replace those polymers derived from petroleum sources.
4. Photo bleaches (such as Zinc/Si/Al Phthalocyanine Sulphonates) can be cost effective ingredients that can significantly improve cleaning and this is in sync with the current consumer habits.
5. Use of Polymeric materials that help in removal of soil peculiar to developing geographies (eg-Carbon in the atmosphere due to vehicular pollution and clay soil encountered in the rural areas).

Through the above one can realize a saving of at least 10 per cent in the cost of Raw materials in the inexpensive detergent industry segment.

Currently there is a project that is being undertaken by the section to look at developing value added products from by products of the fatty alcohol industry through Guerbet chemistry. When successful scaled up this could be the forerunner of many other similar products.

BIO – DIESEL (ALTERNATIVE FUELS OF BIOLOGICAL ORIGIN)

Fuel is a substance, which gives energy on combustion i.e. oxidation, where the oxygen from air plays a major role. Conventionally used fuels are solid (coal, coke, wood, paper etc.), liquid (kerosene, gasoline, low molecular weight alcohols, vegetable oils etc) and gaseous (methane, LPG, CNG, water gas, producer gas) in nature. The radioactive isotopes could be thought for the peaceful use of atomic energy that can be utilized as a fuel. Many of the above mentioned fuels namely natural gas, kerosene, gasoline etc. are derived from crude oil, which is diminishing very fast from earth's crust. It is predicted that these reserves (existing as of now and which will be found in near future) will be depleted in another 25 to 30 years. Day by day the rift between demand and supply is expected to be widened, which will lead to the unexpected hike in the price of fuels, which also reflects in the price of the crude oil as on today, which is at 70 $ per barrel. By looking at these aspects, the time has come to explore the new source of fuels.

Fuels derived from renewable biological resources for use in diesel engines are known as biofuels. This could be thought to partly cope up with fuels such ethanol, fatty acid methyl esters popularly known as biodiesel.

The name "biodiesel" was introduced in the United States in 1992 by the "National Soydiesel Development Board" (now the "National Biodiesel Board"), which has pioneered the commercialization of biodiesel in the U.S. Chemically, biodiesel is referred to as the mono alkyl esters (methyl or ethyl) of long chain fatty acids or ester-based oxygenated fuels derived from renewable lipid sources. It can be used in compression-ignition (diesel) engines with little or no modifications. Pure biodiesel is biodegradable, nontoxic and essentially free of sulfur and aromatics.

This molecule (fatty acid methyl ester) has attracted the attention of many technologists and scientists across the globe. Major advantage of it includes renewability, better quality gas emissions and biodegradability. Biodiesel readily blends with diesel fuel in any percent. The blend level is a function of economics, the desired emissions profile, material compatibility, and combustion characteristics. The focus at the moment is on a 20 % (Vol.) blend of biodiesel in petrodiesel. India is a country with vast resources of inedible oils, some of which are derived from plants that grow in the wild. Yet, the development activity on biofuels in our country is at a primary stage. In this background, it is important that in order to harness the country's nonedible vegetable oil resources like neem, karaja, jatropha, mahua etc. towards renewable raw materials, development work on products, processes and technologies related to this vital field must be accelerated. Some of the comparatively cheaper sources those need a special attention are soap stock, acid oil, waste cooking oil etc.

An organized program of social forestry can generate enormous benefits to rural areas in terms of employment for collection of seeds and processing. The globalization has opened up opportunities to Indian oleochemicals industry in an unprecedented measure. Added to this, a wide scale introduction of biodiesel has brought to for the supply of glycerol, magnitude of which may likely to question the very economical viability of the oleochemical industry. Selection of a suitable topic on the utilization of glycerol will be made after preparation of a review report.

BIOSURFACTANTS

From the global viewpoint chemical, pharmaceutical, environmental and petrochemical industries have recognized the potential of living cells in pretreatment of raw materials, processing operations, product development, waste management, energy recycling and conservation. In this context, surfactants are increasingly recognized for their range of uses. The total quantity of biological and chemical surfactants all over the world is estimated at more than 25 billion pounds and 10 billion pounds respectively. The enormous market demands of 3 million tones per annum are currently met by synthetic, petroleum based surfactants. These surfactants are toxic to the environment and non biodegradable. The tightening environmental regulation and increasing awareness to protect ecosystems have therefore resulted in increasing interest in biosurfactants during past decade. The requirement of surfactant-based products is increasing at rate of 5% annually.

Biosurfactants are biologically synthesized surface-active agents produced as metabolic byproducts through microbial transformation of organic substrate. Besides their classical application as emulsifiers of hydrocarbons, they can be used in environmental protection, crude oil recovery, food processing industries, in various fields of biomedicine (antibacterial, antiviral and antifungal), textiles manufacturing, metal treatment, cosmetics, agriculture, paint industries and in paper and pulp processing. India being an agricultural country has enough availability of substrates like molasses, baggasse, glycerol, used oil and deoiled cake for production of biosurfactants. They have advantages over conventional surfactant in

toxicity, biodegradability and the availability of renewable raw materials. Biosurfactants are also effective at wide temperatures, pH and salinity. Among the different types of biosurfactants, the glycolipids (e.g. ramnoslipids, sophoroselipid, mannosylerythritol, surfactin) and polysaccharide lipid complex have broad spectrum of applications. In the production of these biosurfactants, it has been estimated that raw material accounts for about 30% of overall cost where as downstream processing accounts for about 60% cost. Therefore further significant improvements in upstream as well as downstream processing by exploring system biology for strain improvement, fermentation engineering, integrated product recovery and reactor design are required. Attempt to characterize and to increase the number of applications is also desirable.

It is aimed at developing technology that would use waste carbon sources such as used oils, de-oiled cakes, and glycerol for the production of biosurfactants through fermentation, over-expression of glycolipids (rhamnoslipids, sophoroselipid and mannosylerythritol), Phospholipids, Polymeric Surfactants based on Carbohydrate-protein-lipid, Lipopeptide and Lipoproteins (Peptide-lipid and Surfactin) etc.

The proposed project will involve selection and development of strains aimed at producing select biosurfactants. Further, focus will be at identification and physico-chemical characterization and devising new strategies for purification of selected biosurfactants to give products that meet international specifications in terms of purity, safety profile etc. The work will also involve studies in kinetics of biosurfactants production in bioreactors and scale up. Biosurfactants, which is currently in its state of infancy, could get a further boost if larger numbers of applications are identified. This would also create technical expertise and ameliorate the availability of skilled manpower in the said field. The technology developed through this proposal will be patented according to intellectual property rights. Further the proposed process will scaled up to pilot scale production and will be offered to industries for commercialization.

TRIBOAPPLICATIONS OF OILS AND FATS

Over the last fifty years, urgency to find renewable alternatives for petroleum in lubricants has been acutely felt, primarily due to the serious environmental hazards related to the indiscriminate use of petroleum in lubricant formulations. In many countries, legislations have been enforced, making the use of environment friendly lubricants mandatory in certain sensitive high risk applications. In the era of modern technology, the gradual change-over from Petroleum based to Vegetable oil based environment friendly lubricants is inevitable.

India is a country with vast resources of inedible oils, some of which are derived from plants that grow in the wild. Yet, the development activity on vegetable oil based lubricants in our country is almost non-existent. In this background, it is important that in order to harness the Country's inedible vegetable oil resources towards viable alternative lubricants, development work on products, processes and technologies related to this vital field must be accelerated. It is believed that the Oils and Fats Department of UICT, with its long experience and strong expertise in the field of Vegetable oils, can play an important part towards achievement of this objective by taking on an intensive long term project aimed at standardizing various aspects of this emerging and strategically important technological field. Some of the candidate Indian inedible vegetable oils, which can be considered for the study, include Jatropa, Mahua, Pilu, Castor and other tree borne oils. Studies will also be carried out on superior genetic varieties of Sunflower, Rapeseed and Soybean oils to generate comparative data.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr.	Authors	Title	Journal	Page No., Volume and Year
1	Amit P. Pratap and D. N. Bhowmick	Pesticides as Microemulsion Formulations	Journal of Dispersion Science and Technology	29, 1325-1330 (2008)
2	S. D. Wadekar, S. V. Patil, S. B. Kale, D. N. Bhowmick, A.M. Lali and A. P. Pratap	Study of Glycerol and Sweet Water as a Carbon Source for Production of Rhamnolipids by Naturally Occurring Strains of Pseudomonas aeruginosa (ATCC 10145 and ATCC 9027)	Tenside Surfactants Detergents	47 (2010) 4; 238-242
3	S. D. Wadekar, S. V. Patil, S. B. Kale, D. N. Bhowmick, A.M. Lali and A. P. Pratap	Structural Elucidation and Surfactant Properties of Rhamnolipids Synthesized by Pseudomonas aeruginosa (ATCC 10145) on Sweet Water as Carbon Source and Stabilization Effect on Foam Produced by Sodium Lauryl Sulfate	Tenside Surfactants Detergents	48 (2011) 4; 287-292
4	Amit Pratap, Sushant Wadekar, Sandeep Kale, Arvind Lali, Dipti Narayan Bhowmick	Sophorolipid production from virgin and waste frying oils and the effects of activated earth treatment of the waste oils	Journal of American Oil Chemists' Society	89:6 (2012) 1029-1039 (DOI 10.1007/ s11746-011-1986-6)
5	S. D. Wadekar, S. B. Kale, A. M. Lali, D. N. Bhowmick and A. P. Pratap	Jatropha oil and Karanja oil as Carbon Sources for production of sophorolipids	European Journal of Lipid Science and Technology	114:7 (2012), 823–832, (DOI:10.1002/ ejlt.201100282)
6	S. R. Khalkar, D. N. Bhowmick and A. P. Pratap	"Effect of Wax Esters as Friction modifiers in petroleum base stock"	Journal of Oleo Science (by Japan Oil Chemists Society)	61 (12) 723-728 (2012)
7	Nishat R. Khan, Dipti Naraya Bhowmick and Amit P. Pratap	Green Synthesis of Isopropyl Ricinoleate	Journal of Oleo Science	62, (3) 153-158 (2013)
8	Akash Bhangale, Sushant Wadekar, Sandeep Kale and Amit Pratap	Optimization and monitoring of water soluble substrate for synthesis of Mannosylerythritol lipids by Pseudozyma antarctica (ATCC 32657)	Biotechnology and Bioprocess Engineering	18: 679-685 (2013)
9	S. R. Khalkar, D. N. Bhowmick and A. P. Pratap	Synthesis and Effect of Fatty Acid Amides as Friction Modifiers in Petroleum Base Stock	Journal of Oleo Science	62, (11) (2013)
10	Chetan Waykole Dipti Narayan Bhowmick Amit Pratap	Synthetic Base Stock Based on Guerbet Alcohols	J Am Oil Chem Soc	(2014) 91:1407–1416

SUBJECTS TAUGHT :
Technology of Oil and Fat Production, Functional Fluids and Performance Chemicals, Byproducts Utilization and Waste Management, Analysis and Development of Green Industrial Processes, Technology and Science of Essential Oils, Processing of Oils and Fats, Cosmetics Formulations, Triboapplications Laboratory, Processing of Oleochemicals and Waxes, Processing of Soaps, Surfactants and Detergents

RESEARCH INTERESTS :
Vegetable oil based lubricants and additives, biosurfactants, value addition for byproductswaste

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Ph.D. (Tech.) - 05,
M.Tech. - 13, Ph.D.(Sc) - 05

SPONSORED PROJECTS :
Government- 02,
Private- 02

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):
(a) "Life member" of Oil Technologists' Association of India – Western Zone
(b) "Life member" of Alumni Association of UDCT
(c) "Life member" of Indian Society for Surface Science and Technology (ISSST)
(d) "Life member" of Indian Association Nuclear Chemists' and Scientists (IANCAS)
(e) "Hon. Treasurer" of the "Oil Technologists' Association of India (WZ), India" from year 2013-15

DR. JYOTSNA WAGHMARE

Ph.D (Tech)
Assistant professor

RESEARCH INTEREST AND EXPERTISE:
Nutraceuticals, surfactants, biofuel, emulsion

PROFESSIONAL AFFILIATION:
- Secreatary of Oil Technologist Association of India.
- Member of Indian society for surface science and Technology.
- Member of American oil chemist society, USA.
- Member of Society of Chemical Industry, UK.

PUBLICATIONS (PEER REVIEWED) SO FAR: 22

CONFERENCE PROCEEDINGS/PAPERS: 23

SEMINARS/LECTURES/ ORATIONS DELIVERED : 5

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 11

AWARDS/HONORS:
National - 4

SUBJECTS TAUGHT :
Nutraceuticals, Technology of edible fat, Analysis of oils, Analysis of surfactants, Techonolgy and science and essential oils

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Ph.D. (Tech.) - 1
M.Tech. - 11
RA - 3

RESEARCH PUBLICATIONS:
National - 5
International - 20
Conference proceeding - 1
Books (if any) - 2 book chapters

SPONSORED PROJECTS :
Government - 3 Private - 2

DR. PARAG RAMESH NEMADE

B. Chem. Eng., M. S., Ph. D.

UGC Assistant Professor in Engineering Science

RESEARCH INTEREST AND EXPERTISE:

Membrane separations, Catalysis, Biosensors, Sustainability Engineering

PUBLICATIONS (PEER REVIEWED) SO FAR : 3

PATENTS : 1 (filed)

CONFERENCE PROCEEDINGS/PAPERS : 4

SEMINARS/LECTURES/ ORATIONS DELIVERED: 2

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 1

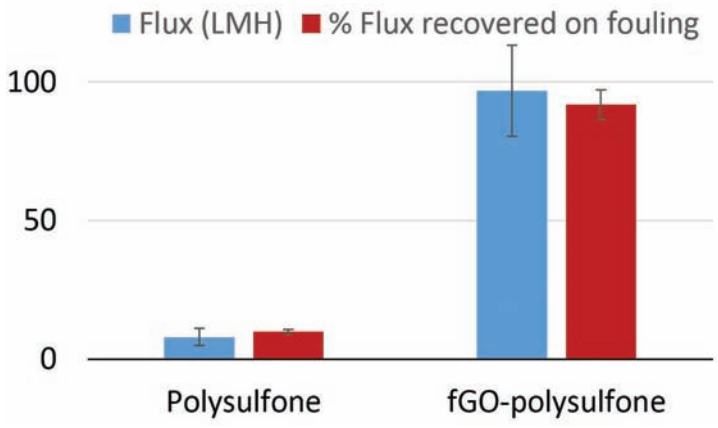
H-INDEX : 2

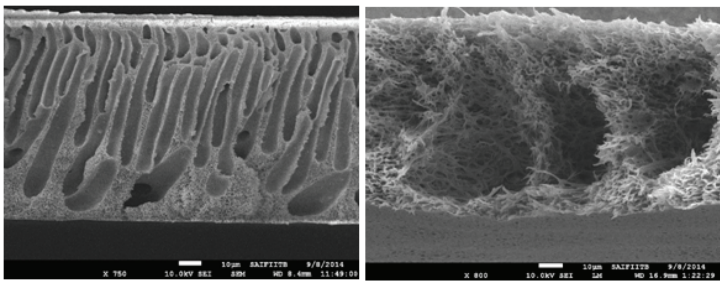
CITATIONS :121

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):

Membranes

Many operations in oils industry are solvent based wherein the solvent is recovered, usually by distillation at lower pressures. These vacuum based distillations are quite sensitive to leakages and lead to off spec products. Our endeavour is to develop pervaporation based membrane processes to replace or reduce the reliance of industry on vacuum distillation. Further, with increasing efforts towards zero-discharge, efficient use and reuse of water is paramount. Use of membrane technologies such as ultrafiltration and reverse osmosis could significantly aid these efforts to reclaim water as well as carry out process separations more efficiently. The research focuses on developing new membranes for use in process liquids and gases separation including pervaporation, reverse osmosis, anti-fouling ultrafiltration membranes. Another focus of research in membranes is development of ultrathin barrier films for packaging applications. Currently, polymeric membranes are being developed using polymers such as polyethersulfone, polyvinylidene fluoride, cellulose acetate, etc. The membranes are then coated with high performance coating to achieve desired properties. The research is based both on developing better membranes and to improve the performance of the membranes with new coatings.





SEM of cross section of low fouling functionalized graphene oxide (fGO)-polysulfone membranes

Waste Management

Our group has been active in development of abatement techniques for industrial wastes such as copper smelter sludges, gypsum, fly ash, red mud, etc. We have recently developed a gypsum based water resistant plaster that is currently being evaluated for potential commercialization. We are also working on developing a robust water free toilet systems for improving urban sanitation. Our concept of water free toilet was selected for award of Reinvent The Toilet Challenge (RTTC), a flagship initiative of DBT in collaboration with Bill and Melinda Gates Foundation.

Carbon Nanomaterials

We are looking to develop formulations with antioxidant, anti-ultraviolet nanoparticles for use in cosmetics, self-healing plastics etc. We also looking to develop thin barrier films using inorganic nanoparticles, platelets for long term storage of materials for improved packaging. Carbon nanomaterials are also been investigated in the development of high performance lubricants. We are also working on developing catalysts based on carbon nanomaterials. Some of the catalysts developed in our labs can carry out selective oxidation of benzylic alcohols to aldehydes without overoxidation to carboxlic acids, this route is not employed in the industry currently as further oxidation of products cannot be preventedin the processes currently used. Efforts are on to study the catalytic effect for other substrates such as fatty alcohols. We were able to replace Lewis acid catalyst used in antibiotics synthesis and perform the reaction at room temperature with high yields, with efforts being directed to carry out the reaction in absence of organic solvents.

Sensors

There is an acute need for simple sensors for detecting adulteration in everyday food stuffs such as milk, oils, ghee, water, etc. If the general populace is armed with awareness, knowledge and tools to identify pollution and adulteration, menace of pollution and adulteration can be tackled more effectively. Our focus is on developing facile techniques for detection of adulteration, pollutants, and unwanted chemicals. Our efforts are currently focussed on developing a facile, inexpensive sensor for detection of arsenic and pesticides in ground water, detection of milk and oil adulteration for mass usage.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Title	Journal	Year	Volume	Pages	Impact Factor
P. R. Nemade, Gaikar, V. G., Jha, N., Dhopte, K. B., Kadam, M. M.	Novel nanocomposites of γ-MnO_2 supported on graphene oxide used as a catalyst	Indian Patent Application: 473/ Mum/2014	2014			

Zhou, M., Nemade, P.R., Lu, X., Zeng, X., Hatakeyama, E.S., Noble, R.D., Gin, D.L.	New type of membrane material for water desalination based on a cross-linked bicontinuous cubic lyotropic liquid crystal assembly	Journal of the American Chemical Society	2007	129	9574	10.677
Gin, D.L., Lu, X., Nemade, P.R., Pecinovsky, C.S., Xu, Y., Zhou, M.	Recent advances in the design of polymerizable-lyotropic liquid-crystal assemblies for heterogeneous catalysis and selective separations	Advanced Functional Materials	2006	16	865	9.765
Nemade, P.R., Davis, R.H.	Secondary membranes for flux optimization in membrane filtration of biologic suspensions	Applied Biochemistry and Biotechnology	2004	113-116	417	1.893

SUBJECTS TAUGHT :
Chemical Engineering Laboratory, Advanced Membrane Separations

SPECIFIC RESEARCH INTERESTS:
New membrane materials, green catalysis, green construction materials

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Ph.D. (Tech.) - 3
Ph.D.(Sc) - 1
M.Tech. - 4
M. Chem. Eng - 3

PATENTS :
Indian - 1

SPONSORED PROJECTS :
Government - 3
Private - 2

SPECIAL AWARDS/ HONOURS / ACCOLADES :
Award of Project under DBT-Bill and Melinda Gates Foundation Re-Invent The Toilet Challenge (RTTC)

DR. DIPAK VITTHAL PINJARI

PhD (Tech)

DST-INSPIRE Faculty (Associate professor grade)

RESEARCH INTEREST AND EXPERTISE :

Cavitation, Nanotechnology, Polymerization technique

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE

OR ENGINEERING (IF ANY):

DST-INSPIRE Faculty (Assistant professor grade), Nehru Fulbright post doctorate fellowship

PUBLICATIONS (PEER REVIEWED) SO FAR : 27

PATENTS : 2

AWARDS/HONORS

- National - 27
- International - 1

H-INDEX : 11

CITATIONS : 272

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART : Annexure - I

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Krishnamurthy Prasad*, **D. V. Pinjari***, A. B. Pandit, S. T. Mhaske	Ultrasonics Sonochemistry	18	1128-1137	3.83
Dipak Vitthal Pinjari, Aniruddha B. Pandit	Ultrasonics Sonochemistry	18	1118-1123	3.83
K. J. Jarag*, D. V. Pinjari*, A. B. Pandit, G. S. Shankarling	Ultrasonics Sonochemistry	18	617-623	3.83
DipakVitthalPinjari and Aniruddha B. Pandit	Ultrasonics Sonochemistry	17	845–852	3.83
Krishnamurthy Prasad, D. V. Pinjari, A. B. Pandit and S. T. Mhaske	Ultrasonics Sonochemistry	17	697-703	3.83
Krishnamurthy Prasad*, D. V. Pinjari*, A. B. Pandit and S. T. Mhaske	Ultrasonics Sonochemistry	17	409-415	3.83
SunitaRaut- Jadhav, Virendra Kumar Saharan, Dipak Pinjari Shirish Sonawane Daulat Saini, Aniruddha Pandit	Journal of Hazardous Materials	261	139–147	4.68
B. A. Bhanvase, D. V. Pinjari, S. H. Sonawane, P. R. Gogate and A. B. Pandit	Ultrasonics Sonochemistry	19	97-103	3.83
Balvant S. Singh, Hyacintha R. Lobo, Dipak V. Pinjari, Krishna J. Jarag, A. B. Pandit, Ganapati S. Shankarling	Ultrasonics Sonochemistry	20	287-293	3.83
S.R. Shirsath, D.V. Pinjari, P.R. Gogate, S.H. Sonawane, A. B. Pandit	Ultrasonics Sonochemistry	20	277-286	3.83

SUBJECTS TAUGHT :
Chemical Engineering Laboratory, Introduction to Polymer Engineering, Introduction to Polymer Science and Engineering

RESEARCH INTERESTS :
Sustainable and Environmental Engineering, Process Intensification, Cavitation Engineering and Technology, Synthesis of Nanomaterials, Polymers, Sonochemistry, and Paints Technology

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :
Undergraduate Summer Fellows – 2
RA - 1
Ph.D. (Tech.) – 3
M. Chem. Eng – 1
M.Tech. – 3

RESEARCH PUBLICATIONS:
National - 3
International -24
(Peer-reviewed) -24
Conference proceeding -31
Books (if any) -2

PATENTS : Indian -2

SPONSORED PROJECTS :
Government - 1

AWARDS/HONOURS / ACCOLADES :
- Young Engineering Award 2014 by The Institution of Engineers India
- Wipro Earthian Award 2013 by Wipro foundation, Banglore (India)
- Young Associate, Maharashtra Academy of Sciences 2013
- M. P. Chary Memorial Award 2013 by Indian Institute of Chemical Engineers (IIChE).
- Swiss Government Excellence Scholarship 2013-2014.
- DST (Govt. of India) Inspire Faculty Fellowship 2013-2018.
- Fulbright Nehru Postdoctoral Fellowship Program 2013-2014.

SUPPORT STAFF

V.M. Patil
Sr. Tech. Asstt.

Dr. A.B. Jogi
Jr. Analyst

S.D. Mahadik
Sr. Lab Assistant

S. S. Dhadve
Lab Assistant

R.L. Kalmabate
Lab Attendant

S.A. Parab
Lab Attendant

PUBLICATION

Sr. No.	Title of Paper & Authors	Journal		
		Vol.	Pages	Year
1	Nutraceuticals: The Indian Scenario, Kothekar S., Waghmare, INFORM Journal of American Oil Chemical Society		548-558	2005
2	Rationalizing and producing nanoemulsions for personal care, journal of Cosmetics and Toiletries		51-53	2006
3	Neem Oil as Pesticide, Waghmare J. Ware A. M. and Momin S., Journal of Dispersion Science and Technology	28	323-328	2007
4	Alkylpolyglucoide: Carbohydrate based Surfactant, Ware A, Waghmare J. and MominS., Journal of Dispersion Science and Technology	28	437-444	2007
5	Comparative analysis of the properties of Tween-20, Tween-60, Tween-80, Arlacel-60and Arlacel-80, Kothekar S, Ware A, Waghmare J, Momin S, Journal of Dispersion Science and Technology	28	477-484	2007
6	Evaluating the Stability of Fragrance & Flavouring Materials in Deodorant Stick, , BondarC, Dubal S, Ware A, Waghmare J.,.Momin S,. Cosmetic and Toiletries	122	73-94	2007
7	Stability of Fragrance & flavouring materials in face powder and lipstick. BondarC, Dubal S, Ware A, Waghmare J.,.Momin S,.Fafai		39-59	2007
8	Process optimization for the synthesis of tricapryline using candida antartica, Kothekar S,Waghmare J., Momin S, Journal of lipid science and Technology	39	172-175	2008
9	Custom Made Animals The Magic of Transgenesis, Mahamulkar S., Joshi V., Chavan A., Waghmare J., Waghmare S, Advanced Biotech Journal - Online			2010
10	Catalyst for epoxidation of oils : a review, H. Patil, Jyotsna Waghmare, Discovery	3	10-14	2013
11	Conjugated linoleic acid: a significant review, Jyotsna waghmare, Indian Journal of Science	2(3)	8-12	2013
12	Current trends in Flavour Encapsulation by Chemical Process: Sachin Kausadikar and Dr. Jyotsna Waghmare, Food marketing andd Technology		27-29	2013
13	Nanoemulsion: Current state and perspectives: Harshal patil, Jyotsna Waghmare, Research Journal Topical and Cosmetics Science, 4(1), Jan.-June 2013, 32-40.	4(1)	32-40	
14	Emofuel to save Earth: J.S. Waghmare, Asma D. Fakir, Sadanand S. Kadam, International Journal of Green and Herbal Chemistry, June – August 2013, Volume 2(3), 692-702.	2(3)	692-702	2013
15	Selective catalytic oxidation of glycerol to synthesize 2-Dihydroxyacetone. Pachpande CP, Waghmare JS, Discovery Science, Volume 5(15), september 2013, 44-46.	5(15)	44-46	2013
16	Emulsified Fuels: Current State and Perspectives: Harshal Patil1, Pawan Meshram2, Jyotsna Waghmare1* Research J. Science and Tech. 5(4): October- December, 2013, 396-403	5(4)	396-403	2013
17	17. Nutraceuticals & Delivery systems: T. D. Dhumal, A.D. Fakir, Dr. J.S. Waghmare, Food marketing and Technology,	5,issue no.3	52-55	March 2014

18	Emofuel to save Earth: J.S. Waghmare, Asma D. Fakir, Sadanand S. Kadam, International Journal of Green and Herbal Chemistry	2(3)	692-702	June – August 2013
19	Selective catalytic oxidation of glycerol to synthesize 2-Dihydroxyacetone. Pachpande CP, Waghmare JS, Discovery Science	5(15)	44-46	september 2013
20	Formulation of Oxygenated Water-in-Diesel Fuel Emulsion and Investigation of Its Properties By: Harshal Patil, Ashish Gadhave, Swapnil Mane, Jyotsna Waghmare	Vol 33. Issue 2	211-217	2015
21	Analysing Stability in Water-in-Diesel Fuel Emulsion, Harshal Patil, Ashish Gadhave, Swapnil Mane, Jyotsna Waghmare			Sept 2014
22	"Neutraceuticals and delivery systems" in Food marketing and Technology, India, (Author: T D Dhumal, A D Fakir, Dr J S Waghmare)(in magazine and on web link: http://www.fmtmagazine.in/interview032014.html)	5, Issue 3	52-54	March 2014
	1."Essential Oils: A Perfect Solution For Headlice" in Research Journal of Pharmaceutical, Biological and Chemical Sciences (RJPBCS) in ISSN: 0975-8585 (Author: T Dhumal, and JS Waghmare*)	5, Issue 3	Page No. 1486-1504	May-June2014
	2. "Mechanism Of Action Of Essential Oil On Pediculus Humanus Capitis" in Research Journal of Pharmaceutical, Biological and Chemical Sciences (RJPBCS) (Author: Waghmare JS*, and Trupti D Dhumal) *(Accepted and will be publish on Feb2015) "A HYPERLINK "http://www.google.co.in/	5(4)	Page No. 894-901	July – August
23	Accepted : Essential oils: A perfect solution for head lice" T. D. Dhumal, J.S. Waghmare "Research Journal of Pharmaceutical, Biological and Chemical Sciences (RJPBCS)"	Vol 5, Issue 3	1486-1504	2014
24	Accepted : REMOVAL OF HEAVY METAL IONS FROM WASTEWATER BY CARBON NANOTUBES (CNTs)" accepted for publication in International Journal of Chemical Sciences and Applications. (Ashish Gadhave, Jyotsna Waghmare*)	Vol 5, Issue 2	56-67	2014
25	GC-MS analysis of bioactive components from banana peel (Musa sapientum peel), Jyotsna S. Waghmare* and Ankeeta H. Kurhade, Pelagia Research Library, European Journal of Experimental Biology	4(5)	10-15	2014
26	Effect of banana peel oleoresin on oxidative stability of sunflower and soybean oil, ankeeta h. Kurhade and Jyotsna S. Waghmare1, Journal of food processing and preservation issn		1745-4549	2014
27	Paper communicated to journal of microbiology, biotechnology and food Sciences, International scientific peer-review open access journal			
28	Antioxidant Activity of Peel Extracts of Banana (Musa Sapientum), Ankeeta H. Kurhade , Dr.Jyotsna S. Waghmare*, Asian Journal of Food & Agro-Industry	Vol 7, issue 3		2014
29	Effect of Banana peel powder on bioactive constituents and microstructural quality of chapatti- an unleavened Indian flat bread, Ankeeta Kurhade 1, Sonal Patil 2, Waghmare J*1 Arya S. S. 2, Food marketing and Technology		20-23	Oct 2014

30	"A short review on microemulsion and its application in extraction of vegetable oils." Ashish Gadhave, Jyotsna Waghmare* International Journal of Research in Engineering and Technology	Vol. 3. Issue 9	pp. 148-158	2014
31	Paper communicated to journal: Formulation of reverse micellar fuel microemulsion: Investigation of phase behavior, interfacial composition, effect of chain length of surfactants and characterizations", Ashish Gadhave, Jyotsna Waghmare. Journal of petroleum Science and Engineering.			
32	"Microencapsulation of orange oil using simple coacervation: Characterization and application in shampoo" Sachin Kausadikar, Jyotsna Waghmare*. (Accepted for publication)			
33	"A review on microencapsulation of fish oil to improve oxidative stability" Asma Fakir, Ashish Gadhave, Jyotsna Waghmare. Asian Journal of Food and Agro-Industry. (Accepted for publication)			
BOOK CHAPTERS				
Formulating Strategies in Cosmetic Science, edited by Rachel Chapman		ISBN-10:1-932633-52-9	ISBN-13:978-1-932633-52-8	2009
Skin Barrier: Chemistry of Delivery Systems, edited by Johann W. Wiechers				

UNDERGRADUATE STUDENTS' SEMINARS/PROJECTS/HOME PAPERS

Sr.	Student	Seminar Topic	Project Topic
1	Funde Shital Bhimrao Shobha	Nanotechnology in aerosol science	TRANSPARENT SOAP
2	Tayade Anhad Shaligram Varsha	Uses of oilseed waste	Studies in epoxidation of neem butyl ester
3	Moghe Mihir Ravindra Neelima	A Review of Heterogeneous Catalysts for Use in Hydrogenation and Trans-Esterification of Oils	Upgradation of crude glycerol obtained from biodiesel production by transesterification
4	Kataria Tarun Kishor Manisha	Multifunctional additives of lubbricant oil	Synthesis and applications of Ricinoleyl alcohol
5	Patare Bhushan Dattatray Sujata	Advances in Surfactants Based Drug Delivery Systems	Studies in epoxidation of karanja butyl esters
6	Arolkar Neha Devendra Pushpa	Oleosomes: Natural Self-Emulsifying Systems for Cosmetic Formulations	Peanut protein-based surfactants
7	Gade Harshal Vijay Swati	Biosurfactants and nanotechnology in enhanced oil recovery	Studies in foam boosters
8	Marathe Rutvik Mohan Alpana	Application of membrane technology in processing of edible oils	Enzymatic de – acidification of edible oil Using enzyme lipase
9	Patil Dipashree Suhas Swati	Olive oil- present and future aspects	Sulfated karanja butyl ester
10	Bhusara Dipesh Ashok Archana	Wastewater treatments inoleochemical industries	Study of isopropyl esters
11	Parate Ashwini Hemraj Vimal	Life Cycle Assessment of surfactants	Enzyme assisted extraction of antioxidant from banana Peel

12	Devkatte Pravinkumar Dnyanoba Shobha	Lecithin production and its potential applications	Production and analysis of cationic gemini surfactants
13	Asthana Soumya Sanjay Meenu	Nanotech Biofuels	Production and analysis of zwitterionic gemini surfactants
14	Joshi Abhimanyu Abhay Kshama	Designer. Structured lipids	Synthesis of glyceryl ether based gemini surfactants
15	Dhote Navin Ashok Anita	Nanotechnology in Cosmetics	Cosmetic products using natural colour
16	Vadodaria Shishir Pankaj Dipti	Peptide-based surfactants: A new generation of surfactants	Estolide derivatives as Potential Lubricants

M.TECH. SEMINAR AND PROJECT TOPICS

Sr.	Roll No.	Name of Student	Seminar Topic	Project Topic
1	13OIL2001	Dhage Swatejraja Jalinder Bharti	Importance Of Molecular Structure In Surfactant	Synthesis and characterization of Emulsifier for Nano-Emulsion.
2	13OIL2002	Mestri Rohan Suresh Minakshi	Overview on multiple emulsions and its current status	Manufacturing of Tablet Detergent.
3	13OIL2003	Honmane Bharat Chandrakant	Newer processing methods for oils	Deacidification of cottonseed oil
4	13OIL2004	Waghmode Amol Tukaram	Recent Advances in green transformer oils	Production of multipurpose grease from sustainable feedstock
5	13OIL2005	Devsarkar Ganesh Shankarrao	Lecithin as Food Emulsifier	Synthesis of Food Emulsifier
6	13OIL2006	Bhole Gandhar Sunil	Nanotechnology in Neutraceuticals	Synthesis of Cationic Gemini Surfactants and its Applications
7	13OIL2007	Chaudhari Yogesh Suryakant	Prospects and retrospect's of catalytic cracking of vegetable oils	Synthesis and characterization of Estolides and their derivatives by using Castor oil.
8	13OIL2008	Golewar Rupesh Narsing	Development of polymeric based surfactant.	Synthesis of surfactant from melanisation of sunflower oil
9	13OIL2009	Datir Kirti Ashok Ranjana	Nanoparticle synthesis using emulsions.	Synthesis of nanoparticles from cerium and study of its application in different scenario.
10	13OIL2011	Bhutada Payal Radheshyam Rekha	Extraction of Ben Oil from Moringa Oleifera Seeds and its application in Cosmeceutical Formulation	Extraction of Moringa Oil from Moringa Oleifera Lam. Seeds and its application in Cosmeceutical Formulation
11	13OIL2012	Gadhave Ashish Dashrath	Removal of heavy metal ions from wastewater by using Carbon Nanotubes (CNTs)	Extraction of non-edible oils using reverse miscellar fuel microemulsion to make biodiesel.
12	13OIL2013	Mishra Amitkumar	Recent Advances in synthesis of green chelating agent	Control Relase study of Neem oil Formulation

Ph.D. (TECH)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Mr. Akash P. Bhangale	LIT, Nsgpur	Microbial Production and Isolation of Biosurfactants	A. P. Pratap
2	Mr. Sachin Patil	ICT, Mumbai	Gemini Surfactants from Renewable Resources	A. P. Pratap
3	Mr. Chetan Waykole	ICT, Mumbai	Value Addition to Biodiesel via Biolubricants	A. P. Pratap
4	Mr. Dharmendra Wankhade	ICT, Mumbai	Studies in Fragrance and Flavor Ingredients	A. P. Pratap
5	Ms. Patil Harshada Ishwar	NMU, Jalgaon	Studies in Synthesis of Carbohydrate Based Surfactants	A. P. Pratap
6	Mr. Swapnil Mane	UICT, NMU, Jalgaon	Eco-friendly, Economical Alternative Fuels and Functional Fluids.	Jyotsna Waghmare

Ph.D. (SCIENCE)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Mr. Pramod Patil	NMU Jalgaon	Structural Modifications of Fatty Materials	A. P. Pratap
2	Mrs. Supriya Hase Phatangare	Pune University	Synthesis and application of glycerol based chemicals	A. P. Pratap
3	Ms. Pranali Chiplunkar	Mumbai University	Value Addition to the Byproducts from Vegetable Oil Industry	A. P. Pratap
4	Mr. Mithun Mondal	Nagpur University	Nitrogen Derivatives of Fatty Materials	A. P. Pratap
5	Ms. Priyanka Sathe	Marathwada University	Green Surfactants from Renewable Resources	A. P. Pratap
6	Dhopte, Kiran B.	Dnyanopasak College, Parbhani	Application of Graphene oxide as Heterogeneous catalyst support for organic transformations	A.V. Patwardhan/ P. R. Nemade

M. TECH.

No.	Research Scholar	Thesis Title	Supervisor
1	Mr. Ravindra Chavan	Studies in Sulphation/ Sulphonation Reactions	A. P. Pratap
2	Mr. Praveen Gorle	Studies in Amphoterric Surfactants	A. P. Pratap
3	Ms. Pallavi Shivdas	Protein Based Surfactants	A. P. Pratap
4	Ms. Harsha Ashtankar	Study on bioactives of coffee extract and its applications	A. P. Pratap
5	Ms. Sruba Dutta	Fermentative Production and Downstream Processing Rhamnolipids	A. P. Pratap
6	Ms. Pinky Samtani	Fermentative Production and Downstream Processing Sophorolipids	A. P. Pratap
7	Mr. Yogesh Chaudhary	Studies in Estolides	A. P. Pratap
8	Mr. Mestri Rohan	Studies in Tablet Detergents	A. P. Pratap
9	Mr. Ganesh Devsarkar	Value addition to the de oiled cake	A. P. Pratap
10	Mr. Akshay Shahane	Green surfactants from renewable resources	A. P. Pratap
11	Ms. Jagruti Jadhav	Enzymatic synthesis of Sucrose based surfactants	A. P. Pratap
12	Mr. Daniel Dmello	Fermentative Production and Downstream Processing Trehaloseolipids using waste lipids	A. P. Pratap
13	Mr. Ajay Lambe	Fermentative Production and Downstream Processing Trehaloseolipids using waste lube oil	A. P. Pratap

14	Mr. Sadanand Kadam	Studies in Natural Pesticides	Jyotsna Waghmare
15	Ms. Asma D. Fakir	Microencapsulation of Fish oil	Jyotsna Waghmare
16	Ms Trupti D. Dhumal	The study of Pediculosis and their management	Jyotsna Waghmare
17	Ms. Ankeeta Kurhade	Extraction of Antioxidants From Fruit Waste	Jyotsna Waghmare
18	Ms. Nikita Wanjari	Extraction From Sunflower meal for Industrial Application	Jyotsna Waghmare
19	Swatejraja J Dhage	Synthesis of sorbitol base emulsifier	Jyotsna Waghmare
20	Lakhan A. Lale	Studies on different extraction techniques and encapsulation on jasmine essential oil	Jyotsna Waghmare
21	Ashish Gadhave	Extraction of non-edible oils using reverse micellar fuel microemulsion to make biodisel	Jyotsna Waghmare
22	Gandhar Bhole	Synthesis of Cationic gemini surfactants and its application	Jyotsna Waghmare
25	Datir, Kirti	Synthesis of nanoparticles from cerium and study of its application in different scenarios	P. R. Nemade
26	Mishra, Amit	Control Relase study of Neem oil Formulation	P. R. Nemade
27	Waghmode, Amol	Production of multipurpose grease from sustainable feedstocks	P. R. Nemade
28	Honmane Bharat Chandrakant	Production of multipurpose grease from sustainable feedstock	D. V. Pinjari
29	Golewar Rupesh Narsing	Synthesis of surfactant from melanisation of sunflower oil	D. V. Pinjari
30	Bhutada Payal Radheshyam Rekha	Extraction of Moringa Oil from Moringa Oleifera Lam. Seeds and its application in Cosmeceutical Formulation	D. V. Pinjari

DETAILS OF SPONSORED PROJECTS :

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Co- Principal Investigator(s)	Research Fellows
Rajeeev Gandhi Science and Technology Commission, (Govt. of Maharashtra), Mumbai	Green Surfactants: Value Addition to Neem Oil and Cake	Two years	63.23 Lakhs	Dr. Amit Pratap		Mr. Bhavin Patel and Ms. Priyanka Sathe
Department of Science and Technology (DST), New Delhi	Value Addition to Biodiesel via Biolubricants	Three years	40.33 Lakhs	Dr. Amit Pratap		Mr. Chetan Waykole

Ministry of Consumer Affairs , Food & Public Distributition , Department of food & Public distributition	Stabilisation of Omega -3 Fatty acids in oil based products (Stabilisation of Omega -3 Fatty acids in edible oil blends/ vanaspati/ margarine/ shortening/butter like products using natural antioxidants	3 years	15.68 lakhs	Dr. Jyotsna Waghmare and Dr. Amit Pratap		Ankita Kurhade, Harsha Ashtankar Ashish Gadhave, Ankeeta Shinde
Ministry of Science & Technology SERB-DST	Eco-Friendly economical Alternative fuel	2 years	12 lakhs	Dr. Jyotsna Waghmare		Swapnil Mane
TEQIP	Enzymatic process intensification for the manufacture of structure lipid to enhance the yield	1 year	20 lakhs	Dr. Jyotsna Waghmare		Asma Fakir, Sadanand Kadam, Snehal More
Pitambari Pvt.Ltd	A method development for separation of aroma from Jasmine (Mogra flower	1 year	2.5 lakhs	Dr. Jyotsna Waghmare		Lakhan Lale
Reckitt benckiser (india) ltd	Bar soaps	6 months	1.6 lakhs	Dr.Jyotsna Waghmare		Gandhar Bhole
BIRAC-Bill and Melinda Gates Foundation	Hygienic Water-Free Toilet	1 year	Rs 25.00 Lakh	P. R. Nemade	V. H. Dalvi, S. Kasthurirangan, C. S. Mathpati, A. S. Misra, N. Jha	
SERB: Scheme for Young Scientists	Development of Polymerizable Ionic Liquid Membranes for Gas Separations	3 years	Rs 22.40 Lakhs	P. R. Nemade		
Rajiv Gandhi Science and Technology Commission	Pre-Treatment of Biomethanated Distillery Waste by Catalytic Wet Air Oxidation (CWAO) to Enhance Further Biomethanation	2 years	Rs 22.00 Lakhs	P. D. Vaidya	P. R. Nemade	

INDUSTRIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Co- Principal Investigator(s)	Research Fellows
M/s Pitambari products Pvt. Ltd., Navi Mumbai	Value Addition for Fatty Materials	Six Months	5.17 Lakhs	Dr. Amit Pratap		Mr. Yohesh Chaudhari and Mr. Rohan Mistry
M/s Reckitt Benckiser (India) Ltd., Gurgaon, Haryana	Antimicrobial Soap	Six Months	1.8 Lakhs	Dr. Amit Pratap and Dr. Jyotsna Waghmare		Mr. Gandhar Bhole and Mr. Ganesh Devsarkar
M/s Tetra Pack IndiaPvt. Ltd., Pune	Studies in Packaged Oils	Six Months	4.27 Lakhs	Dr. Amit Pratap		Mr. Akshay Shahane and Ms. Jagruti Jadhav
RCF Ltd.	Development of Water Resistant Gypsum Plaster	1 year	Rs 21.26 Lakhs	P. R. Nemade	D. D. Sarode, V. H. Dalvi, S. M. Sontakke	Zambare, Rahul S.
GAIL (India) Ltd.	Development of Catalyst for Conversion of Methane to Olefins	3 years	Rs 103.80 Lakhs	S. M. Sontakke	P. R. Nemade	Ph.D. (Tech): Chaudhari, Sushil M. Ph.D. (Tech): Sane, Priyanka

MEMBERSHIP OF IN-HOUSE COMMITTEES:

Dr. Amit P. Pratap
Member PG Admission committee
Co-ordinator TEQIP II for Oils Dept.

Dr. J.T. Waghmare
Special cell member- till date
Library committee member- till date

Dr. P. R. Nemade
Institute
TEQIP MIS Committee (convener), Website Committee (member), TEQIP Innovation Networking Coordination Committee (member)

SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/ WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS :

(a) Production of Sophorolipids Employing Castor Oil, Glucose and Glycerol as Carbon Sources" by A. P. Bhangale, S. D. Wadekar and Amit P.Pratap, at 68th Annual Convention of Oil Technologists' Association of India and International Conference on Emerging Trends in Oleochemicals & Lipids Expo – 2013 at IICT Hyderabad

(b) "Biodiesel as a feedstock for Biolubricants" by C. S. Waykole and Amit P. Pratap at 68th Annual Convention of Oil Technologists' Association of India and International Conference on Emerging Trends in Oleochemicals & Lipids Expo – 2013 at IICT Hyderabad

(c) "Anionic Gemini Surfactants Based on Renewable Resources" by S. V. Patil and Amit p. Pratap at 68th Annual Convention of Oil Technologists' Association of India and International

Conference on Emerging Trends in Oleochemicals & Lipids Expo – 2013 at IICT Hyderabad

(d) "Lecithin Derivatives as Emulsifiers" by Pranali S. Chiplunkar and Amit p. Pratap at 68th Annual Convention of Oil Technologists' Association of India and International Conference on Emerging Trends in Oleochemicals & Lipids Expo – 2013 at IICT Hyderabad

(e) "Polyglycerol Based Surfactants from Renewable Resources" by Supriya K. Phatangare and Amit p. Pratap at 68th Annual Convention of Oil Technologists' Association of India and International Conference on Emerging Trends in Oleochemicals & Lipids Expo – 2013 at IICT Hyderabad

(f) "Vegetable oil Based Functional Fluids" by Amit P. Pratap, at a National Conference on 'Emerging Trends in Oleo-chemicals and Ecofriendly Coatings Technologies' (OECT) on 28th Sept. 2013 held at University Institute of Chemical Technology, North Maharashtra University, Jalgaon

PRESENTATIONS:

1. SELECTIVE OXIDATION OF GLYCEROL TO SYNTHESIZE 2-DIHYDROXYACETONE: Chetan Pachpande; Asma Fakir; Dr.Jyotsna Waghmare. OTAI International Conference on "International conference on Emerging Trends in Oleochemicals & Lipids Expo 2013" to be held at Indian Institute of Chemical Technology, Hyderabad during August 8-10, 2013
2. Epoxidation of Wild Safflower (Carthamus oxyacantha) Oil with Peroxy acid in presence of strongly Acidic Cation Exchange Resin IR- 122 as Catalyst: Harshal Patil, Nikita Wanjari, Pawan Meshram and Jyotsna Waghmare OTAI International Conference on "International conference on Emerging Trends in Oleochemicals & Lipids Expo 2013" to be held at Indian Institute of Chemical Technology, Hyderabad during August 8-10, 2013
3. Timur Oil (Zanthoxylum rhetsa): A Potential Source as Flavor, Sachin N. Kausadikar, Trupti D. Dhumal, Jyostna Waghmare1, OTAI International Conference on "International conference on Emerging Trends in Oleochemicals & Lipids Expo 2013" to be held at Indian Institute of Chemical Technology, Hyderabad during August 8-10, 2013
4. Long storage stability of emulsion: Harshal Patil, Sadanand kadam, Pawan Meshram and Jyotsna Waghmare OTAI International Conference on "International conference on Emerging Trends in Oleochemicals & Lipids Expo 2013" to be held at Indian Institute of Chemical Technology, Hyderabad during August 8-10, 2013
8. Events Organized and responsibility (Converor / Secretary/ Member):
   Co-convenor for 3 Days Workshop on 'LATEST TRENDS IN INSTRUMENTAL ANALYSIS OF OILS, OLEO-CHEMICALS & ALLIED FIELDS ON 24TH TO 26TH OCTOBER, 2013 at K. V. Auditorium, Institute of Chemical Technology, Matunga, Mumbai – 400 019 Dr. A.P. Pratap.
9. Poster presented on ''Extraction of Antioxidants from sunflower cake Meal for various Industrial Applications''; Nikita Wanjari; Dr.Jyotsna Waghmare. OTAI International Conference on "International conference on Sustainable Technologies and Futuristic Trends in Oilseed-oils processing Surfactant Expo 2014" to be held at Radisson blu hotel, Agra during November 14-16,2014.
10. Poster presented on ''Formulation of Water-in-Diesel Microemulsion as a Biofuel: Phase Study, Interfacial Composition, Effect of Chain length of Co-surfactant and viscosity''; Swatej Dhage; Ashish Gadhve; Dr.Jyotsna

Waghmare. OTAI International Conference on "International conference on Sustainable Technologies and Futuristic Trends in Oilseed-oils processing Surfactant Expo 2014" to be held at Radisson blu hotel, Agra during November 14-16,2014.

11. Poster presented on ''An Emulsion Fuel-A New Generation Fuel''; Swapnil Mane; Dr.Jyotsna Waghmare. OTAI International Conference on "International conference on Sustainable Technologies and Futuristic Trends in Oilseed-oils processing Surfactant Expo 2014" to be held at Radisson blu hotel, Agra during November 14-16,2014.
12. Paper presented on ''Solvent and Enzyme-Assisted Extraction of Banana Peel (Musa Sapientum) and its Antioxidant Activity in Refined Vegetable Oils''; Ankeeta Kurhade; Dr.Jyotsna Waghmare. OTAI International Conference on "International conference on Sustainable Technologies and Futuristic Trends in Oilseed-oils processing Surfactant Expo 2014" to be held at Radisson blu hotel, Agra during November 14-16,2014.
13. Paper presented on ''Production and Microencapsulation of Fish Oil''; Asma Fakir; Snehal More; Dr.Jyotsna Waghmare. OTAI International Conference on "International conference on Sustainable Technologies and Futuristic Trends in Oilseed-oils processing Surfactant Expo 2014" to be held at Radisson blu hotel, Agra during November 14-16,2014.
14. Accepted for Poster presentation on "A Green Fuel For Oil Fired Boiler"; Swapnil Mane; J. S. Waghmare in Bioprocessing INDIA 2014 which is scheduled to be held at ICT, Mumbai from 17th-20th December, 2014
15. Accepted for Poster presentation on "Tranchyspermum ammi: Natural pestiscides"; Sadanand Kadam; J. S. Waghmare in Bioprocessing INDIA 2014 which is scheduled to be held at ICT, Mumbai from 17th-20th December, 2014.

WORKSHOP ORGANIZED :

Latest trends in instrumental analysis in the field of Oils, Oleo-chemicals, surfactants and allied products "" during Oct- 24-26,2013 at Institute of chemical Technology, Mumbai. By Dr. J.T.Waghmare.

RESEARCH GROUP

DR. AMIT PRATAP RESEARCH GROUP

From Left to Right: Sachin Patil, ChetanWaykole, Pravin Gorle, Mithun Mondal, Akash Bhangale, Sayali Chaudhari, Pranali Chiplunkar, Supriya Phatangre, Pallavi Shivdas, Harshada Patil, Harshda Asthankar

DR. J. T. WAGHMARE RESEARCH GROUP

From Left to Right: Ashish Gadhave, Swapnil Mane, Lakhan Lale, Gandhar Bhole, Swatej Dhage, Snehal More, Asma Fakari and Dr. J. T. Waghmare in the centre

DR. PARAG NEMADE RESEARCH GROUP

From Left to Right: Payal Bhutada, Kirti Datir, Priyanka Sane, Mohini Sable, Kiran Dhopte, Khushboo Tahilyani, Sushil Choudhari, Bharat Honmane, Parag Nemade **(Sitting)**, Rohit Shinde, Amol Waghmode, Amit Mishra, Rahul Zambare.

PREFACE

PROFESSOR
DR. (MRS.) PADMA V. DEVARAJAN
B. Pharm, M. Pharm, PhD. (Tech)
Professor in Pharmacy and
Head of Department

MISSION

To achieve the best in pedagogy and research, through creation of a dedicated team of faculty and state of art research facility, to develop skilled manpower and innovative cost effective technology to support national healthcare programmes.

VISION

To be a globally recognized premier educational and research centre with world class facilities, adopting international best practices, focused on the integration of science and technology in the areas of Drug Discovery, Drug Delivery, Organic Process Research and Herbal Healthcare Products

PRESENT SCENARIO:

The DPST comprises of the following human resources:
Undergraduates: 177, Doctorates: 135, Masters: 43

No. of Faculty (in place):
Professors-08,
Associate Professors- 01,
Assistant Professor- 03

Vacancy:
Professor- 02,
Assistant Professor- 05

Supporting Staff: 15

MAJOR RESEARCH INTERESTS:

Design of Drug delivery systems for oral, parenteral, transdermal,nasal, buccal and sublingual, ocular and vaginal drug delivery, Drug design and discovery, Computer Aided Drug Discovery, Design & Synthesis of drugs drug intermediates and NCE's, Evaluation of indigenous plants for various pharmacological activities, Extraction and isolation of phytoconstituents, Standardization and stability of herbal drug products, Modification of herbal constituents for synthesis of useful compounds, Bioanalytical method development, Nanotechnology in drug delivery, Protein and nucleic acid delivery, Pharmaceutical biotechnology.

MAJOR INSTRUMENTAL / PROCESSING FACILITIES

Proton NMR, GC-MS, FT-IR, HPTLC, several HPLCs, GC, UV, DSC, Fluorimeter, Ozoniser, Polarimeter, Parallel Plate Syntesiser and other chemistry related instruments, CADD lab with sophisticated hardwares and softwares for docking, homology modeling, 3D-QSAR and other modules, facilities like parallel synthesizer, hydrogenator, Particle size analyzers, Zeta Sizer, Film

DEPARTMENT OF PHARMACEUTICAL SCIENCES AND TECHNOLOGY

To achieve the best in pedagogy and research, through creation of a dedicated team of faculty and state of art research facility, to develop skilled manpower and innovative cost effective technology to support national healthcare programmes.

coater, Extrusion spheroniser unit, Transdermal permeation apparatus, Freeze driers, High Pressure Homogenizers, Tablet machines, Dissolution apparatus, Sonicators, Fluidised bed coater cum processors, Dryers, Multi purpose processors for solid and liquid formulations, Facilities for wet and dry granulations, Facilities for bioadhesion testing, facilities for size reduction, Liquid filling machines, Facilities for processing of semi-solid dosage forms, ICH stability testing facilities, BIOPAC, Elisa readers, Aggregometer, Non-invasive blood pressure measuring instrument, microbiology facility and cell culture facility, incubator shaker, CO_2 incubator, inverted microscope, fluorescence microscope, high speed cold centrifuges, freezers, and other basic equipments and instruments.

MAJOR AWARDS / HONOURS RECEIVED IN 2013-14

PROFESSOR (MRS.) P. V. DEVARAJAN

Professor C. J. Shishoo Award. Research in Pharmaceutical Sciences, conferred by the Association of Pharmaceutical Teachers of India, 2013

DR. PRAJAKTA DANDEKAR JAIN and PROFESSOR (MRS.) V. B. PATRAVALE

N. R. Kamath Book Award for book entitled 'Nanoparticulate Drug Delivery: Perspectives on the Transition from Laboratory to Market', (Woodhead Publishing Series in Biomedicine), Woodhead Publishing, 2014.

PROFESSOR (MRS.) V. B. PATRAVALE

Grant Awardee – 'Nanovaccine for Brucellosis using Green Technology'; Grand Challenges Explorations Grants Round 11, Bill & Melinda Gates Foundation, (2013)

YEAR WISE STATISTICS OF RESEARCH AND ACADEMIC ACTIVITIES

Year	Ph.D.	Masters	Graduates	Publications		Books Chapters/ Patents	Sponsored projects
				International	National		
2009-10	99	49	212	57	12	03/27	35
2010-11	112	50	198	54	11	05/21	35
2011-12	114	52	207	74	14	02/24	37
2012-13	134	40	212	107	8	05/16	55
2013-14	135	43	177	109	09	20/14	49

*Upto 30th June

COURSES OFFERED IN DPST

Sr. No.	Degree	Comments	No. of Seats
1	Bachelor in Pharmacy	AICTE Approval in 2002, 2008(12+4) pattern	30
2	Bachelor in Technology (Pharma)	AICTE Approval in 2002,	18
3	Master in Pharmacy	AICTE Approval in process	Min 10
4	Master in Technology (Pharma)	AICTE Approval in process	Variable
5	PhD (Tech)	15 UGC SAP fellowships since 2007	Minimum 15
6	PhD (Sci)	In Chemistry and Biotechnology	Variable

* At Institute level

PROFESSOR DR. (MRS.) PADMA V DEVARAJAN

B. Pharm, M.Pharm, PhD(Tech.)

Head of Department and Professor in Pharmacy

RESEARCH INTEREST AND EXPERTISE:

- Engineering of nanoparticulate (polymer/ lipid/gold) drug delivery systems for cancer and infectious diseases (tuberculosis) with specific focus on key issues including scale up and commercialization
- Screening for new targeting ligands
- Non-invasive (nasal and sublingual) delivery systems for peptides, proteins and nucleic acids
- Surfactant based innovative self-assembled structures for drug delivery
- Controlled Release Drug Delivery Systems (NDA and ANDA)
- CAMM applications in drug delivery
- Nano Diagnostics

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Nominated Fellow Maharashtra Academy of Sciences
- Member Advisory Council

Drug Information Association, India

- Member, Board of Governors UDCT Alumni Association
- Ex-Treasurer, Ex-Secretary and Patron Member Controlled Release Society-Indian Chapter
- Life Member Indian Pharmaceutical Association
- Life Member Indian Women Scientists Association.
- Member Indian Society of Surface Scientists and Technologists.
- Member Third World Organization of Women in Science
- Life Member UDCT Alumni Association
- Registered Pharmacist Maharastra Pharmacy Council

PUBLICATIONS (PEER REVIEWED) SO FAR : 53
PATENTS (FILED / GRANTED) : 24/7
CONFERENCE PROCEEDINGS/PAPERS: 197
SEMINARS/LECTURES/ ORATIONS DELIVERED: 42
PhD AWARDED AS SINGLE GUIDE: 29
MASTERS AWARDED AS SINGLE GUIDE: 57
POST DOCTORAL FELLOWS SUPERVISED: 1

AWARDS/HONORS

- National -10
- International - 5

H-INDEX : 15

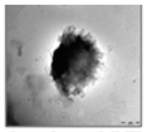
CITATIONS: 613

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT

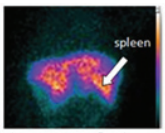
Innovations in Nanomedicine are in nationally relevant areas of healthcare, namely infectious diseases(Tuberculosis, AIDS, veterinanry infections) and cancer, with a focus on the design of practical and relevant interventions, to enable translation of nanomedicine from bench to clinic. Important contributions are highlighted below:

LIPOMER - Nanoparticle Shape and Drug Targeting

LIPOMER,an innovative nanocarrier,is the first ever application of nanomedicine in veterinary infections. We have for the first time reported the role of nanoparticles of irregular geometry in targeting drug loaded nanoparticles to the spleen (Journal of Biomedical Nanotechnology, 2008, 4(3, 359-369) ;J Pharm Sci.; 99(6):2576-81, 2010). This paper was cited in the US based magazine The Scientist April 2010 pg 69, under cutting edge research in Nanoparticles in drug development. Clinical success in E.Canis infection in dogs is demonstrated. More importantly, the scalability of this Lipomer has been successfully demonstrated (Am. J. PharmTech Res. 2013; 3(4) in press).

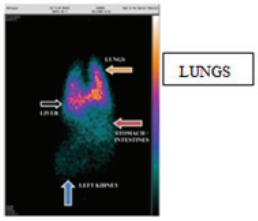


Irregular shaped LIPOMER



Splenic accumulation of irregular LIPOMER in dog

MYCOTARG-Targeting to the lungs



Orally administered nano carriers loaded with anti tubercular drug combinations which enable targeting the lungs, through a simple ligand, a pharmaceutically acceptable, low cost excipient approved for oral administration. Journal of Biomedical Nanotechnology, 2013;9 (5):765-775.

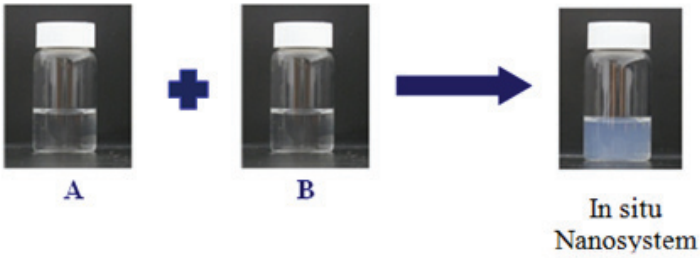
Scintigraphic images reveal high lung uptake of nanoparticles after oral administration in rats (J. Biomed. Nanotechnology, 2013 in press)

Sublingual Nano Delivery System of insulin

We have a granted Indian Patent based on microemulsion compositions for sublingual administration of insulin. This non injectable insulin delivery system exhibits great potential. This system can be readily scaled up for commercialization.(Granted Indian Patent 233413)

Self Nanoprecipitating Preconcentrates (SNP)

A simple idea which completely overcomes the technology gap in the development of nano drug delivery systems. SNP involves generation of a mixed nanosystem, comprising lipid/polymeric nanoparticles and micelles, IN SITU by the patient or doctor by simply mixing two liquids (A &B) prior to administration. It has been successfully developed for anticancer drugs(doxorubicin, tamoxifen) and Anti HIV(Nevirapine), the technology appears too simple to be true! (Int J Pharm 429(1-2):104-12, 3053/MUM/2010)



TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Vishvesh M Joshi; Padma V.Devarajan. Receptor-mediated hepatocyte-targeted delivery of primaquine phosphate nanocarboplex using a carbohydrate ligand	Drug Delivery and Translational Research, 2014	-	1-12	-
Padma V. Devarajan, G. S. Sonavane, and Mukesh Doble Computer aided molecular modeling: A predictive approach in design of nanoparticulate drug delivery systems	J. Biomedical Nanotechnology, 2005	1(4)	375-383	5.256
Ganeshchandra S. Sonavane and Padma V. Devarajan,Preparation of Alginate Nanoparticles Using Eudragit E100 as a New Complexing Agent: Development, In-Vitro and In-Vivo Evaluation	Journal of Biomedical Nanotechnology, 2007	3(2)	160-169	5.256
Rajesh R. Patil, Rajiv V. Gaikwad Abdul Samad and Padma V. Devarajan,Role of lipids in enhancing splenic uptake of polymer-lipid nanoparticles	Journal of Biomedical Nanotechnology, 2008	4	359-366	5.256
Padma V Devarajan, Anil B Jindal, Rajesh R Patil, Fernaz Mulla, Rajiv V Gaikwad, Abdul Samad Particle shape: A new design parameter for passive targeting in splenotropic drug delivery	J Pharm Sci. 2010	99(6)	2576-81	3.13

Derajram M Benival, Padma V Devarajan, Lipomer of doxorubicin hydrochloride for enhanced oral bioavailability	International journal of pharmaceutics, 2011	423(2)	554-61	3.458
Anisha A D'Souza, Puneet Jain, Chandrakant N Galdhar, Abdul Samad, Mariam S Degani, Padma V. Devarajan., Comparative in silico-in vivo evaluation of ASGP-R Ligands for hepatic targeting of Curcumin Gantrez nanoparticles	AAPS J. 2013	15(3)	696-706	4.386
Sameera V. Khandekar, M. G. Kulkarni, and Padma V. Devarajan, Polyaspartic acid functionalized gold nanoparticles for tumor targeted Doxorubicin delivery	Journal of Biomedical Nanotechnology, 2013	10(1)	143-53	5.256
Mitesh D Patel, Praveen V Date, Rajiv V Gaikwad, Abdul Samad, Vinod C Malshe, Padma V Devarajan. Comparative evaluation of polymeric nanoparticles of rifampicin comprising Gantrez and poly(ethylene sebacate) on pharmacokinetics, biodistribution and lung uptake following oral administration	Journal of Biomedical Nanotechnology 2014	10(4)	687-94	5.256
Benival D.M.; Devarajan P.V. In Situ Lipidization as a New Approach for the Design of a Self Microemulsifying Drug Delivery System (SMEDDS) of Doxorubicin Hydrochloride for Oral Administration	Journal of Biomedical Nanotechnology, 2014	10	1-10	5.26

SUBJECTS TAUGHT:

Targeted Drug Delivery, Drug Delivery Systems I and II, Pharmaceutics, Advanced Pharmaceutics, Technology of solid dosage forms, Technology of sterile dosage forms

RESEARCH STUDENTS:

RA-1, Ph.D (Tech.)-19,
M. Pharm- 04, M. Tech- 1
Undergraduate
Summer Fellows -5

RESEARCH PUBLICATIONS:

International-09,
Peer-reviewed-09,
Conference proceedings - 16,
Book Chapters - 03

SPONSORED PROJECTS:

Government- 02, Private- 06

PROFESSIONAL ACTIVITIES:

- Member, Research Recognition Committee, S.N.D.T. University
- Referee for International J. Pharmaceutics, Journal of Pharmaceutical Sciences, AAPS Pharma Sci Tech, Journal of Pharmaceutical and Biomedical Analysis, Indian Journal of Pharmaceutical Sciences, J. of Nanomedicine, J. Biomedical Nanotechnology
- Advisory Committee member, SVKM's Dr. Bhanuben Nanavati College of Pharmacy, Mumbai
- Member Board of Studies, Shobhaben Pratapbhai Patel School of Pharmacy & Technology Management, SVKM's Narsee Monjee Institute of Management Studies (NMIMS).

SPECIAL AWARDS/ HONOURS

- Professor C. J. Shishoo Award. Research in Pharmaceutical Sciences, conferred by the Association of Pharma-ceutical Teachers of India, 2013

PROFESSOR K. G. AKAMANCHI

B.Sc., B. Sc. (Tech.), Ph.D. (Tech.)
Professor of Pharmaceutical Technology

RESEARCH INTEREST AND EXPERTISE:

Development of Novel Methodologies, Hypervalent Iodine Chemistry, Synthesis of drug and drug intermediates, Design and Synthesis of Novel dendritic heterolipids and applications, Design and Synthesis of Potential bioactive molecules, Protein Isolation and stabilization.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Recipient of National Open Merit Scholarships(1969 and 1973)
- Recipient of research fellowship from UGC (1978)
- Recipient of Indian National Science Academy Science Visiting Fellowship.
- Recipient of Dadasaheb Abyankar Visiting Fellowship
- Fellow of Maharashtra Academy of Science, Pune.

PUBLICATIONS (PEER REVIEWED) SO FAR: 87

PATENTS: 09

CONFERENCE PROCEEDINGS/PAPERS: 75

SEMINARS/LECTURES/ ORATIONS DELIVERED: 48

Ph.D.s AWARDED AS SINGLE/ CO-GUIDE: 43

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 78

H-INDEX: 17

CITATIONS: 932

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART

Development of New Methodologies

Molecules are objects of chemistry provided by nature or created by human imagination. One of the prime activities of chemistry is to synthesise these molecules with an objective, be it for structure confirmation, sufficient materials for establishing the applications, or simply establish synthesis as an intellectual exercise. For making these molecules at different scales depending on the requirements, syntheticmethodologies are needed and this need is ever-increasing with advent of complex molecules and specific industrial needs under the grab of utilisation of renewable resources, sustainability, environmental and safety concerns.

Our research group, over the years, has focused on development of new synthetic methodologies and succeeded in development of many oxidative transformationsusing hypervalent iodine(V) reagents prominent among them being o-iodoxybenzoic acid (IBX), Dess-Martin periodinane (DMP) and iodic acid. The methods developed are impressive and are quite useful for medicinal chemistry, contract synthesis activity, and to some extent for large scale synthesis. Hypervalent iodine regents are very mild, work at neutral pH and in mostcases at room temperatures except a few which require higher temperatures. Mechanistically basic feature of these reagents for oxidative transformation is a mandatory ligand exchange step before the ligand under goes oxidative transformation. This feature with relative nucleophilicity of ligands forms the basis for development of new methodologies. New methodologies have been developed using combination of hypervalent iodine reagents and nucelophiles either as activator for subsequent transformations or getting

oxidized by themselves leading to the desired transformations. Our group has developed a combination of IBX/ TBAB(tetrabutyl ammonium bromide) as a new reaction system where Br(-) as a nucleophile adds on to the central iodine facilitating ligand exchange leading to acceleration of many reactions. In other cases oxidation of Br(-) leading to generation of Br(+) triggers many transformations. Using this combination and activation, we have converted organic sulphides exclusively into sulfoxides without any further oxidation to sulphone. Sulfoxide containing molecules are an important class of drugs and therefore this methodology would find wide applications in medicinal chemistry. The bromine activation has been further exploited for one carbon oxidative dehomologation of amides to nitriles similar to Hoffmann rearrangement but under neutral conditions with no added base. This oxidative dehomologation reaction has been further developed into a new method for transformation of α,α-disubstituted amides into one carbon shorter ketones and disubstituted glycine amides into cyanamides. Similarly olefins have been converted directly into α-bromoketones and so on. This is one range of new methodologies that have been developed. Other nucleophiles used were substituted thioureas. The thioureas underwent oxidative desulfurisation forming carbodiimides. In another methodology the cardodiimides thus generated as intermediates from substituted thioureas have been trapped intramolecularly to form several azoles. This was possible because of mild reaction conditions and highly selective transformations due to preferential interaction of IBX with highly nucleophilic sulfur in presence of other nucleophilic sites such as oxygen and amines. One more interesting transformation, visualised while investigating mechanism of dehomologation reactions, was fast and quantitative conversion of aldehydes to nitriles in ammonia solution of IBX. Epoxides have been fragmented in aqueous ammonia solution of IBX where initial opening of epoxides to form amino-alcohols has been exploited for further oxidative cleavage without affecting other functionalities. This fragmentation process could prove to be a valuable alternative for direct oxidative cleavage of olefins where many a times stronger oxidising agents are needed. Earlier methodologies developed in our laboratory using hypervalent iodine reagents were oxidative deoximation to generate ketones or aldehydes. Recently, on similar lines we reacted aryl hydrazines with IBX expecting to generate aryl free radicals through oxidative expelling of nitrogen. Indeed aryl free radical were formed, as demonstrated by trapping experiments. Further aryl radicals were generated in presence of reactive naphthoquinones leading to C-arylation. This is a new way of generation of aryl free radicals under mild conditions. Apart from those described above many more simple methodologies including oxidative rearrangements, bromination, α-sulfoxylations of ketones have been developed.

American Chemical Society Green Chemistry Institute Pharmaceutical Roundtable has found that amide formation avoiding poor atom economy reagents is the priority of research and as many as 65% drugs molecules prepared by leading pharmaceutical companies contain an amide unit indicating its importance and prevalence in synthetic organic chemistry. Another key area of research is the activation of hydroxide group. Present methods that makes use of strong acidic reagents lead to formation of many by products or requires an additional step of activation through formation of good leaving group.

We initiated the work to solve these problems by developing a new acid catalyst with the hypothesis that a catalyst with oxophilic sites and acidity strong enough to activate

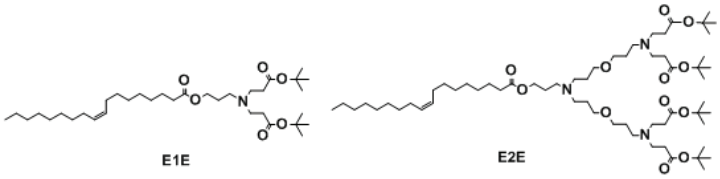
hydroxyl group but not strong enough to deactivate amino group could do the trick and with an added feature of heterogeneous nature for easy separation to recycle. We made for the first time "sulfated tungstate" by reacting sodium tungstate with chlorosulfonic acid in an organic solvent. To our satisfaction sulfated tungstate turned out to have the features as we desired and proved to be a very good catalyst for amidation using carboxylic acid and amines. Our publications have triggered interest in development of many more catalysts for amidation. Having oxophilicity and mild acidity sulfated tungstate was found to activate hydroxy groups of alcohols for displacement without elimination to form olefinic by products. One such example is Ritter reaction a industrially useful 100% atom economy reaction between alcohol and nitrile to form amides. Since acid catalysed reactions are basic transformations in chemistry we are exploring sulfated tungstate for many more useful transformations. So far successful ones are transamidation, mono alkylation of amines, epoxide opening using amines. Another interesting observation was that sulfated tungstate was compatible with sulfur and found suitable for Kindler and Willgerodt reactions for making thioamides which required sulfur in just stoichiometric amounts, giving high yields. Otherwise these reactions are quite messy under conventional conditions due to polymerisation of sulfur and posing problems in product isolation.

In addition several new methodologies have been introduced by our group.

New material for Pharmaceutical Applications

Many recently introduced, approximately 40%, new chemical entities as drugs are water insoluble and have bioavailability problem when administered through oral route. Currently these issues are addressed through different approaches including development of NDDS (New Drug Delivery Systems), prodrug and use of cyclodextrins . Many of these NDDS employ oil phase and surfactants for solublisation. However the major problem is limited options among available of oil phases. We understood this limitations and the need and initiated research activity towards development of new materials (oil phases and surfactants). Our design concept was based on a lipid with long fatty acid chain preferably oleic acid because oleic acid is known to interact readily with cell membrane and therefore in addition to solubilisation may also facilitate absorption of drug molecule thus solving both solubility and bioavailability problems. The lipid structure envisaged has oleic acid as tail and branched head group linked through bio-labile ester functionality. The branched head group provides scope for manipulation of property through different functionalities and their number. More over by selecting tertiary amine as branching element additional features of basicity and hydrogen binding site are incorporated. With all these features the following structure has been considered and successfully synthesised.

All these new materials have shown excellent solubilisation properties which has been demonstrated by developing NDDS such SMEDDS(self micro emulsifying drug delivery systems), SLNs(solid lipid nanoparticles), SNEDDS (self nano emulsifying drug delivery systems), and other formulations. This material has been proven biocompatible and safe by using in vitro, ex-vivo and animal studies. This new lipid material, with basic nature, was found to



be a good solubiliser and bioavailability enhancer, as demonstrated by animal studies for Curcummin a water insoluble natural product with varieties of promising activities. This work was presented recently (19th to 20th April 2014) at international conference themed "Clinical Pharmacology - Translational Research: Patient to Public Health" held in Mumbai. The work was well appreciated and won the third prize. We are further modifying the structures to develop additives for stabilisation of proteins in protein formulations, and by trying to introduce amino functionalities at the terminal end of the head groups to facilitate for siRNA and gene delivery.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors	Journal	Year, Volume	Pages	Impact Factor
Patil, P.; Nimonkar, A.; Akamanchi, K.G.	Journal of Organic Chemistry	2014, 79	2331-2336	4.564
Kalhapure, R.S.; Akamanchi, K.G.	International Journal of Pharmaceutics	2013, 454	158-166	3.458
Kalhapure,R.S., Akamanchi, K.G.	Colloids and Surfaces B: Biointerfaces	2013,105	215-222	3.554
Chaudhari, P.S.; Pathare, S.P.; Akamanchi, K.G.	Journal of Organic Chemistry	2012, 77	371-372.	4.564
Kalhapure, R.S., Akamanchi, K.G.	International Journal of Pharmaceutics	2012, 425	9-18	3.458
Katkar, K.V., Chaudhari, P.S., Akamanchi, K.G.	Green Chemistry	2011, 13	835-838	6.828
Chaudhari, P.S.; Salim, S.D.; Sawant, R.V.; Akamanchi, K.G.	Green Chemistry	2010, 12	1707-1710	6.828
Bellale, E. V.; Bhalerao, D. S.; Akamanchi, K.G.	Journal of Organic Chemistry	2008, 73	9473-9475	4.564
Bhalerao, D. S.; Mahajan, U. S.; Chaudhari, K. H.; Akamanchi, K.G.	Journal of Organic Chemistry	2007, 73	662-665	4.564
Shukla, V. G.; Salgonkar, P. D.; Akamanchi, K. G.	Journal of Organic Chemistry	2003, 68,	5742-5745	4.564

SUBJECTS TAUGHT:
Advance Organic Chemistry, Pharmaceutical Chemistry, Medicinal Chemistry, Pharmaceutical Technology

RESEARCH STUDENTS:
Ph.D (Tech.) - 06, Ph. D.(Sci.) - 04 M. Pharm- 02 M. Tech- 03 Undergraduate Summer Fellows -2

RESEARCH PUBLICATIONS:
International-06

SPONSORED PROJECTS:
Private- 01

SPECIAL AWARDS/ HONOURS
Appointed as Independent Director on the Board of Aarti Drugs Ltd.

PROFESSOR (MRS.) PURNIMA D. AMIN

B. Pharm., M. Pharm., Ph.D. Tech
Professor in Pharmacy

RESEARCH INTEREST AND EXPERTISE:

- Developing Novel drug delivery systems using Hot Melt Extrusion (HME) and spray drying techniques.
- Developing Novel fixed dose combinations of antimicrobial in extended and immediate release dosage forms.
- Solubility enhancement of poorly soluble drug using several excipients by solid dispersion techniques.
- Exploring newer applications for excipients
- Developing R & D models of pharmaceutical machinery.

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING

- Fellow of Maharashtra Academy of science.
- Referee, Indian Journal of Pharmaceutical Science, and Drug Dev Industrial Pharmacy
- Referee, Journal of Nanotechnology
- Referee, Journal of Controlled Release
- Referee, Journal of Pharmaceutical Sciences

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Life Member, Indian Pharmaceutical Association, Maharashtra State Branch.
- Life Member, I.C.T. Alumni Association
- Member, Controlled Release Society, Indian Local Chapter
- Life member APTI

PUBLICATIONS (PEER REVIEWED) SO FAR: 60

PATENTS: 6

H-INDEX : 8

CITATIONS :180

CONFERENCE PROCEEDINGS/PAPERS: 80

SEMINARS/LECTURES/ ORATIONS DELIVERED: 5

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE: 16

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 50

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
"Porous starch: a novel carrier for solubility enhancement of Carbamazepine" Ali Meer Tarique, FuleRitesh, Sav Ajay kumar, Purnima D. Amin*	AAPS PharmSciTech.	14 (3)	919-26	4.38
"Preparation and Characterization of Lafutidine Solid Dispersion Systems using Hot Melt Extrusion	Asian Journal of Pharmaceutical Sciences	9 (2)	92–106	

Technique: Investigating drug-polymer miscibility with advanced characterization"RiteshFule, Purnima D. Amin* et al.				
"Recent Advancements in solubility and dissolution enhancement of Simvastatin: A Review" Ajay Kumar Sav, Purnima D. Amin*	American Journal of PharmTech Research	3(2)	127- 144	0.98
"Development of extended release matrix tablet of rifampicin by hot melt Extrusion technology" Vanita J. Sharma, Purnima D. Amin*	Journal of Applied Pharmaceutical Science	3(10)	030-038	0.53
"Development and Evaluation of Artemether-Aeroperl® 300 Pharma Granular Solid Dispersion Powder with Enhanced Solubility, Dissolution Rate and Physicochemical Characterisation" Ritesh A. Fule, Tarique S. Meer, Deepak Khanna, Purnima D. Amin*	Am. J. PharmTech Res.	3 (2)	487-506	0.98
"Solubility and dissolution enhancement of HPMC - based solid dispersions of carbamazepine by hot-melt extrusion Technique" SharadchandraDagaduJaveer, Purnima D. Amin	Asian Journal of Pharmaceutical Sciences	8 (2)	119-124	1.29
"Carbamazepine Co-crystals by Solvent Evaporation technique: Formulation and Characterization" Harita Desai, Purnima D Amin	American Journal of Pharm Tech Research	4(2)	479-493	0.98
"Enhanced solubility and dissolutionof simvastatin by HPMC-based soliddispersions prepared by hot melt extrusion and spray-drying method." Sharadchandra D. Javeer, Rahul K.Patole& Purnima D. Amin*	Journal of Pharmaceutical Investigation	43 (4)	471-486	

SUBJECT TAUGHT :

Lectures: Pharmaceutics, Pharmaceutical Technology, Dispensing Pharmacy, Hospital Pharmacy, Advanced Pharmaceutics

RESEARCH STUDENTS :

Ph.D (Tech.)-10,
M. Pharm- 01,
M. Tech- 01

RESEARCH PUBLICATIONS:

International- 16

SPONSORED PROJECTS:

Government- 01,
Private- 06

PROFESSIONAL ACTIVITIES:

- Life Member, Indian Pharmaceutical Association, Maharashtra State Branch.
- Life Member, I.C.T. Alumni Association
- Member, Controlled Release Society, Indian Local Chapter
- Life member APTI

SPECIAL AWARDS/ HONOURS:

- Fellow of Maharashtra Academy of Science.

DR. GANESH U. CHATURBHUJ

B.Pharm, M.Pharm. Sc., Ph.D (Tech.), Post. Doc.
Assistant Professor

GENERAL RESEARCH INTEREST AND EXPERTISE:

Medicinal chemistry, Process chemistry, Impurity profiling.

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING:

UGC Raman Fellowship: for Post Doc. from Northeastern University, Boston, USA.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

Life member of Indian Society of Chemists &biologists,Medicinal Chemistry Division, CDRI, Lucknow.
Life Member, DCT Alumni Association
Life Member, Association of Pharmacy Teachers of India

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 4

AWARDS/HONORS : 1

- National - NA
- International -UGC

RAMAN FELLOWSHIP FOR POST-DOCTORAL FELLOWSHIP

H-INDEX : 1

CITATIONS : 7

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :

Medicinal chemistry:

Our research group is involved in three major fields of medicinal chemistry for the development of new chemical entities for treating type-2 diabetes mellitus, cancer and inflammation/pain; herein we are using currently trending and updated computer aided drug design software for high throughput screening in search of novel scaffold; which includes site mapping, homology modeling, 2D/3D-QSAR study, pharmacophore development and molecular docking. Best predictive candidates are chosen for the synthesis using advanced synthetic methodologies. Biological evaluation of series of synthesized molecules performed using in-vitro and in-vivo models for their corresponding activities.

Process chemistry of drugs and drug intermediates:

Our research team involved in the development of novel synthetic routes of various active pharmaceutical ingredients and their intermediates using

various industrially applicable and beneficial parameters; majorly safer/less hazardous chemicals, cost and labor efficient, environment friendly, green and reproducible, among other considerations.

We are working for scale up of pharmaceutically important reactions from milligram to kilogram scale with kinetic study using pilot size vessels with the intention of maintaining similar characteristics to industry reactors.

Quality assurance of active pharmaceutical ingredients: Our research team is involved in synthesis, purification, characterization of impurity standards, Metabolites and degradation products of API's. We are also involved in the analytical method development and method validation of various drugs / API's.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Miniyar P.B.; Mahajan A.A.; Mokale S.N.; Shah M.U.; Kumar A.S.; Chaturbhuj G.U.	Arabian Journal of Chemistry 2013	-	1-5	2.684
Chaturbhuj G.U.; Akamanchi K.G.,	Tetrahedron Letters 2011	52	4950–4953	2.391

SPECIFIC RESEARCH INTERESTS :

Medicinal chemistry of anti-inflammatory agents, anti-cancer agents, anti-diabetic agents. Process chemistry of drug intermediates. Impurity profiling of pharmaceutical drugs.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Tech.) - 4
M. Pharm 1

RESEARCH PUBLICATIONS:

International- 1
Peer-reviewed - 1

SPONSORED PROJECTS :

Government- 2
Private- 1

SPECIAL AWARDS/ HONOURS / ACCOLADES :

UGC Raman Fellowship-for Post Doctoral Research from Northeastern University, Boston, USA.

PROFESSOR MARIAM S. DEGANI

B.Pharm, M.Pharm, PhD (Tech)
Professor in Pharmaceutical Chemistry

RESEARCH INTEREST AND EXPERTISE :

Drug design including ligand, structure and fragment based techniques. Synthesis of focused libraries of potential bioactive molecules for infectious and Alzheimer's diseases, based on rational drug design, using modern techniques including parallel synthesis and microwave assisted synthesis. Exploration of natural products as therapeutic leads. Fluorine chemistry, process development of drug and drug intermediates, green chemistry using ionic liquids and newer catalytic system development.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Life member of Indian Pharmaceutical Association.

- Fellow of Maharashtra Academy of Sciences
- Life member of Indian Women Scientists Association (AWSA)
- Member of Third World Organization of Women's Association in Science.
- Life member of APTI.
- Life member UDCT alumni association.

PUBLICATIONS (PEER REVIEWED) SO FAR : 43

PATENTS : 02

CONFERENCE PROCEEDINGS/PAPERS : 59

SEMINARS/LECTURES/ ORATIONS DELIVERED : 19

PH.D.S AWARDED AS SINGLE/ CO-GUIDE : 11

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 41

AWARDS/HONORS

- National - 1

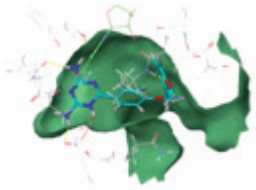
H-INDEX : 10

CITATIONS : 307

HIGHLIGHTS OF RESEARCH CARRIED OUT:

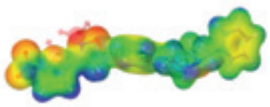
Drug discovery chemistry

- **Rational drug design** including computer assisted design of potential anti-infective and other agents. (Techniques used include Homology modeling, molecular Docking, Pharmacophore mapping, 3D QSAR, Molecular dynamics, stereo electronic feature analysis.

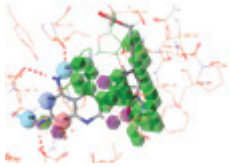


Molecular Docking

Pharmacophore development



DFT calculations



QSAR

- **Synthesis of small focused, compound libraries** using classical and novel reactions and catalysts, multi-component reactions for hit and lead generation and optimization and their in vitro evaluation including enzyme based and whole cell based activity and toxicity.
- Our library of **synthetic molecules** (approx. 500) is being screened by collaborators both in India and abroad for various biological activities including anti-infective (Tuberculosis, MAC and other opportunistic infections, Filaria), some CNS (Alzheimer's disease) and cancer targets.
- Exploration of **plant based products** for biological activity including anticancer, anti-infective and cytoprotective activities has recently been initiated in our laboratory.

Process chemistry research

- **Fluorine chemistry:** This includes design of Novel Fluorinating agents which are economic, safe, stable and easy to handle, development of Fluorination methods for Selective fluorination and catalysis and synthesis of 18F labeled ligands for PET scanning
- **Use of Ionic Liquids (ILs) in synthesis and separation technologies:** This includes design of ILs using computational approach and synthesis of library of tailored ILs. The applications include extraction of natural products, as catalysts & solvents in synthesis and for CO2 capture in industrial processes.
- **Development of innovative processes for pharmaceuticals** including drugs, intermediates and metabolites, using techniques such as Microwave assisted organic synthesis, continuous reactions (Flow chemistry), sonochemistry, parallel synthesis, newer catalysts and biocatalytic reactions.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Rational drug design based synthesis of novel arylquinolines as anti-tuberculosis agents Puneet P. Jain, Mariam S. Degani*, Archana Raju, Muktikanta Ray, M. G. R. Rajan	Bioorganic and Medicinal Chemistry Letters (2013	23(22)	6097-6105	2.33
Mechanistic insights into palladium leaching in novel Pd/C-catalyzed boron-heck reaction of arylboronic acid Dighe, M.G., Lonkar, S.L., Degani, M.S.	Synlett (2013)	24 (3)	347-350	2.655
Novel molecular hybrids of cinnamic acids and guanylhydrazones as potential antitubercular agents Bairwa, R., Kakwani, M., Tawari, N.R., Lalchandani, J., Ray, M.K., Rajan, M.G.R., Degani, M.S	Bioorganic and Medicinal Chemistry Letters (2010)	20(5)	1623-1625	2.33
Pharmacophore mapping and electronic feature analysisfor a series of nitroaromatic compounds with antitubercular activity Tawari, N.R., Degani, M.S	Journal of Computational Chemistry (2010)	31(4)	739-751	3.835
Synthesis and biological evaluation of biguanide and dihydrotriazine derivatives as potential inhibitors of dihydrofolatereductase of opportunistic microorganisms Bag, S., Tawari, N.R., Degani, M.S., Queener, S.F.	Bioorganic and Medicinal Chemistry (2010)	18(9)	3187-3197	3.151
CO2 absorbing cost-effective ionic liquid for synthesis of commercially important alpha cyanoacrylic acids: A safe process for activation of cyanoacetic acid Sharma, Y.O., Degani, M.S.	Green Chemistry (2009)	11(4)	526-530	6.828
Pharmacophore mapping of a series of pyrrolopyrimidines, indolopyrimidines and their congeners as multi drug resistance-associated protein (MRP1) modulators Tawari, N.R., Bag, S., Degani, M.S.	Journal of Molecular Modeling (2008)	14 (10)	911-921	1.984
Green and mild protocol for hetero-Michael addition of sulfur and nitrogen nucleophiles in ionic liquid Sharma,Y.O.,Degani, M.S	Journal of Molecular Catalysis A: Chemical (2007)	277(1-2)	215-220	3.187

Preparative process for ether derivative of artemisinin Degani, Mariam S.; Narkhede, Sachin S.; Pedgaonkar, Yogesh Y.; Chavan, Sunil S.	PCT Int. Appl. (2008)	WO 2008087666 A1 20080724		
Comparative in silico-in vivo evaluation of ASGP-R ligands for hepatic targeting of curcumingantrez nanoparticles D'Souza, A.A., Jain, P., Galdhar, C.N., Samad, A., Degani, M.S, Devarajan P.V	AAPS Journal (2013)	15(3)	696-706	4.386

SUBJECT TAUGHT:
Pharmaceutical and Medicinal Chemistry IV and V, Advanced Medicinal Chemistry I and II, Drug discovery process and Drug design

RESEARCH STUDENTS:
Ph.D (Tech.)-12,
Ph. D. (Sc.)-03,
M. Pharm- 02,
M. Tech- 01
Undergraduate Summer Fellows: 01

RESEARCH PUBLICATIONS:
International- 06, Conference proceeding-03,

PATENTS:
Indian- 03 (provisional)

SPONSORED PROJECTS:
Government- 03,
Private- 01

SPECIAL AWARDS/ HONOURS

- Best Teacher Award, 2013

PROFESSOR (MRS.) ARCHANA R. JUVEKAR

B.Pharm, M.Pharm, PhD (Tech)
Professor in Pharmacology and Physiology

RESEARCH INTEREST AND EXPERTISE :

- Pre-clinical Pharmaco-dynamic activity evaluation in diseases related to
  - Inflammation
  - Immunomodulation
  - Hepatoprotective
  - Central Nervous System
  - Cardio Vascular System diseases
  - Diabetic and its complications
  - Cancer
  - Toxicology - Acute, Sub-acute, Chronic Toxicity studies

FELLOWSHIPS / MEMBERSHIPS OF PROFESSIONAL BODIES:

- Life member of Indian Pharmaceutical Association
- Life member of Indian Pharmacological Society
- Member of Gesellschaft für Arzneipflanzenforschung (GA) Society for Medicinal Plant Research, Germany
- Member of the Editorial Board of Indian Practitioner.
- Member of Radiopharmaceuticals committee (RPC) under Board of Radiation and Isotope Technology
- Member of Research and Recognition Committee in the faculty of admission of Ph. D. of North Maharashtra University, Jalgaon.

PUBLICATIONS (PEER REVIEWED) SO FAR : 83

CONFERENCE PROCEEDINGS/PAPERS : 21

SEMINARS/LECTURES/ ORATIONS DELIVERED : 29

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE :12

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 50

AWARDS/HONORS

- National - 06

H-INDEX : 07

CITATIONS : 320

HIGHLIGHTS OF RESEARCH WORK DONE AND IT'S IMPARTING :

Study of cardiovascular and allied activities of indigenous plants, neuropharmacological evaluation of indigenous plants, pure drug and phytoconstituents, study of antioxidant and anti-stress activity of indigenous plants, study of hepatoprotective activity of indigenous plants, immunopharmacological evaluation of indigenous plants, antidiabetic and its complication evaluation of indigenous plants, anti-inflammatory and cytotoxic activity indigenous plants, pharmacokinetic study.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Hole, R.C., Juvekar, A.R., Roja, G., Eapen, S., D'Souza, S.F. Positive inotropic effect of the leaf extracts of parent and tissue culture plants of Coleus amboinicus on an isolated perfused frog heart preparation	Food Chemistry	114 (1)	pp. 139-141	3.334
Deepawali Thanekar, Jayesh Dhodi, Archana Juvekar. Evaluation of in vitro cytotoxic activity of petroleum ether, methanol and aqueous extracts of indian bay leaf, Cinnamomum tamala (buch.-ham.) T. nees and eberm. onthe cancer cells.	World Journal of Pharmacy and Pharmaceutical Sciences,	vol. 3, issue 1	pp.519-533	2.786
Deshpande P. D, Khatri DK, Juvekar AR. Analysis of Bioactive componants from chloroform and hydroalcoholic extracts of indigofera cardifolia by GC MS	World Journal of Pharmacy and Pharmaceutical Sciences	Volume 2, Issue 5	3320-3328	2.786
Deshpande P.D, Khatri DK, Juvekar AR. GC-MS analysis of phytocomponants from petroleum ether extracted oil of indigofera cordifolia seeds	World Journal of Pharmacy and Pharmaceutical Sciences	volume 2, issue 5	2831-2838	2.786
Roja, G., Bhangale, A.S., Juvekar, A.R., Eapen, S., D'Souza, S.F. Enhanced production of the polysaccharide arabinogalactan using immobilized cultures of Tinospora cordifolia by elicitation and in situ adsorption	Biotechnology Progress	21 (6)	pp. 1688-1691	1.853
Kothavade, P.S., Nagmoti, D.M., Bulani, V.D., Juvekar, A.R. Arzanol, a Potent mPGES-1 Inhibitor: Novel Anti-Inflammatory Agent	The Scientific World Journal	Volume 2013	pp. 1-9	1.73

Sakat, S.S., Juvekar, A.R., Gambhire, M.N. In-vitro antioxidant and anti-inflammatory activity of methanol extract of Oxalis corniculata linn	International Journal of Pharmacy and Pharmaceutical Sciences	Vol 2, Issue 1	pp. 146-155	1.59
Shah, A.S., Juvekar, A.R In vitro and in vivo immunostimulatory activity of Woodfordia fruticosa flowers on non-specific immunity	Pharmaceutical Biology	Vol. 48 (9)	PP.1066-1072	1.206
Dnyaneshwar Madhukar Nagmoti, Archana Ramesh Juvekar In vitro inhibitory effects of Pithecellobium dulce (Roxb.) Benth. seeds on intestinal α-glucosidase and pancreatic α-amylase	Journal of Biochemical Technology	4(3)	615-621	0.9032

SUBJECT TAUGHT:

Topic in pharmacology, Models for Drug Delivery System, Pharmacology Toxicology and Therapeutics, Pharmacology, Clinical Pharmacy.

RESEARCH INTERESTS:

- Pre-clinical Pharmacodynamic activity evaluation in diseases related to
  - Inflammation
  - Immunomodulation
  - Hepatoprotective
  - Central Nervous System
  - Cardio Vascular System diseases
  - Diabetic and its complication
  - Cancer
- Toxicology - Acute, Sub-acute, Chronic Toxicity studies

RESEARCH STUDENTS:

Ph.D (Tech.)-11,
Ph.D. (Sci.)- 01,
M. Pharm- 01,
M. Tech- 01

RESEARCH PUBLICATIONS:

International- 10,
Conference proceeding- 21,

PROFESSIONAL ACTIVITIES:

- Life member of Indian Pharmaceutical Association
- Life member of Indian Pharmacological Society
- Member of Gesellschaft für Arzneipflanzenforschung (GA) Society for Medicinal Plant Research, Germany
- Member of the Editorial Board of Indian Practitioner.
- Member of Radiopharmaceuticals committee (RPC) under Board of Radiation and Isotope Technology
- Member of Research and Recognition Committee in the faculty of admission of Ph. D.

DR. PRAJAKTA DANDEKAR JAIN

Ph. D. (Tech.) in Bioprocess Technology

Dr. John Kapoor Assistant Professor in Pharmaceutical Technology

RESEARCH INTEREST AND EXPERTISE :

Polymeric nanocarriers for drug and gene delivery, development of pre-clinical cellular models for evaluating biopharmaceuticals, 3D cell models and tissue engineering

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING (IF ANY):

Young Associate of Maharashtra Academy of Sciences, Fellow of European Respiratory Society

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Member, Standing Evaluation Committee for the review of proposals, European Respiratory Society, Switzerland
- Member, European Respiratory Society, Switzerland
- Member, Volunteer Recruitment Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA
- Member, Outreach Committee, American College of Clinical Pharmacology, USA
- Member, Controlled Release Society- USA and Indian Chapter
- Member, Indian Pharmaceutical Association (IPA)
- Member, UDCT Alumni Association

PUBLICATIONS (PEER REVIEWED) SO FAR : 17

PATENTS/TRADEMARKS : 01

CONFERENCE PROCEEDINGS/PAPERS : 31

SEMINARS/LECTURES/ ORATIONS DELIVERED : 02

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 01

AWARDS/HONORS

- National - 08
- International -05

H-INDEX : 07

CITATIONS :185

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :

A transitional research through the fields of Pharmaceutical Sciences to Bioprocess Technology to Molecular biology over the past eight years has enabled me to realize that there are no 'real' boundaries between various areas of science but that it is a subtle convergence of diverse principles ultimately aimed towards betterment of human lives. Being a pharmacist by profession, I have always attempted towards converging the various principles I learnt towards developing more effective drug delivery systems.

During the initial years of my research I have worked with synthesis of bio-surfactants from materials of indigenous origin for exploiting their application in pharmaceutical formulations. I have also had sufficient experience in formulation and characterization of microemulsion based, colloidal drug delivery systems and their toxicity evaluations in animal models.

The chief area of my expertise lies in design of polymeric nanoparticles, their physico-chemical characterization and efficacy evaluation in cell lines and animal models. I have had sufficient experience in design of therapeutic nanoparticles using a wide range of polymers including pH-sensitive polymethacrylate polymers, polylactic-polyglycolic acid

copolymers, hydrophobic starch based polymers and cellulose based polymers forming soft-shelled systems (hydrogel nanoparticles). The work undertaken afforded me ample opportunity to get acquainted with and know the intricacies of the methods involved in fabrication of polymeric nanoparticles along with good insight into various aspects of targeting and formulation of nanoparticles based on charged interactions. These various nanoparticulate systems were used for encapsulation several hydrophobic, natural or synthetic, anti-cancer agents, anti-inflammatory agents and anti-malarial actives. Working with several characterization methods including their in vivo efficacy and toxicity studies as well as their cellular evaluations in terms of efficacy, toxicity and understanding the molecular mechanisms underlying the effectiveness of these systems, are some of my other areas of forte. I have conducted research providing insights into the routes of cell uptake, intracellular trafficking and fate of these nanomaterials in various diverse cell types like epithelial cells, macrophage cells, carcinoma cell lines and normal fibroblast cells. Some of these systems were found to give superior action when compared with un-encapsulated drug disease models in animals.

Apart from solid shelled nanoparticles I have also gained sufficient experience in developing soft nanoparticles based on charge interactions between commercial and synthesized cationic polymers and anionic nucleotides to exploit gene-silencing efficacy of the latter. While conducting this research, principles of molecular biology were employed for developing systems capable of eradicating infectious lung diseases at molecular level. These nanosystems were investigated at cellular level for their ability to traverse cellular barriers to gene delivery, like inefficient uptake, endosomal degradation and release of associated nucleotide, and were observed to successfully knockdown gene of therapeutic interest.

Currently my research group is working on developing nanocarriers of biopolymers for delivery of biopharmaceuticals, for treating lung infections and other pulmonary diseases. To recapitulate, my research expertise lies in design of polymeric nanoparticulate carriers to enhance the efficacy of natural, synthetic drugs and nucleotide based therapeutic agents and exploring their application in infectious diseases.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Dandekar P, Jain R, Keil M, Loretz B, Mujis L, Schneider M, Auerbachd D, Jung G, Lehr CM, Wenz G	Journal of Controlled Release,	164	387-393	8.078
Dandekar P, Jain R, Stauner T, Loretz B, Koch M, Wenz G, Lehr CM	Macromolecular Bioscience	12	184-194	3.742
Jain R, Dandekar P, Loretz B, Melero A, Stauner T, Wenz G, Koch M, Lehr CM	International Journal of Pharmaceutics	420	147-155	3.991
Dandekar P, Jain R, Patil S, Dhumal R, Tiwari D, Sharma S, Vanage G, Patravale V	Journal of Pharmaceutical Sciences	99	4992-5010	3.13
Dandekar P, Jain R, Dhumal R, Tiwari D, Vanage G, Patravale V	Food and Chemical Toxicology	48	2073-2089	3.215

Jain R, Nabar S, Dandekar P, Patravale V	Pharmaceutical Research	27	655-664	4.742
Jain R, Nabar S, Dandekar P, Hassan P, Aswal V, Talmon Y, Shet T, Patravale V	Nanomedicine	5	575-587	7.647
Dandekar P, Jain R, Kumar C, Subramanian S, Samuel G, Venkatesh M, Patravale V	Journal of Biomedical Nanotechnology	5	445-455	5.256
Koli U, Krishnan RA, Pofali P, Jain R, Dandekar P	Journal of Biomedical Nanotechnology	10	1953-1997	5.256
Dyawanapelly S, Ghodke S, Vishwanathan R, Dandekar P, Jain R	Journal of Biomedical Nanotechnology	10	1998-2037	5.256

SUBJECT TAUGHT:

Pharmaceutical Biotechnology (B. Pharm. &B.Tech.), Drug Store Management (B. Pharm.), Green Biotechnology (M.Tech.)

RESEARCH STUDENTS:

RA-02, Ph.D (Tech.)-01, Ph. D. (Sci.)- 01, M. Tech- 03

UNDERGRADUATE SUMMER FELLOWS: 06

RESEARCH PUBLICATIONS:

International- 03,
Conference proceeding - 06,
Book chapters- 03

SPONSORED PROJECTS:

Government- 06

PROFESSIONAL ACTIVITIES:

- Member, Standing Evaluation Committee for the review of proposals, European Respiratory Society, Switzerland
- Member, European Respiratory Society, Switzerland
- Member, Volunteer Recruitment Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA
- Member, Outreach Committee, American College of Clinical Pharmacology, USA
- Member, Controlled Release Society- USA and Indian Chapter
- Member, Indian Pharmaceutical Association (IPA)

SPECIAL AWARDS/ HONOURS:

N. R. Kamath Book Award for book entitled 'Nanoparticulate Drug Delivery: Perspectives on the Transition from Laboratory to Market', (Woodhead Publishing Series in Biomedicine), Woodhead Publishing, 2014

PROFESSOR K. S. LADDHA

D. Pharm., B.Pharm, Sci., M.Pharm. Sci., PhD (Tech)

Professor of Pharmacognosy

RESEARCH INTEREST AND EXPERTISE :

- Technology for extraction and isolation of phyto-constituents
- Standardization and stability of herbal drug products
- Technological development for the extraction of herbal drugs
- Utilization of herbal constituents as an intermediate for synthesis of useful compounds
- Effect of plant growth regulator on medicinal plants.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Life Member, Indian Pharmaceutical Association
- Life Member, Indian Society of Pharmacognosy.

PUBLICATIONS (PEER REVIEWED) SO FAR : 72

PATENTS : 01

CONFERENCE PROCEEDINGS/PAPERS : 32

SEMINARS/LECTURES/ ORATIONS DELIVERED : 20

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 09

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 52

AWARDS/HONORS

- National - 4

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :

- Development of Ayurvedic / Herbal preparations.
- Standardization of medicinal herbs.
- Utilization of herbal constituents as an intermediate for synthesis of useful Compounds.
- Effect of Phytohormones on the growth of medicinal plants.

Extraction of phytoconstituents and standardization of plant extracts using these phytoconstituents as marker compounds

Lawsone, b - Amyrin palmitate, Ursolic acid, Catechin, Ellagic acid, Gallic Acid, Tannic acid, Chebulinic acid, Bhilawanol, Curcuminoids, Piperine, Barbaloin, Aloes polysaccharide, genistin, 20-Hydroxy ecdysone, andrographolide, safflower yellow pigments, marsupsine, gymnema genins, forskolin, conessine, vasicine, punicalagin, reserpine.

Enzymatic pretreatment to facilitate the release of phytoconstituents

- Curcuminoids from Curcuma longa (Turmeric)
- Piperine from Piper nigrum (Black pepper)
- Ephedrine from Ephedra scinensis
- Anthraquinone glycosides from Cassia angustifolia and Rheum emodi

Studies on tannins

- Extraction of Catechin from Uncaria gambier and conversion to Phloro-glucinol
- Extraction of Tannic acid, Ellagic acid and Chebulinic acid from Terminalia chebula and Pistacia integerrima
- Extraction of Ellagic acid and Punicalagin from Punica granatum

Studies on Mucilage

Aloe vera, Blepharis edulis, Onosma bracteatum

Studies on Herbal formulations

Formulation and standar-dization of Gulkand, Aloe vera Gel.

Studies on Pigments

Carthamus tinctorius (Safflower)

Studies on Ecdysteroids

Studies on Saponins and Sapogenins

Chlorophytum borivilianum (Safed Musli)

Studies on Ketosteroids

Cissus quadrangularis (Hadjod)

Studies on Natural Gums

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Shinde PB, Katekhaye SD, Mulik MB, Laddha KS	Journal of Food Science and Technology	DOI 10.1007/s 13197-014-1270-5.		1.1
Agrawal P, Laddha K, Tiwari A	Natural Product Research	DOI 10.1080/ 14756419. 2014.896009		1
Barve Kalyani and Laddha K. S.	Journal of Planar Chromatography	Vol 22	157-161	0.9
Nabar MP, Mhaske PN, Pimpalgaonkar PB, Laddha KS	Indian Journal of Traditional Knowledge	12(2)	277-280	0.49
Akhade M.S , Agrawal P.A. , Laddha K.S	Indian Journal of Pharmaceutical Sciences	75(4)	476-482	0.34
Ferreira GM, Laddha KS.	Indian Journal of Pharmaceutical Sciences	75(2)	246-250	0.34
Ghosh, D., Tandon, B. and Laddha, K. S	Journal of Entomological Research	28(3)	211-223	0.2

SUBJECT TAUGHT:

Pharmacognosy, Advanced Pharmacognosy, Natural products for fragrance and flavours

RESEARCH STUDENTS:

Ph.D (Tech.)- 13,
Ph. (Sci.)- 1
M. Pharm-06,
M. Tech-02

RESEARCH PUBLICATIONS:

National - 07,
International - 02,
Peer-reviewed - 09,
Conference proceeding - 03,
Book - 01

PROFESSIONAL ACTIVITIES:

- Life Member, Indian Pharmaceutical Association
- Life Member, Indian Society of Pharmacognosy.

PROFESSOR (MRS.) VANDANA B. PATRAVALE

B.Pharm, M.Pharm, PhD (Tech)
Professor of Pharmaceutics

RESEARCH INTEREST AND EXPERTISE :

Expertise in area of novel nanocarriers for cosmeceuticals and other pertinent areas of national relevance with major emphasis on malaria, cancer and neurodegenerative disorders.

SPECIFIC RESEARCH INTEREST INCLUDE :

- Nanotechnology based drug and gene delivery systems (lipid, polymeric, micellar nanocarriers, nanosuspesions, micro/ nanoemulsions and self-micro/nano emulsifying systems) for bioavailability enhancement and/or targeting.
- Vaccines and adjuvants
- Nanodiagnostics
- Tissue engineering and scaffolds
- Medical devices viz. coronary stents, intrauterine devices etc.
- Novel carriers for solubilization and formulation development thereof
- New polymer and lipid conjugates, surfactant synthesis
- Exploring potential of indigenous excipients
- Modified release dosage forms for all routes of administration

FELLOWSHIPS OF NATIONAL AND INTERNATIONAL ACADEMIES OF SCIENCE OR ENGINEERING

- Life Member, Maharashtra Academy of science, India
- Life Member, American Association of Pharmaceutical Scientists, USA
- Life Member, Association of Pharmaceutical Teachers of India
- Life Member, Indian Cosmetics Technologist Association
- Member, Indian society for Surface Science and Technology
- Life Member, IPA, Maharashtra State Branch
- Life Member, Indian Women Scientists Association
- Life Member, U.D.C.T. Alumni Association

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Member Controlled Release Society Inc., USA
- Member, Controlled Release Society, Indian Local Chapter

PUBLICATIONS (PEER REVIEWED) SO FAR : 98

Research articles -
International: 58, National :11
Review articles-
International : 27 National :2

PATENTS :

Granted- 3, Applied- 25

CONFERENCE PROCEEDINGS/PAPERS : 236

SEMINARS/LECTURES/ ORATIONS DELIVERED : 73

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 15

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 51

AWARDS/HONORS: 56

- National: 14, International: 2
- Awards for conference presentation – International : 32, National : 8

H-INDEX : 23

CITATIONS: 2202

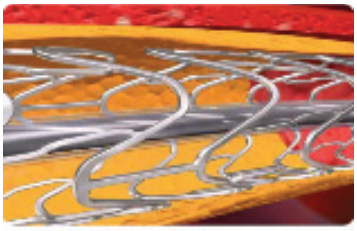
HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :

Medical devices

Drug eluting Coronary stents:

A platform technology based on biodegradable polymers for coronary stents was successfully developed and transferred to industry. Such 3 coronary stents are currently being marketed in India and abroad under the trade nameInfinniumTM, SupralimusTM , Supralimus core TM. Other stents under development: S-Link, Supraflex etc.

Intrauterine contraceptive device:



Designed to release 20μg of API per day over a period of 5 years

Anti-parasites and anti-infective therapeutics

Nanodelivery approaches are successfully explored for potential dose reduction of antimalarial drugs and an Indian patent has been granted for the same

Targeted drug delivery approaches

- Nanostructured lipid carriers of anticancer drugs and gene delivery modules for lymphatic system targeted breast cancer therapeutics via nuclear co-localization.
- Micellarnanocarriers are successfully developed for nose to Brain targeted delivery
- Blank Lipid Nanocarriers developed for antimalarial studies showed selective uptake by malaria infected RBCs and thus are being explored for their uptake pathways.

Efficacy enhanced formulation approaches

- Bioenhancement Poorly bioavailable actives from natural as well as synthetic origin using plethora of technologies viz. Hot melt extrusion, high pressure homogenization, supercritical fluid extraction, nanoformulation approaches

[Commercial success: Products developed with CadilaPharmaceuticsl Ltd: Cadisome (Amphotericin B liposomes), Zillion (Taste masked ondansetron tablets), O-lit (Mouth dissolving tablets), Immuvac (Immunomodulator), Ranx (Ranolazine tablets), ACELOX (Ranitidine Oral Suspension and Syrup), Paclitaxel/tacrolimus soft gelatin capsules, Curcumin soft gelatin capsules, Zolpidem,nebivilol injection]

- Modified release dosage forms for all routes of administration

Vaccines and adjuvants

- Blank Lipid Nanocarriers developed for antimalarial studies boosted antibody levels for the antigens tested thus are being explored as vaccine adjuvants

Tissue Engineering and Scaffolds:

- Engineering of polysaccharide based tissue scaffolds using cost effectives techniques for wound healing
- Exploring scaffold of water soluble derivative of chitosan, chitosan complexes for wound healing

Diagnostics

Diagnostic kit development for infectious diseases like malaria, Brucellosis

New polymer and lipid conjugates, surfactant synthesis

- Cationic lipids for gene delivery
- Lipid conjugates and novel surfactant synthesis for targeted drug delivery across blood brain barrier

Exploring potential of indigenous excipients

- Various polymers of natural origin are being explored for their pharmaceutical and cosmeceutical application viz. tamarind seed polysaccharides, mando kernel fat etc.
- Extraction of actives from natural sources viz. Hippophaerhamnoides (seed and berry oil), Coleus forskohlii, Anogeissuslatifolia, Punicagranatum, Myristicafragrans, Brassica Junceaand applications thereof

Other transferred technologies and innovations

- Self microemulsifying-peroral, dispersible, mouth dissolve, sublingual, buccal tablets with adequate hardness yet faster dissolution rate for BCS class II/class IV actives. The research yielded 2 world patents.
- Novel, stable microemulsion based formulations containing two to five drugs in combination.
- Skin moisturizers, Anti-aging formulations, Herbal skin repair creams, Thixotropic dispersion paste for nail lacquers, Metal based nanosized hair colorant pigments.

TEN REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
S. Jain, H. Basu, P. Prabhu, U. Soni, M. Joshi, D. Mathur, V. Patravale, S. Pathak, S. Sharma. Parasite Impairment by Targeting Plasmodium-Infected RBCs Using Glyceryl-dilaurate Nanostructured Lipid Carriers.	Biomaterials (2014)	Accepted		8.496
H. Shete, N. Selkar, G. Vanage, V. Patravale. Tamoxifen Nanostructured Lipid Carriers: Enhanced in vivo Antitumor Efficacy with Reduced Adverse Drug Effects. Int. J. Pharm.	International Journal of Pharmaceutics (2014)	468(1-2)	1-14	3.991
D. Kalaria, P. Patel, V. Merino, V. Patravale, Y. Kalia. Controlled iontophoretic delivery of pramipexole: Electrotransport kinetics in vitro and in vivo.	European journal of Pharmaceutics and Biopharmaceutics (2014)	[Epub ahead of print] doi: 10.1016/j.ejpb.2014.02.002		4.689
V. Borhade, S. Pathak, S. Sharma, V. Patravale. Formulation and characterization of atovaquone-nanosuspension for improved oral delivery in the treatment of malaria.	Nanomedicine (2013)	[Epub ahead of print] doi: 10.2217/nnm.13.61		7.647

S. Patil, S. Suryavanshi, S. Pathak, S. Sharma, V. Patravale; Evaluation of novel lipid based formulation of β-artemether and lumefantrine in murine malaria model; Int. J. Pharm.;	International Journal of Pharmaceutics (2013)	455(1-2)	229-234	3.991
H. Shete, V. Patravale, Long chain lipid based Tamoxifen NLC. Part I: Preformulation studies, formulation development and physicochemical characterization.	International Journal of Pharmaceutics (2013)	454(1)	573-583	3.991
H. Shete, S. Chatterjee, A. De, V. Patravale, Long chain lipid based Tamoxifen NLC. Part II: Pharmacokinetic, biodistribution and in vitro anticancer efficacy studies.	International Journal of Pharmaceutics (2013)	454(1)	584-592	3.991
V. Borhade, S. Sharma, S. Pathak and V. Patravale; Clotrimazolenanoemulsion for malaria chemotherapy. Part I: Preformulation studies, formulation design and physiochemical evaluation; Int. J. Pharm;, (2012)	International Journal of Pharmaceutics (2012)	431 (1-2)	138-148	3.991
V. Borhade, S. Sharma, S. Pathak and V. Patravale; Clotrimazolenanoemulsion for malaria chemotherapy. Part II: Stability assessment, in vivo pharmacodynamic evaluations and toxicological studies	International Journal of Pharmaceutics (2012)	431 (1-2),	149-160	3.991
L. Kagliwal, A. Pol, S. Patil, R. Singhal and V. Patravale, Antioxidant-Rich Extract from Dehydrated Seabuckthorn Berries by Supercritical Carbon Dioxide Extraction.	Food and Bioprocess Technology (2011)	5 (7)	2768-2776	4.115

SUBJECT TAUGHT:

Pharmaceutics, Cosmeticology, Validation and regulatory affairs, Nanoscience and technology, Drug delivery system I, Drug delivery system II, Advance pharmaceutics,Targeted drug delivery systems.

RESEARCH STUDENTS:

RA- 1,
Ph.D (Tech.)-19,
Ph.D.(Sci.)- 1,
M. Pharm-04,
M. Tech- 01,
Integrated Ph. D(Tech.)-01
Undergraduate Summer Fellows - 06

RESEARCH PUBLICATIONS:

International- 15,
Peer-reviewed- 06, Conference proceeding- 43,
Books and Book chapter - 02

PATENTS:

Indian-04

SPONSORED PROJECTS:

Government- 04,
Private- 03

PROFESSIONAL ACTIVITIES:

- Expert member, DSIR
- Fellow, Maharashtra Academy of sciences, India
- Advisor and Life Member, American Association of Pharmaceutical Scientists, USA
- Patron Member, Controlled Release Society, Indian Chapter
- Life Member, Association of Pharmaceutical Teachers of India
- Life Member, Indian Cosmetics Technologist Association
- Member, Indian society for Surface Science and Technology
- Life Member, Indian Pharmaceutical Association, Maharashtra State Branch
- Life Member, Indian Women Scientists Association

SPECIAL AWARDS/ HONOURS:

- Veneto Nanotech Prize (Winner of the second edition of the Cadini Prize) , NanotechItaly, Italy, (2013)
- Grant Awardee – 'Nanovaccine for Brucellosis using Green Technology'; Grand Challenges Explorations Grants Round 11, Bill & Melinda Gates Foundation, (2013)

DR. SADHANA SATHAYE

B.Pharm, M.Pharm, PhD. (Tech)
Associate Professor in Pharmacy

GENERAL RESEARCH INTEREST AND EXPERTISE:

- Developing phytoactives and enzymes as dietary health supplements, immunomodulators, hepatoprotectives, aphrodisiac, appetite stimulant, anti-osteoporotic, anti-tubercular, anti-diabetic, anti-convulsants, anti-parkinson's and anti-alzheimer's activity (In- Vitro and In-Vivo evaluation).
- Applications of Biotechnology to isolate biomolecules.
- Evaluation of Drug Delivery Systems and synthetic drugs using In-Vitro and In – Vivo models (Efficacy and Toxicity).
- Development of zebra-fish model for screening of CNS drugs.
- Herb-drug interactions and pharmacokinetic studies.
- Toxicity evaluation as per regulatory guidelines.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Life Member of University Department of Chemical Technology (U.D.C.T) Alumni Association
- Life Member of Indian Pharmaceutical Association (I.P.A), Maharashtra.
- Life Member of Association of Pharmaceutical Teachers of India (A.P.T.I).
- Life Member of Indian Pharmacological Society (I.P.S)
- Life Member of Indian Women Scientists' Association
- Life member of Society of Toxicology
- Member of Society of Neuroscience, Washington DC, USA
- Member independent ethics committee for conduct of clinical studies
- Member of editorial board of International Research Journal of Pharmaceutical Sciences.
- Member of editorial board of International Journal of Biological and Chemical Sciences (IJBCS).
- Member of editorial board of Journal of Pharmaceutical and Biological sciences.
- Member of editorial board of International Journal of Ayurveda and Integrated medicine.
- Member of editorial board of Pharmaceutical Biology.
- Member of editorial board of Indian Journal of Pharmacology.

PUBLICATIONS (PEER REVIEWED) SO FAR :40

CONFERENCE PROCEEDINGS/PAPERS : 15

SEMINARS/LECTURES/ ORATIONS DELIVERED : 02

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 05

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 34

H-INDEX : 6

CITATIONS : 153

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT:

- Research is focused on role of inflammation in pathogenesis of neurological/ neurodegenerative disorders like epilepsy, Parkinson's disease and Alzheimer's disease.
- Advanced glycation end (AGEs) products and related inflammation in Diabetes mellitus leading to diabetic complications is important focus as well.
- Herbal extracts, isolated phytoconstituents are studied extensively as a promising therapy of disorders as discussed above.
- The objective is to prevent the disorders or relieve the symptoms to provide good quality life to the patients.
- The studied molecules can be translated into probable therapeutics or nutraceuticals with specific activity and reduced side effects. This will have a social impact as well as important research contribution.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Gauresh Somani, Rahul Chaudhari, Jayant Sancheti, Sadhana Sathaye, Inhibition Of carbohydrate hydrolysing enzymes by methanolic extract of Couroupita guianensis Leaves	International Journal of Pharma and Bio sciences, 2012	3(4)	511 – 520	2.958

Sadhana Sathaye, Poornima Amin, Vinam Mehta, Vijay Zala, Ramesh Kulkarni, Harpreet Kaur and Roopali Redkar. Hepatoprotective effects of Murraya koenigii L against ethanol-induced liver toxicity model in experimental animals.	International Journal of Pharma and Bio sciences, 2012	3(1)	430-438	2.958
Sathaye S, Bagul Y, Gupta S, Kaur H, Redkar R. Hepatoprotective effects of aqueous leaf extract and crude isolates of Murraya koenigii against in vitro ethanol-induced hepatotoxicity model	Experimental and Toxicologic Pathology, 2011	63(6)	587-91	2.781
D. G. Kanjwani, T. P. Marathe, S. V. Chiplunkar, S. Sathaye, Evaluation of immunomodulatory activity of methanolic extract of Piper betel.	Scandinavian Journal of Immunology; 2008	67(6)	589-93	2.199
Jayant S., Shaikh M.F., Chaudhari R., Somani G., Patil S., Jain P., Sathaye S. Anticonvulsant and antiepileptogenic potential of Thymol: Effect on GABAA receptors and Na+ channels	Naunyn-Schmiedeberg's Archives of Pharmacology, 2014	387(1)	59-66	2.147
Rakesh. K., Sathaye S., Effect of Chlorophytum borivilianum on sexual behaviour and sperm counting in male rats.	Phytotherapy Research; 2008,:	22(6)	796-801	2.068
KVK Rao, T Samikkannu, KB Dakshayani, X Zhang, SS Sathaye, MA Indap, Madhavan PN Nair. Chemopreventive Potential of an Ethyl Acetate Fraction from Curcuma Longa is Associated with Upregulation of p57kip2 and Rad9 in the PC-3M Prostate Cancer Cell Line	Asian Pacific Journal of Cancer Prevention, 2012	13	1031-1038	1.271
Sonali J., Sathaye S., Anti-ulcer effect of mammalian lignan precursors from flaxseed.	Pharmaceutical Biology; 2008,	46 (5)	329-332	1.206
Rakesh. K., Sathaye S., Anti-stress and anti-oxidant effects of roots of Chlorophytum borivilianum (Santa Pau & Fernandes)..	Indian Journal of Experimental Biology; 2007	45	974-979	1.195
Jayant Sancheti, Sadhana Sathaye. Voltage gated ion channels as therapeutic target for drug discovery	Journal of Pharmaceutical and BioSciences, 2013	1(2)	76-88	0.997

SUBJECT TAUGHT:
Anatomy, Physiology, Pathophysiology, Pharmacology, Models for Drug Delivery systems, Pharmacology and Toxicology, Physiopharmacology.

RESEARCH STUDENTS:
Ph.D (Tech.) -12,
Ph.(Sci.)- 01,
M. Pharm- 04,
M. Tech- 01

UNDERGRADUATE SUMMER FELLOWS: 08

RESEARCH PUBLICATIONS:
National- 02,
International - 07,
Peer-reviewed- 09

SPONSORED PROJECTS:
Government-04, Private- 03

PROFESSIONAL ACTIVITIES:

- Expert pharmacologist at The Advertising Standards Council of India.
- Consultant, Pharmaceutical Industry in India for API selection and evaluation of drug delivery systems
- Life Member of Indian Pharmaceutical Association (I.P.A), Maharashtra.
- Life Member of Association of Pharmaceutical Teachers of India (A.P.T.I).
- Life Member of Indian Pharmacological Society (I.P.S)
- Life Member of Indian Women Scientists' Association
- Life member of Society of Toxicology
- Member of Society of Neuroscience, Washington DC, USA
- Member independent ethics committee for conduct of clinical studies

SPECIAL AWARDS/ HONOURS:

- Best Teacher Award for S.Y. B Pharm class for excellent teaching 2013-2014.

DR. V. N. TELVEKAR

B. Sc, B. Sc (Tech.); M. Sc (Tech); Ph D. (Tech.)
Assistance Professor, Boyscast Fellow

RESEARCH INTEREST AND EXPERTISE:
Novel methodology using Iodine reagents, Synthesis of anti-tuberculosis and anti-diabetic agents, computer drug design.

PUBLICATIONS (PEER REVIEWED) SO FAR : 50

MASTERS AWARDED AS SINGLE/ CO-GUIDE : 30

H-INDEX : 10

CITATIONS : 281

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :

Invention of New Reactions and Reaction System:
The principles of green chemistry also motivate me to create new synthetic methods. Here I have been focusing on the employment of novel application of exiting reagents as well as novel reagent system developed for chemical transformations.

Design and Synthesis of Novel Bioactive Molecules using Computer Aided Drug Design:
I am exploring my knowledge in the area of medicinal chemistry. Currently I am working on novel bioactive molecules which are designed by technique like pharmacophore and structure based drug design using various software. These designed molecules are synthesized and evaluated.

Total Synthesis of Bioactive Natural Products:

The unifying thesis behind all of our methodological and mechanistic studies is that the chemistry to emerge from such studies should be applicable to real synthetic problems. I view target synthesis as the best proof of this concept.

Process Development:

In our globally-linked economy, process development capabilities are the basis for successful competition. Successful process development requires fundamentally improved approaches to reducing waste, innovation, scaleup, technology transfer and optimization of manu-facturing processes. My interest is to accomplishment of these objectives.

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Title	Year	Page	I. F
Kavitkumar N. Patel, Vikas N. Telvekar*	*European J of Medicinal Chemistry*	Design, synthesis and antitubercular evaluation of novel series of N-[4-(piperazin-1-yl) phenyl]cinnamide derivatives	2014	43	3.85
Nikhil C. Jadhav, Prashant B. Jagadhane, Hemlata V. Patile, Vikas N. Telvekar*	*Tetrahedron Letters*	Three-component direct system of substituted pyrroles from easily accessible chemical moieties using hypervalent iodine reagent	2013	3019	2.39
Vinod K. Bairwa, Vikas N. Telvekar*	*Combinatorial Chemistry & High throughput Screening*	Novel 2-(2-Benzylideneh ydrazinyl)Benzo[d]thiazole as Potential Antitubercular Agents	2013	244	2.53
Vikas N. Telvekar*, Harshal M. Bachhav, Vinod Kumar Bairwa,	*Synlett*	Novel 2-(2-Benzylide nehyd razinyl)Benzo[d]thiazole as Potential Antituber-cular Agents	2012	2219	2.78
Vikas N. Telvekar*, Anirudh Bellubi, Vinod Kumar Bairwa	*Bioorganic & Medicinal Chemistry Letters*	Novel N'-benzylidene benzofuran-3-carbohydrazide derivatives as anti-tubercular and anti-fungal agents	2012	2343	2.42
Vikas N. Telvekar*, Vinod Kumar Bairwa, Kalpana Satardekar, Anirudh Bellubi	*Bioorganic & Medicinal Chemistry Letters*	Novel 2-(2-(4-aryloxybenz-ylidene) hydrazinyl)benzothiazole derivatives as anti-tubercular agents	2012	659	2.42
Vikas N. Telvekar*, Kavit N. Patel	*Chemical Biology and Drug Design*	Pharmacophore Development and Docking Studies of the HIV-1 Integrase Inhibitors Derived from Nmethylpyrimidones, Dihydroxypyrimidines and Bicyclic pyrimidinones	2011	150	2.47

Harshal M. Bachhav, Saket B. Bhagat, Vikas N. Telvekar*	*Tetrahedron Letters*	Efficient protocol for the synthesis of Quinoxaline, Benzoxazole Derivatives using Glycerol as Green Solvent	2011	5697	2.39
Vikas N. Telvekar* , Harshal M. Bacchav	*Synlett*	A Novel Application of (Diacetoxyiodo)benzene for Carbon–Carbon Cleavage of Aryl Diamines and Synthesis of Quinones	2010	2059	2.78
Vikas N. Telvekar*, Harish S. Kundaikar, Kavit N. Patel, Hemchandra K. Chaudhari	QSAR & Combinatorial Science	3-D QSAR and Molecular Docking Studies on Aryl Benzofuran-2-yl Ketoxime Derivatives as Candida albicans N-myristoyl transferase Inhibitors	2008	1193	2.59

SUBJECT TAUGHT:

Medicinal Chemistry; Pharmaceutical Chemistry; Process Technology Drugs and intermediates

RESEARCH INTERESTS:

Novel Methodology and Synthesis

RESEARCH STUDENTS:

Ph.D (Tech.)- 12,
Ph. D. (Sci.)- 02,
M. Pharm-02,
M. Tech- 01

RESEARCH PUBLICATIONS:

International- 08,
Peer-reviewed - 08

SPONSORED PROJECTS:

Government - 02

PROFESSOR P. R. VAVIA

Ph.D. (Tech.), M. Pharm., B. Pharm.
Professor of Pharmaceutics, Dean (Academic)

RESEARCH INTEREST AND EXPERTISE :

- Cyclodextrins based drug delivery systems
- Targeted Drug Delivery for Oncology
- Gene Delivery Systems
- Nanosponge based drug delivery systems
- Bioencapsultion
- Multiparticulte drug delivery system
- Transdermal drug delivery systems
- Protein and peptide drug delivery system
- Lipid based colloidal formulations
- Polymer synthesis for drug delivery
- Modified release films
- Liposome based Drug Delivery Systems
- Melt Extrusion Technology
- Oral liquid dosage forms
- Techniques in solubilization

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- Life member, Indian Pharmaceutical Association
- President, Indian Pharmaceutical Association (2002-2004) (Maharashtra State Branch)
- Member, Association of Pharmacy Teachers of India (APTI)
- Member, Royal Pharmaceutical Society of Great

Britain (Hon. Membership)

- ❖ Inspector appointed by Pharmacy Council of India for Inspection of Institutions
- ❖ Inspector appointed by AICTE for Inspection of Institution
- ❖ Member, Editorial board of Indian Journal of Pharmaceutical sciences
- ❖ Expert Member, DSIR for inspection of industrial R & D facility
- ❖ Nominee of Vice-chancellor for appointment of teachers of Mumbai University
- ❖ Member, International Advisory board, Asian Oceanic Cyclodextrin League
- ❖ Scientific Convener, Indian Pharmaceutical Congress Association, 2006-2009.
- ❖ Member of Italian Cyclodextrin League.
- ❖ Convener, 5th Young Innovative Choice Competition (YICC) and Young Research Competition (YRC), 2010-2011
- ❖ Reviewer of
  - AAPS Pharm Sci-Tech
  - International Journal of Pharmaceutics
  - Nanomedicine: Nanotechnology, Biology, and Medicine
  - Indian Journal Pharmaceutical Sciences
  - Pharmaceutical research
  - Journal of pharmacy and Pharmacology
  - AIChE Journal
  - Journal of Controlled Release

PUBLICATIONS (PEER REVIEWED) SO FAR : 118

PATENTS :

1 (Granted), 30 (Filed),

15 (provisional)

CONFERENCE PROCEEDINGS/PAPERS: 12

SEMINARS/LECTURES/ ORATIONS DELIVERED : 245

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 31

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 42

H-INDEX : 17

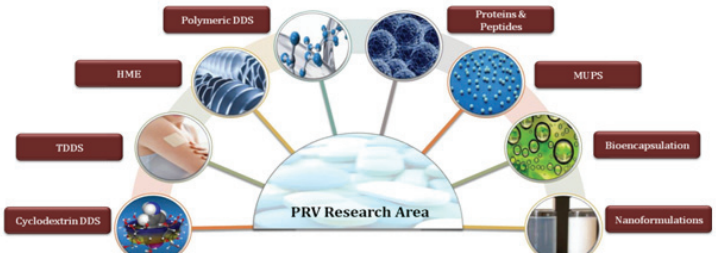
CITATIONS : 1200

HIGHLIGHTS OF RESEARCH WORK DONE AND IT'S IMPACT:

Keeping in mind, the constraints to efficient delivery of potential drug candidates and ample opportunities associated with design of non-infringing drug formulations as well as value added generic drug development sector, Professor P.R. Vavia and his research group is currently involved in fundamental as well as industrial research.

Research work based on Nanoformulations for oncology, Gene delivery, Cyclodextrin and their derivatives, Nanosponge based drug delivery systems, Transdermal drug delivery systems, Synthesis and development of nanocarriers and polymer conjugates for active tumor targeting, Techniques in solubilisation of poorly water soluble drugs, Hot melt extrusion, Nano-emulsions, Micro-emulsions, Nanosuspensions, Bioencapsulation of poorly soluble actives, Modified release multiparticulate drug delivery systems, Modified release polymeric films, Application of particle engineering strategies, Protein and peptide based drug delivery systems, Synthesis and application of novel polymers and excipients is going on with expected outcomes of industrial applicability and scalability.

Manpower Development in formulation technology and validation of analytical methods, In-vivo studies of developed formulations has given equal importance to meet the standards.



TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
Novel L-lactide-depsipeptide polymeric carriers for enhanced brain uptake of Rivastigmine in treatment of Alzheimer's disease, Pagar, K.P., Sardar, S.M., Vavia, P.R.,	Journal of Biomedical Nanotechnology	10(3)	415-426	5.25
Arginoplexes: An arginine-anchored nanoliposomalcarrier for gene delivery, Patel, K.P., Tyagi, M., Monpara, J., Gupta, S., Vavia, P.R.	Journal of Nanoparticle Research,	16(4)	2345	2.278
Design, synthesis and evaluation of N-acetyl glucosamine (NAG)-PEG-Doxorubicin targeted conjugates for anticancer delivery, Pawar, S.K., Badhwar, A.J., Kharas, F., Khandare, J.J., Vavia, P.R	International Journal of Pharmaceutics	436(1-2)	183-193	4.090
Encapsulation of Acyclovir in a new carboxylated cyclodextrin nanosponges improves the agents antiviral activity, Lembo D., Swaminathan S., Donalisio M., Trotta F., Cavalli R.,	International Journal of Pharmaceutics	443(1-2)	262-272	4.090
Medium chain triglyceride (MCT) rich, paclitaxel loaded self nanoemulsifyingpreconcentrate (PSNP): A safe and efficacious alternative to Taxol, Patel K.P. Pati A., Mehta M., Gota V., Vavia P.R.,	Journal of Biomedical Nanotechnolgy	9(12)	1996-2006	5.25
Effect of decisive formulation variables encapsulation efficiency and integrity of yeast biocapsules for oral itraconazole delivery, Sangawai, M.,B., Vavia, P.R.	Journal of Microencapsulation	28(4)	311-322	1.89
Cyclodextin based nanosponges of Curcumin: Formulation and physicochemical characterization, Darandale, S.S., Vavia, P.R.	Journal of Inclusion Phenomenon and Macrocyclic Chemistry	7593-40	315-322	1.42
Amorphous ternary cyclodextrin nanocomposites of telmisartan for oral drug delivery: Improved solubility and reduced pharmacokinetic variability, Sangawai, M.,B., Vavia, P.R.	International Journal of Pharmaceutics	453(2)	423-432	4.090

Osmotic pellet system comprising osmotic core and in-process amorphized drug in polymer-surfactant layer for controlled delivery of poorly water-soluble drug, Saindane, N., Vavia, P. R.	Journal of Pharmaceutical Sciences	101(9)	3169	3.007
Khire A., Vavia P.R., Effect of permeation enhancers of dynamic mechanical properties of acrylate pressure sensitive adhesives	International Journal of Pharmaceutics	458(1),	141-147	4.090

SUBJECTS TAUGHT:

B.Pharm, B.Tech (Pharma), M.Pharm.Sci., M.Tech. (Pharma), (Pharmaceutics, Drug Delivery System I & II, Advanced Pharmaceutics, Biopharmaceutics).

RESEARCH STUDENTS:

Ph.D (Tech.)- 15,
M. Pharm-04,
M. Tech- 2

RESEARCH PUBLICATIONS:

International- 30,
Peer-reviewed- 30

PATENTS:

International-1
Indian- 08 (filed)

SPONSORED PROJECTS:

Prviate- 05

PROFESSIONAL ACTIVITIES:

- Life member, Indian Pharmaceutical Association
- Member, Association of Pharmacy Teachers of India (APTI)
- Member, Royal Pharmaceutical Society of Great Britan (Hon. Membership)
- Inspector appointed by Pharmacy Council of India for Inspection of Institutions
- Inspector appointed by AICTE for Inspection of Institution
- Member, Editorial board of Indian Journal of Pharmaceutical sciences
- Expert Member, DSIR for inspection of industrial R & D facility
- Nominee of Vice-chancellor for appointment of teachers of Mumbai University
- Member, International Advisory board, Asian Oceanic Cyclodextrin League
- Member of Italian Cyclodextrin League.

SUPPORT STAFF

Dr. Ravindra V. Sawant
Technical Assistant

Jitendra S. Jadhav
Sr. Lab Assistant

Mithila M. Sardar
Lab Assistant

Sunil N. Jadhav
Lab Assistant

Manveer M. Rana
Lab Assistant

Hemanta Kumar G. Sahoo
Lab Assistant

Mahendra T. Kudekar
Animal House Assistant

Anita V. Bankar
Lab Assistant

Rekha Khatal
Lab Attendant

Kiran T. Chaudhari
Lab Attendant

Krishna B. Dhengale
Lab Attendant

Santosh D. Chile
Lab Attendant

UNDER GRADUATE STUDENT SEMINAR/PROJECTS

SEMINARS- FINAL YR. B.TECH. (PHARMA)

No.	Name of the Student	Topic	Guide
1	Gudhka Ronak	Mannose receptor mediated targeted drug delivery	Professor P. V. Devarajan
2	Shah Harnil	Oral thin films	Professor P. V. Devarajan
3	Abhishek Vartak	Chemistry of Carbon Nanotubes and application in targeted drug delivery	Professor M. S. Degani
4	Sahil Gupta	Antibody Drug Conjugates	Professor M. S. Degani
5	Saurabh Ramachandran	Alzhiemer's disease	Professor A. R. Juvekar
6	Raghav Tamhankar	Lung Cancer	Professor A. R. Juvekar
7	Pranjal Deshmukh	Crispr Interference	Dr. Prajakta Dandekar Jain
8	Abhishek Panchal	Cell line engineering for biopharmaceutical production	Dr. Prajakta Dandekar Jain
9	Vishaka Sarode	Magnolol	Professor K. S. Laddha
10	Ashwin Ramaswamy	Icariin	Professor K. S. Laddha
11	Tanaya Vaidya	Virosomes: Novel drug and Vaccine Delivery agents	Professor V. B. Patravale
12	Bhagyashree Bachhav	Pharmaceutical Co-crystals	Professor V. B. Patravale
13	Harini Krishnan	Affibodies targeted to EGFR and HER-2 overexpressing tumors	Professor V. B. Patravale
14	Raveena Bhosle	Advanced Glycation End Products	Dr. S. Sathaye
15	Anushree Rajvir	Acetyl Choline Esterase Inhibitors	Dr. S. Sathaye
16	Aniket Thosar	Attrition enhanced continuous deracemization	Dr. V. N. Telvekar
17	Anup Joshi	New avenues in heterogenous catalysis: Superhydrophobic polymers functionalized with ionic liquids	Dr. V. N. Telvekar
18	Nitesh Jadhav	Continuous Processes in Pharma Industry	Dr. V. N. Telvekar
19	Shail Panchamia	Polymer-drug conjugates as a novel approach for cancer treatment	Dr. V. N. Telvekar
20	Shalaka Khobragade	siRNA delivery	Professor P. R. Vavia
21	Dhanashree Mahadik	Bacteria in Cancer Therapy	Professor P. R. Vavia

PROJECTS – FINAL YEAR B. TECH. (PHARMA)

No.	Name of the Student	Topic	Guide
1	Gudhka Ronak	SMEDDS based in situ gel for intramuscular administration of rifampicin	Professor P. V. Devarajan
2	Shah Harnil	Zolmitriptan oral fast dissolving films	Professor P. V. Devarajan
3	Joshi Anup	Development of flow reactor system for diazotization followed by Meerwein arylation to synthesis o-nitro phenyl acetaldehyde	Professor K. G. Akamanchi
4	Thosar Aniket	Development of flow reactor system to synthesis p-chloro phenyl acetaldehyde	Professor K. G. Akamanchi
5	Anushree Rajvir	Extended release of Metformin Hcl Tablet	Professor P. D. Amin
6	Bhosale Ravina	Extended release of Carbamazepine (CBZ) tablets	Professor P. D. Amin
7	VartakAbhishek	Task specific ionic liquids for CO_2 capture	Professor M. S. Degani

8	Gupta Sahil	Green approach towards synthesis of 2,3,4,6-tetra-O-acetyl-α-d-glucopyranosylbromide	Professor M. S. Degani
9	Tamhankar Raghav	In-vitro membrane stabilization activity of Celastrus paniculatus	Professor A. R. Juvekar
10	Ramachandran Saurabh	In-vitro membrane stabilizing activity of Achyranthes aspera	Professor A. R. Juvekar
11	DeshmukhPranjal	Low Molecular Weight Chitosan Production Using Sulphonated Activated Carbon as Catalyst	Professor P. D. Jain
12	PanchalAbhishek	Synthesis of Zinc Oxide Nanoparticles	Professor P. D. Jain
13	Sarode Vishaka	Extraction and Isolation of Lupeol from Crataeva Nurvala	Professor K. S. Laddha
14	Ramaswamy Ashwin	Extraction of Mangiferin from the Bark of Mangifera Indica	Professor K. S. Laddha
15	Harini Krishnan	Formulation development of curcumin micelles for brain delivery	Professor V. B. Patravale
16	BacchavBhagyashree	Pharmaceutical cocrystal of atovaquone	Professor V. B. Patravale
17	VaidyaTanaya	Formulation and evaluation of liposomal amphotericin B gel	Professor V. B. Patravale
18	Jadhav Nitesh	Synthesis of nitrotoluenes using flow	Dr. V. N. Telvekar
19	Panchamia Shail	Selective Hydrogenation of Nirtiles to amines using a Novel naocatalyst	Dr. V. N Telvekar
20	MahadikDhanashri	Formulation and evaluation of thiocolchicosidenanogel	Professor P. R. Vavia
21	KhobragadeShalaka	Liposomal coenzyme Q10 topical gel: Novel formulation to reduce photoaging	Professor P. R. Vavia

HOME PAPERS- FINAL YEAR. B.PHARM

No.	Name	Title	Guide
1	Chawalla Dhruvika Kalpesh	Cyclodextrin based Nanosponge of Fulvestrant for Advanced Breast Cancer therapy	Professor P. V. Devarajan
2	Fangari Shiban Navid	Microneedle Integrated Transdermal Patch (MITP) of Galantamine for Symptomatic treatment of Alzheimer's Disease	Professor P. V. Devarajan
3	Thakare Devdatta Satish	Design and Development of Amino lipids for siRNA delivery	Professor K. G. Akamanchi
4	Mahajan Nikita Anil	Oleic acid and its conjugates for application in drug delivery system	Professor K. G. Akamanchi
5	Powale Krushali Kiran	Fixed Dose Combination of Antibiotics	Professor P. D. Amin
6	Khanna Vidhi Devendra	Development of a Novel Delivery System for Glaucoma Drug Latanoprost	Professor P. D. Amin
7	Karve Gauri Girish	Increasing aqueous solubility of an anti-cancer drug Telomestatin using pro-drug approach	Professor M. S. Degani
8	Palekar Nikita Ajit	Solubility Enhancement of PA-824 used for the Treatment of Turberculosis	Professor M. S. Degani

9	Rupani Dhwani Naresh	Targets in pharmacological treatment of Dengue Hemorrhagic Fever and Dengue Shock Syndrome	Professor A. R. Juvekar
10	Chaudhari Rashmi Nilkanth	Pathophysiology and Novel Therapeutic Strategies for the Treatment of Osteoporosis	Professor A. R. Juvekar
11	Gore Manish Ravikiran	Stem cell based Bioartificial Retina as a cure for blindness	Dr. P. D. Jain
12	Mehta Shreya Sanjay	Novel Drug Delivery System Targeting Tumor Microenvironment	Dr. P. D. Jain
13	Yangod Saiprasad gangareddy	Extraction & Isolation of Colchine & Thiocolchicoside	Professor K. S. Laddha
14	Deshpande Ketaki Milind	Hair colouring formulation: non-staining to skin	Professor V. B. Patravale
15	Parab Nikita Vilas	Co-crystal of Atovaquone	Professor V. B. Patravale
16	Hegdekar Nivedita Uday	Role of mTOR pathway in neurodegeneration	Dr. S. Sathaye
17	Pednekar Prajakta Anant	Diabetes and Endothelial Dysfunction: New Molecular Targets For Endothelial Dysfunction	Dr. S. Sathaye
18	Ranvir Vikas Prakash	Innovative Approaches to Target Cancer Cells with Biotin-Dendrimer Conjugates	Dr. V. N. Telvekar
19	Mandot Mayank Arvind	Innovative Approaches for the Development of Anti Malarial Quinoline Heterocycles	Dr. V. N. Telvekar
20	Priyanka Prasannakumar	Novel drug delivery system for anti-cancer drug Bevacizumab	Professor P. R .Vavia
21	Dinani Dhaval Upendra	Multiparticulate Pulsatile Drug Delivery System for Repaglinide	Professor P. R. Vavia

SEMINARS – THIRD YEAR B. PHARM

No.	Name	Title	Guide
1	Ugaonkar Sharvari	Dissolvable microneedles array for intradermal drug delivery: fabrication and application	Professor P. V. Devarajan
2	Desai Raj	Pharmacoeconomics of diabetes therapy in india	Professor P. V. Devarajan
3	Vibhandik Sanket	Metal-based Nanocatalysts and their application in organic synthesis.	Professor K. G. Akamanchi
4	Gangurde Puja	Green chemistry approaches in drug synthesis	Professor K. G. Akamanchi
5	Nerurkar Urvi	From Biostudies to biowaivers.	Professor P. D. Amin
6	Shah Kashish	Generic product development	Professor P. D. Amin
7	Kamaraj Aarti	Activatable molecular probes for cancer imaging	Professor M. S. Degani
8	Kapadia Akshay	Importance of physicochemical properties in drug discovery	Professor M. S. Degani
9	Patil Pritesh	Prodrug concept for increasing bioavailability of poorly soluble drugs	Professor M. S. Degani
10	Rane Pallavi	Reduction of doxorubicin toxicity by altering drug delivery system	Professor A. R. Juvekar
11	Bhute Shashikala	Pathophysiological role of 5HT receptor	Professor A. R. Juvekar
12	Ghag Saylee	Diabetesinducedperipheral	Professor A. R. Juvekar

13	Shah Nehal	Molecular beacon for disease diagnosis	Dr. Prajakta Dandekar Jain
14	Kanvinde Pranjali	Immunisation strategies for developing vaccine against HIV	Dr. Prajakta Dandekar Jain
15	Pandit Aarti	Vaccines for H5N1 virus : Challenges and opportunities	Dr. Prajakta Dandekar Jain
16	Pujari Priya	Kavalactone	Professor K. S. Laddha
17	Mandurnekar Aboli	Usnic acid	Professor K. S. Laddha
18	Chandwade Paritosh	Functionalised carbon nanotubes	Professor V. B. Patravale
19	Sheth Swapnil	Microfluidic platforms for lab-on-a-chip applications	Professor V. B. Patravale
20	Rege Madhura	Quality by design	Professor V. B. Patravale
21	Modi Sannidhi	Diagnostics for alzheimers	Dr. S. Sathaye
22	Dikshit Ashutosh	Role of aggregation of alpha-synuclein in the pathophysiology of Parkinson's disease	Dr. S. Sathaye
23	Prabhu Disha	Role of proteases in the treatment of alzheimers	Dr. S. Sathaye
24	Sonawane Rahul	Recent advances of antitb agents including sar and qsar	Dr. V. N. Telvekar
25	Bagul Ankita	Target mitochondria for cancer treatment	Dr. V. N. Telvekar
26	Gandhi Aakash	Graphene based nanomaterials for drug delivery and tissue engineering	Professor P. R. Vavia
27	Mehta Heta	Gene therapy as drug delivery through non viral vectors	Professor P. R. Vavia
28	Patil Chinmayee	Micro and nano bubbles: a versatile platform for gene delivery system	Professor P. R. Vavia

POST GRADUATE STUDENTS SEMINARS/ PROJECTS

M. PHARM/ M. TECH. SEMINARS

No.	Name	Seminar Topic	Supervisor
M. Pharm Pharmaceutics			
1	Raju Tayade	Protein scaffolds for therapeutic applications	Professor P. V. Devarajan
2	Sudeep Pukale	Targeting mitochondria for cancer therapy	Professor P. V. Devarajan
3	Nilesh Dhakar	Nanotheranostics for cancer	Professor V. B. Patravale
4	Alok Shukla	Recent advances in intelligent nanodevices for preventive medicine and therapy	Professor V. B. Patravale
5	Sagar Sonawane	Role of brain as sanctuarian site in diseases: Advanced drug delivery system to improve bioavailability in brain	Professor P. R. Vavia
6	Satish Rojekar	Self-assembled cyclodextrin nanoparticles as drug carriers	Professor P. R. Vavia
M. Pharm Pharmaceutical Chemistry			
1	Aakriti Kapoor	Stabilisation of proteins in invitro systems	Professor K. G. Akamanchi
2	Rhishikesh Herlekar	Modern interpretation of wittig reaction mechanisms	Professor K. G. Akamanchi
3	Tanmeet Kaur Arora	Improving selectivity in drug design using molecular modeling	Professor M. S. Degani
4	Juee Raut	Dynamic combinatorial libraries in drug discovery	Professor M. S. Degani

5	Deepak Mishra	Evolution of CYP 450 enzymes as biocatalysts in drug discovery and development	Dr. V. N. Telvekar
6	Kshitij Patel	Human Genome Project	Dr. V. N. Telvekar
M. Pharm Medicinal Natural Products			
1	Dipali Mendhe	Role of transient receptor potential in various diseases	Professor A. R. Juvekar
2	Shweta Lotankar	Multiple biomarkers involved in diabetes	Professor A. R. Juvekar
3	Sangita Kumbhar	Huperzine	Professor K. S. Laddha
4	Chirag Thakkar	Immunomodulator phytoconstituents in the treatment of tuberculosis	Dr. Sadhana Sathaye
5	Aditi Lambe	Role of AGE in Neurological disorders	Dr. Sadhana Sathaye
Integrated Ph.D. (Tech)			
1	Snehal Mestry	Black Cohosh	Professor K. S. Laddha
M. Tech. (Pharma)			
1	Atul Raut	Recent advances in vaccine adjuvants	Professor P. V. Devarajan
2	Vijaya Waghmare	Functional modification of natural polymers for drug	Professor P. R. Vavia
3	Kishor Kande	Microreactors as tools for invitro cell culture	Dr. P.Dandekar Jain
4	Pankaj Patil	Carbon sequestration technology	Dr. V. N. Telvekar

M.PHARM/ M. TECH. CRITICAL REVIEWS

No.	Name	Topic	Guide
M. Pharm Pharmaceutics			
1	Sonawane Sagar	Chitosan–zinc–insulin complex incorporated thermosensitive polymer for controlled delivery of basal insulin invivo	Professor P. V. Devarajan
2	Rojekar Satish	Unmodified drug used as a material to construct nanoparticles:delivery of cisplatin for enhanced anti-cancer therapy	Professor P. V. Devarajan
3	Tayade Raju	Simultaneous delivery of doxorubicin and curcuminencapsulated in liposomes of pegylated RGDK-lipopeptide to tumorvasculature	Professor V. B. Patravale
4	Pukale Sandeep	Taclitaxel-loaded PLC-TPGS nanopracticles: In vitro and in vivo performance compared with Abraxame®	Professor V. B. Patravale
5	Shukla Alok	A Novell Plug Controlled Colon Specific Pulsatile Capsulewith Tablet of Curcumin Loaded SMEDDS	Professor P.R. Vavia
6	Dhakkar Nilesh	Layer by layer coated solid lipid nano-particles for delivery of anticancer drugs'	Professor P.R. Vavia
M.Pharm Pharmaceutical Chemistry			
1	Patel Kshitij	Design, Synthesis And Evaluation of Novel Anti-Bacterial Agent	ProfessorK. G. Akamanchi
3	Kapoor Aakriti	Synthesis and evaluation of multi-target-directed ligands against Alzheimer's disease based on the fusion of donepezil and ebselen.	Professor M. S. Degani
4	Mishra Deepakkumar	Design, Synthesis, and Biological Evaluation of Indole-2- carboxamides: A Promising Class of Antituberculosis Agents.	Professor M. S. Degani

5	Raut Juee	Design, Synthesis, and Biological Evaluation of Indole-2-carboxamides: A Promising Class of Antituberculosis Agents	Dr. V. N. Telvekar
M.Pharm Medicinal Natural Products			
1	Kumbhar Sangita	Synergistic interaction of ferulic acid with commercial hypogycemic drugs in streptozotocin induced diabetic rats.	Professor A. R. Juvekar
2	Mendhe Dipali	Preventive Effects OfRutin On The Development Of Experimental Diabetic Nephropathy In Rat	Dr.SadhanaSathaye
3	Lotankar Shweta	C-peptide preserves the renal microvascular architecture in the streptozotocin-induced diabetic rat	Dr. Sadhana Sathaye
4	Lambe Aditi	The effect of microwave assisted extraction on the isolation of anthocyanins and phenolic acids from sour cherry marasca (prunuscerasus var. arasca)	Professor K. S. Laddha
5	Thakkar Chirag	Comparisons between conventional, ultrasound-assisted and microwave assisted methods for extraction of anthraquinones from Heterophyllae pustulata Hook.f. (Rubiaceae).	Professor K.S. Laddha
Integrated Ph. D. (Tech.)			
1	Mestry Snehal	Preventive effects of polysaccharides from Liriopespicata var. prolifera on diabetic nephropathy in rats.	Professor A. R. Juvekar
M.Tech. Pharma			
1	Kande Kishor	Aerosolization characteristics of dry powder inhaler formulations for theexcipient enhanced growth (EEG) application: Effect of spray drying processconditions on aerosol performance	Professor P. V. Devarajan
2	Patil Pankaj	Development of a Scalable Synthesis of a Bruton's Tyrosine Kinase Inhibitor via C−N and C−C Bond Couplings as an End Game Strategy	Professor K.G.Akamanchi
3	Waghmare Vijaya	Novel Freeze Drying Methods to Produce a Range of Collagen-Glycosaminoglycan Scaffolds with Tailored Mean Pore Sizes	Dr. Prajakta Dandekar Jain
4	Raut Atul	Inhibition of surface crysatllisation of amorphous indomethacin particles in physical drug-polymer mixture.	Professor P.R. Vavia

RESEARCH TOPICS

Ph.D. (TECH)

No.	Research Scholar	Previous Institute	Project	Supervisor
1	Ranee Banteilang	ICT	Innovative Drug Delivery Systems	Professor P.V. Devarajan
2	Shinde Rajshree	Bombay College of Pharmacy	Nutraceutical based Drug Delivery System	Professor P.V. Devarajan
3	Malode Vilas N.	ICT	Oral controlled release once a day formulation	Professor P.V. Devarajan
4	Mande Prashant	Bharti Vidyapeeth, Belapur	Bioenhancement strategies for Oral and Nasal Drug Delivery	Professor P.V. Devarajan

5	Joshi Rohit	Bombay College of Pharmacy	Drug Delivery approaches for Anti-Cancer Therapy	Professor P.V. Devarajan
6	Dalvi Bhagyashree	ICT	Drug Delivery approaches for Anti-Infective Therapy	Professor P.V. Devarajan
7	Sandhya P.	ICT	Drug Delivery Systems for Hepatic Targeting	Professor P.V. Devarajan
8	Joshi Bhagyashri	Mumbai Education Trust Institute of Pharmacy	Drug Adsorption Models for predicting Bioenhancement Strategies for Poorly Permeable Drugs	Professor P.V. Devarajan
9	Dawre Shilpa	ICT	Colloidal Drug Delivery Systems	Professor P.V. Devarajan
10	Bacchav Sagar	R C Patel Institute of Pharmaceutical Education and Research	Development and Preclinical evaluation of Drug Delivery Systems for Targeted Delivery to the Brain	Professor P.V. Devarajan
11	Chawla Shweta	ICT	Inorganic Nanocarriers in drug delivery and diagnosis	Professor P.V. Devarajan
12	Jahagirdar Priyanka	ICT	Nano drug delivery systems for targeted delivery of anti-tubercular agents	Professor P.V. Devarajan
13	Das Saugandha	JSS, Mysore	Nanocarriers for targeted drug delivery to the RES	Professor P.V. Devarajan
14	Pati Sidhartha	School of Pharmaceutical Sciences, Siksha O Anusandhan University, BBSR	Topic to be registered	Professor P.V. Devarajan
15	Chaturvedi Anila	SGSITS, Indore	Topic to be registered	Professor P.V. Devarajan
16	More Krantisagar	Sinhagad College of Pharmacy, Vadgaon	Nanotechnology approaches for bioenhanced delivery of nutraceuticals and nutraceutical drug combinations	Professor P.V. Devarajan
17	Maithania Heena	KMKCP	Topic to be registered	Professor P.V. Devarajan
18	Kotak Darsheen	Ramanbhai Patel Institute of Pharmacy, Charotar University	Topic to be registered	Professor P.V. Devarajan
19	Harsh Joshi	Shri Sarvajanik Pharmacy College	Topic to be registered	Professor P.V. Devarajan
20	Katkar Kamlesh	Manipal University	Development of Green Methodologies for Synthesis of Active Pharmaceutical Ingredients and Intermediates.	Professor K. G. Akamanchi
21	Jain Ashish Kumar	ICT	Synthesis and Evaluation of Polyphenols and their metal complexes as potental bioactive agents	Professor K. G. Akamanchi
22	Chaudhari Kapil	UDCT, Jalgaon	Dendrimers: Design, Synthesis and Applications	Professor K. G. Akamanchi

23	Patil Dhiraj	SRM University	High pressure technology for extraction of plant based natural products	Professor K. G. Akamanchi
24	Kale Smita	Pune University	Designing Protein Stabilizing Systems	Professor K. G. Akamanchi
25	Dhumal Dinesh	North Maharashtra University	Design and Synthesis of Heterolipids for Pharmaceutical Application	Professor K. G. Akamanchi
26	Sav Ajay	NIPER	Evaluation of hydrocolloids for emulsification and release retarding properties	Professor P. D. Amin
27	Fule Ritesh	BCP	Formulation and Evaluation of Drug Delivery Systems Prepared Using Hot Melt Extrusion	Professor P. D. Amin
28	Meer tarique	ICT	Release modification designs for poorly water soluble drugs	Professor P. D. Amin
29	Patole Rahul	ICT	Modified dissolution method and processing technology for solid dosage forms	Professor P. D. Amin
30	Jain Puneet	UICT	Synthesis of novel substituted benzopyridines as anti-infectives	Professor M. S. Degani
31	Lele Arundhati	UICT	Design and synthesis of novel antifolate anti-infectives	Professor M. S. Degani
32	Bochare Machhindra	NDMVP College of Pharmacy, Nashik	Development of synthetic methods for organofluorine compounds	Professor M. S. Degani
33	Lonkar Sachin	Dr. D. Y. Patil College of Pharmacy, Pune	Synthesis of Phase-II metabolites by Green methods	Professor M. S. Degani
34	Shelke Rupesh	Govt. College of Pharmacy, Aurangabad	Design and synthesis of novel multi-targeting anti-infectives	Professor M. S. Degani
35	Kundaikar Harish	UICT	Design and synthesis of molecules for Alzheimer's disease	Professor M. S. Degani
36	BhusariArun	ICT	Design, synthesis and evaluation of fluorinated molecules for Alzheimer's disease	Professor M. S. Degani
37	Mali Hemlata	NDMVP College of Pharmacy, Nashik	Design, synthesis and evaluation of Nitrogen containing heterocycle as antimycobacterial agents	Professor M. S. Degani
38	Khambete Mihir	ICT	Design and Synthesis of Molecular libraries for Alzheimer's disease	Professor M. S. Degani
39	Patel Sagar	ICT	Topic to be registered	Professor M. S. Degani
40	Anantram Aarti	KMK College of Pharmacy, Mumbai	Topic to be registered	Professor M. S. Degani
41	AgreNeha	ICT	Topic to be registered	Professor M. S. Degani
42	Preeti Tupe	D Y P IPSR, Pune	Neuropharmacological Investigations of Mentha arvensis and Vernonia anthelmintica In Experimental Animals	Professor A. R. Juvekar

43	Dnyaneshwar Nagmoti	UICT, Mumbai	Pharmacological investigations of Pithecellobium dulce and Vernonia anthelmintica for their antidiabetic activity.	Professor A. R. Juvekar
44	Jayesh Dhodi	UICT, Mumbai	Phytochemical and Pharmacological investigation of Medicinal Plant in diabetic nephropathy	Professor A. R. Juvekar
45	Sabir Attar	Nagpur University	Study of Toxicology and Genotoxicity of L-DOPA and Hyoscine in combination therapy	Professor A. R. Juvekar
46	Vipin Bulani	D Y P IPSR, Pune	Evaluation of bioactive complex for their anti-inflammatory activity	Professor A. R. Juvekar
47	Pankaj Kothavade	D Y P IPSR, Pune	Pharmacological investigation of Achyranthes aspera linn. andCelastrus peniculatus willd. foranti-inflammatory and anti-arthritis activity	Professor A. R. Juvekar
48	Dharmendra Khatri	ICT, Mumbai	Topic to be registered	Professor A. R. Juvekar
49	Nitin Gawali	U.D.P.S. Nagpur	Topic to be registered	Professor A. R. Juvekar
50	Amrita Chowdhury	ICT, Mumbai	Topic to be registered	Professor A. R. Juvekar
51	Yadav Vijay	Dr L.H. Hiranandani College of pharmacy	Topic to be registered	Dr. Prajakta Dandekar
52	Gholkar Manasi	Prin, K.M.Kundnani college of Pharmacy	Studies on natural xanthones	Professor K. S. Laddha
53	Kale Maheshkumar	NDMVP Nashik	Phytochemical Investigation of Genus Momordica.	Professor K. S. Laddha
54	Arvindekar Aditya	NIPER, Kolkata	Natural Anthraquinones: Their extraction, isolation and chemistry	Professor K. S. Laddha
55	Shinde Prashant	Gov. College of Pharmacy, Amaravati	Studies on natural coumarins	Professor K. S. Laddha
56	Mulik Mandar	ICT	Natural Lignans: Their extraction, isolation and chemistry	Professor K. S. Laddha
57	Bhandare Snehal	MGV's Pharmacy College	Natural Flavonoids: Their extraction, isolation and its chemical modification	Professor K. S. Laddha
58	Agrawal Poonam	ICT	Topic to be registered	Professor K. S. Laddha
59	Akhade Meenakshi	ICT	Topic to be registered	Professor K. S. Laddha
60	Garg Gaurav	NIPER,Ahmedabad	Topic to be registered	Professor K. S. Laddha
61	Patil Sapna	BVP,Pune	Topic to be registered	Professor K. S. Laddha

62	Pimpale Awdhut	IPER, Wardha	Topic to be registered	Professor K. S. Laddha
63	Bowlekar Pooja	SVBCP,Mumbai	Topic to be registered	Professor K. S. Laddha
64	Velhal Milind	Government College of Pharmacy, Karad	Development of colon targeted microparticles/nanoparticles	Professor V. B. Patravale
65	Swami Megha	AISSMS College of Pharmacy, Pune	Nanoengineered particulate carriers of antimalarials using novel techniques	Professor V. B. Patravale
66	Patil Sushant	ICT, Mumbai	Transdermal patches for neurodegenerative disorders	Professor V. B. Patravale
67	Jain Soniya	K.M. Kundanani College of Pharmacy Mumbai	Development of nanocarrier based antimalarial formulations	Professor V. B. Patravale
68	Prabhu Priyanka	ICT, Mumbai	Development of novel antimalarial nanocarriers	Professor V. B. Patravale
69	Mohrule Swapnil	IIT, Mumbai	Anti-amyloid agents loaded nanocarriers via intranasal route for alzheimer's disease treatment	Professor V. B. Patravale
70	Prabhu Rashmi	ICT, Mumbai	Functionalized non-viral vectors for breast cancer therapy	Professor V. B. Patravale
71	Vyas Swati	ICT, Mumbai	Nanotechnology based diagnostic module for detection and prevention of brucellosis	Professor V. B. Patravale
72	Gite Sandip	UDCT, Aurangabad	Development and scale up of novel controlled release dosage forms	Professor V. B. Patravale
73	Namrata Kadwadkar	Bombay college of Pharmacy, Mumbai	Novel drug delivery for targeting Hemoglobinopthies	Professor V. B. Patravale
74	Mirani Amit	BharatiVidyapeeth College of Pharmacy, Navi Mumbai	Microbicidalnano-therapeutics for HIV/AIDS	Professor V. B. Patravale
75	Bhupatani Ronak	Bombay college of Pharmacy, Mumbai	Novel carrier systems for improved topical delivery	Professor V. B. Patravale
76	Agrawal Ankit	ICT, Mumbai	Development of innovative micromachined macrostructures for enhanced drug delivery	Professor V. B. Patravale
77	Kharkar Prachi	ICT, Mumbai	Nanoengineered systems for oncotherapy	Professor V. B. Patravale
78	Sane Mangesh	UDCT, Aurangabad	Development and evaluation of vascular scaffolds	Professor V. B. Patravale
79	Shivraj Naik	North Maharashtra University, Jalgaon	Topic to be registered	Professor V. B. Patravale
80	Manasi Chogale	SVC college of Pharmacy, Mumbai	Topic to be registered	Professor V. B. Patravale
81	Vinod Ghodake	Sinhgad institute, Pune	Topic to be registered	Professor V. B. Patravale P
82	Sagar Dhoble	Bombay college of Pharmacy, Mumbai	Topic to be registered	Professor V. B. Patravale

83	Chaudhari Rahul	NDMVP college of Pharmacy, Nashik	Herbal Drugs in Pharmacotherapeutics of vascular complications of diabetes – A Mechanistic Approach	Dr. Sadhana Sathaye
84	Somani Gauresh	Bombay College of Pharmacy, Mumbai	Pharmacological and mechanistic evaluation of medicinal plant for antidiabetic activity and diabetes induced complications.	Dr. Sadhana Sathaye
85	Pherwani Pooja	Grant Medical college, Mumbai	Pharmacology of coumarin derivative and plant part containing the same in osteoporosis.	Dr. Sadhana Sathaye
86	Patil Sachin	R. C. Patel Institute of Pharmaceutical Education and Research Shirpur, Dhule.	Neuropharmacological profile of Apigenin in experimental animal models of parkinson's disease	Dr. Sadhana Sathaye
87	Kanchan Divya	Institute of Chemical Technology, Mumbai	Screening and Evaluation of Thymol and Diosgenin in Complications of Diabetes Mellitus	Dr. Sadhana Sathaye
88	Tambe Rufi	Institute of Chemical Technology, Mumbai	Neuropharmacological Screening of Biologically active Phytoconstituents in the Treatment of Epilepsy	Dr. Sadhana Sathaye
89	Jain Pankaj	Institute of Chemical Technology, Mumbai	Evaluation of Antiepileptic activity of medicinal plants in animal models of epilepsy	Dr. Sadhana Sathaye
90	Ghumatkar Priya	SPPSPTM, NMIMS, Mumbai.	Screening of New therapeutic entities in Alzheimer's disease.	Dr. Sadhana Sathaye
91	Seervi Madhav	Bombay College of Pharmacy	Studies On Herb-Drug Interactions	Dr. Sadhana Sathaye
93	Sarvaiya Devang	Bombay College of Pharmacy	Pharmacokinetic and pharmacodynamic evaluation of therapeutic moieties as an adjunct immunotherapy in tuberculosis	Dr. Sadhana Sathaye
94	Peshattiwar Vaibhavi	Bombay College of Pharmacy	Evaluation of phytoconstituents for its antiparkinson's activity	Dr. Sadhana Sathaye
95	Muke Suraj	MVPs college of Pharmacy, Nasik	Isolation and purification of wedelolactone from herbal source for its potential anti-epileptic activity	Dr. Sadhana Sathaye
96	Yogesh Manohar	ICT, Mumbai	Design, synthesis and biological evaluation of novel antimicrobial agents	Dr. V. N. Telvekar
97	Devidas Mali	UDCT, NMU, Jalgaon	Design, synthesis of novel antidiabetic agents	Dr. V. N. Telvekar
98	Neha Desai	ICT, Mumbai	Design, synthesis of novel antidiabetic agents	Dr. V. N. Telvekar
99	Prashant Jagdhane	UICT, Mumbai	Design, synthesis and evaluation of novel anti-infective molecules	Dr. V. N. Telvekar
100	Saket B. Bhagat	NMIMS University	Design and Synthesis of Novel Anti-infective Agents	Dr. V. N. Telvekar

101	Hemchandra Chaudhari	UDCT, Mumbai	Design and Synthesis of Benzamide Derivatives as Antimicrobial Agents	Dr. V. N. Telvekar
102	Nikhil Jadhav	UDCT, Mumbai	Synthesis of Novel Antidiabetic Compounds	Dr. V. N. Telvekar
103	Ingle Subhash	NIPER, Mohali	Silica based drug delivery system	Professor P.R.Vavia
104	Jadhav Nitin	ICT, Mumbai	Novel carrier based drug delivery system	Professor P.R.Vavia
105	Wavikar Preeti	ICT, Mumbai	Lipid based nanocarrier for brain delivery	Professor P.R.Vavia
106	Vora Lalit	ICT, Mumbai	Polymeric particulate system for biomolecule delivery	Professor P.R.Vavia
107	Mahajan Ketan	UDCT, NMU Jalgaon	Polyelectrolyte multilayered systems for the treatment of infectious diseases	Professor P.R.Vavia
108	Patel Mayank	BharatiVidyapeeth's College Of Pharmacy	Modified Cyclic oligosaccharides based drug delivery system for anticancer drug	Professor P.R.Vavia
109	Jadhav Pankaj	ICT, Mumbai	Studies on application of amorphisation approaches for designing efficient	Professor P.R.Vavia
110	Monpara Jasmin	ICT, Mumbai	Advanced nanocarrier system for targeted delivery of antineoplastic agent	Professor P.R.Vavia
111	Shevalkar Ganesh	UDCT, NMU Jalgaon	Lipid based nanocarrier system for poorly bioavailable drugs	Professor P.R.Vavia
112	Chaudhary Avinash	UDCT, Aurangabad	Modified nanocarrier system for efficient delivery of actives	Professor P.R.Vavia
113	Prajapati Mahendra	NIPER, Mohali	Surface modified targeted nanocarrier for anticancer drug delivery	Professor P.R.Vavia
114	Pai Rohan	Bombay College of Pharmacy, Mumbai	Surface modified nanocarriers as drug delivery systems	Professor P.R.Vavia
115	Yadav Nisha	C.U. Shah College of Pharmacy, Mumbai	Development of nanocarrier for enhanced braind delivery	Professor P.R.Vavia
116	Patil Mrunal	R. C. Patel College Of Pharmacy, Shirpur	Formulation and evaluation of nanocarriers for infectious diseases	Professor P.R.Vavia
117	Bhujbal Neha	N.M.I.M.S, Shirpur	Topic to be registered	Professor P.R.Vavia
118	Khatri Chetankumar	ICT, Mumbai	Design, synthesis and evaluation of NCE's and process chemistry of drug intermediate(s).	Dr. Ganesh U. Chaturbhuj
119	Khatal Trupti	BAMU	An Invention of Distinctive Anti-Cancer drug: Its Design, Synthesis and Evaluation.	Dr. Ganesh U. Chaturbhuj
120	Indalkar Krishna Sadashiv	ICT, Mumbai	Topic to be registered	Dr. Ganesh U. Chaturbhuj
121	Deore Manisha	Smt.R.C.Patel Institute of pharmacy,Shirpur, Dhule.	Topic to be registered	Dr. Ganesh U. Chaturbhuj

A) INTEGRATED Ph.D. (TECH.)

No.	Research Scholar	Previous Institution	Project	Supervisor
1	Snehal Mistry	ICT, Mumbai	Topic to be registered	Professor A. R. Juvekar
2	Desai Preshita	ICT, Mumbai	Novel delivery systems for neurodegenerative disorders	Professor V. B. Patravale

B) Ph.D. (SCIENCE)

No.	Research Scholar	Previous Institute	Project	Supervisor
1	Nimonkar Abhay	Pune University	Development of Synthetic Methodology for Organic Chemistry	Professor K. G. Akamanchi
2	Ghorpade Archana	Pune University	Nitro group and nitro group activation driven new synthetic strategies for drugs and intermediates	Professor K. G. Akamanchi
3	Veer Sachin D.	Pune University	Transition metal impregnated on solid acid catalyst for organic redox transformation	Professor K. G. Akamanchi
4	Wagh Ganesh	Pune University	New reaction systems for synthesis of drugs and intermediates	Professor K. G. Akamanchi
5	Raju Archana	IOS, Mumbai	Dihydrofolate reductase as a drug target in Mycobacterium tuberculosis	Professor M. S. Degani
6	Sabale Sandip	Abasaheb Garaware College of Arts & Science, Pune	Green approach towards synthesis of pharmaceutically important compounds	Professor M. S. Degani
7	Janmanchi Harikesh	Birla College, Mumbai	A study of antitubercular and anticancer properties of aquatic plants	Professor M. S. Degani
8	Deepavali Thanekar	Institute of Science, Mumbai	Studies on bioactive compounds from plant sources for their anti-tumour activity.	Professor A. R. Juvekar
9	Koli Uday	SIES College of Arts, Science & Commerce	Nucleic acid Loaded Nanoplexes for Biomedical Applications	Dr. Prajakta Dandekar Jain (co-guide)
10	Shrikant Babar	Dada Patil Mahavidhyalaya, Karjat	Chemical modification of triterpenoids	Professor K. S. Laddha
11	Swapnil Talkar	Ruia College, Mumbai	Topic to be registered	Professor V. B. Patravale
12	Ajit Nagarkar	New Arts, Commerce and Science College, Ahmednagar	New approach in routine organic synthetic processer and synthesis of antidiabetic molecules	Dr. V. N. Telvekar
13	Afsar Ali Siddiki	D.G.Ruparel College, Matunga Road, Mumbai	Development of novel methodology for synthesis of API molecules	Dr. V. N. Telvekar

M. PHARM RESEARCH PROJECTS

No.	Research Scholar	Previous Institute	Project	Supervisor
1	Shinde Umesh	D.S.T.S. Mandals college of pharmacy,	Nano drug delivery system for antiretroviral drug	Professor P. V. Devarajan
2	Lokhande Amit	Govindrao Nikam COP, Sawarde	Formulation and Evaluation of Sublingual delivery system of Insulin	Professor P. V. Devarajan
3	Rojekar Satish	Government College of Pharmacy, Aurangabad	Insitu nano drug delivery for antiretroviral drug	Professor P. V. Devarajan
4	Sonawane Sagar	Government College of Pharmacy, Aurangabad	Design, formulation and evaluation of doxorubicin hybrid nanoparticles	Professor P. V. Devarajan
5	Tiwari Hitendranath	Mumbai University	Continuous Processes in the fine Chemical and Pharmaceutical Industries	Professor K. G. Akamanchi
6	Gupta Ashish	BAMU, Aurangabad	Design, Synthesis and Evaluation of Novel Antibacterial agents	Professor K. G. Akamanchi
7	Patel Kshitij	K.S.V., Gandhinagar	Design, Synthesis and Evaluation of Novel Antimicrobial agents	Professor K. G. Akamanchi
8	Alwani Vidisha	KMK	Topical formulation of Leutin Ester	Professor P. D. Amin
9	Patel Sagar	A.R. College of Pharmacy, Gujrat	Nitrogen containing [4.3.0] bicyclic ring system as biologically active compounds	Professor M. S. Degani
10	AgreNeha	MET, Mumbai	Bicyclic [4.4.0] nitrogen heterocycles as biologically active agents	Professor M. S. Degani
11	Deshpande Padmini	Yadavrao Tasgaonkar Institute of Pharmacy, Kalyan, Mumbai	Evaluation of pharmacological activity of Indigofera cordifolia plant	Professor A. R. Juvekar
12	Kumbhar Sangita	ICT, Mumbai	Topic to be registered	Professor A. R. Juvekar
13	Havele Onkar	Sinhgad Institute of Pharmacy, Univ. of Pune	Optimizing enzymatic conversion of castor oil to ricinoleic acid as the first step towards maximizing the production of sebacic acid	Dr. Prajakta Dandekar Jain
14	Karande Sachin	Government College of Pharmacy, Karad	Enzyme based coupling of peptide and alginate for scaffold formation in tissue engineering	Dr. Prajakta Dandekar Jain
15	Bangde Prachi	Sinhgad College of Engineering, Pune	Enzymatic Synthesis of trimethylchitosan	Dr. Prajakta DandekarJain
16	Shetty Shreedevi	Bombay College of Pharmacy	Extraction and isolation of phytoconstituents from fruits of Tribulus terrestris	Professor K. S. Laddha
17	Anuradha Sakharkar	ICT	Extraction and isolation of phytoconstituents from Terminalia arjuna	Professor K. S. Laddha

18	Thakkar Chirag	MET,Mumbai	Topic to be registered	Professor K. S. Laddha
19	Lambe Aditi	Shivajirao Jondhale college of Pharmacy, Mumbai	Topic to be registered	Professor K. S. Laddha
20	Mahadev Kamble	NDMVP College of Pharmacy, Nasik	Supercritical fluid and ionic liquid extraction of Wrightiatinctoria	Professor V. B. Patravale
21	Joshi Parth	B. N. college of Pharmacy, Udaypur	Solubility enhancement of BCS Class IV drugs	Professor V. B. Patravale
22	Ghune Meenal	IPS Academy, Indore	Development of nanosuspensions of BCS Class IV drugs	Professor V. B. Patravale
23	Pukale Sudeep	Bombay college of Pharmacy, Mumbai	Topic to be registered	Professor V. B. Patravale
24	Tayde Raju	Government college of Pharmacy, Aurangabad	Preparation and characterization of nanosuspension of BCS class II drug	Professor V. B. Patravale
25	Bharadwaj Atul	MLSU Udaipur, Rajasthan	Isolation of phytoactives from Eclipta alba for potential anti-epileptic activity.	Dr. Sadhana Sathaye
26	Nahire Mruniya	NDMVPs College of Pharmacy,Nasik	Bioactivity guided fractionation of medicinal plants for potential anti-epileptic activity	Dr. Sadhana Sathaye
27	Mendhe Dipali	Govt. college of Pharmacy, Amravati	To study Cytochrome P450 inhibition potential of Herbals.	Dr. Sadhana Sathaye
28	Lotankar Shweta	NDMVP College of Pharmacy, Nasik	To Study the Cytochrome P450 induction potential of Herbals.	Dr. Sadhana Sathaye
29	Aher Ashutosh	SSDJ College of Pharmacy, Chandwad	Separation and purification of soluble receptor for advanced glycation end products (sRAGE) from rat lungs	Dr. Sadhana Sathaye
30	Chobisa Dhawal	Bhupal Noble's College of Pharmacy, Udaipur	Development of nanocarrier for parenteral delivery of cytotoxic agent	Professor P.R.Vavia
31	Fakhruddin Jamiluddin	Govt. College of Pharmacy, Aurangabad	Formulation and evaluation of osmotic pump for poorly soluble drug	Professor P.R.Vavia
32	Dhakar Nilesh	VidyaniketanSamiti (VNS),Bhopal	Formulation and evaluation of osmotically driven controlled release system	Professor P.R.Vavia
33	Shukla Alok	Vidyaniketan Samiti (VNS), Bhopal	Formulation and evaluation of SMEDDS for poorly soluble drugs	Professor P.R.Vavia
34	Snehalata Autade	Mahatma Gandhi Vidhyamandir College of Pharmacy, Nasik	Synthesis of Raloxifene intermediates.	Dr. Ganesh U. Chaturbhuj
35	Jyoti Salve	NDMVP Pharmacy College, Nasik	Synthesis and development of impurity standards for ImatinibMesylate	Dr. Ganesh U. Chaturbhuj

M. TECH. RESEARCH PROJECTS

No.	Research Scholar	Previous Institute	Project	Supervisor
1	Kande Kishor	UDCT, Aurangabad	Microwave assisted development of orally disintegrating tablet (ODT)	Professor P. V. Devarajan
2	Dolas Atul	BAMU, Aurangabad	Study in Organic reactions by sulfated tungustate catalysed	Professor K. G. Akamanchi
3	Pankaj Patil	ICT, Mumbai	Design of novel heterolipid for solubility enhancement of Amphotericin B	Professor K. G. Akamanchi
4	Shete Rahul	UDCT Aurangabad	Solubilisation of Artemether by spray drying	Professor P. D. Amin
5	Madhuri Shinde	-	Studies on extraction of essential oil from Dichanthium odorata plant	Professor K. S. Laddha
6	Madhuri Kamandar	-	Extraction of terpenoids from volatile oil of Feronia elephantum	Professor K. S. Laddha
7	Waghmare Vijaya	University Department of Chemical Technology, Aurangabad	Fabrication of Nanofibers for Biomedical applications	Dr. Prajakta Dandekar Jain
8	Lanjewar Nikhil	UDCT, Aurangabad	Nanoformulation approach to improve solubility and bioavailability of the drug	Professor P.R.Vavia
9	RautAtul	-	Solubility enhancement of poorly water soluble drugs using nanoformulation	Professor P.R.Vavia
10	Gargi Redkar	VES College of Pharmacy, Mumbai	Isolation and purification of drug target enzyme from infectious microorganism	Professor M. S. Degani
11	Pratik Pawar	MGM College of Engineering and Technology, Navi Mumbai	Biosynthesis and characterisation of active ingredients using enzymes or cell assemblies and analytical method development thereof.	Dr. Ganesh U. Chaturbhuj

POST DOCTORAL FELLOW RESEARCH PROJECTS:

No.	Post Doctoral Fellow/RA	Previous Institution	Project Title	Supervisor
1	Ms. Dutta Rinku	North Dakota, State University University in Fargo, North Dakota	Evaluation of Targeted Nanoparticulate Drug Delivery System in Clinical Cases of Tuberculosis in Non-Human Primates	Professor P. V. Devarajan

DETAILS OF SPONSORED PROJECTS

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Total amount (in Rs.)	Principal Investigator	Co-Principal Investigator	Research Fellows
ICMR	Evaluation of Targeted Nanoparticulate Drug Delivery System in Clinical Cases of Tuberculosis in Non-Human Primates	2012-2014 (2 years)	12,7000	Professor P. V. Devarajan		Ms. Rinku Dutta
DBT	Early Translational Study Of Orally Administered Nanoparticulate Carriers For Pulmonary Targeting Of Anti-Tubercular Drug Combinations	2013-2016 (3 years)	1,01,49000/-	Professor P. V. Devarajan		Mr. Sagar Bacchav
DBT	Development and Evaluation of Fixed Dose Combination for Tuberculosis By using Hot Melt Extrusion technology	Jan 2013-Dec 2014	45 Lakhs	Professor P. D. Amin		Divakar R. Jaiswar (M. Pharm)
RGNF	Novel lipidic drug delivery system by HME	Nov -13 to Oct -18	12.85 lakhs	Professor P. D. Amin		Santosh Maruti Gejage (M.Pharm.)
BRNS	Design, synthesis and evaluation of 18F ligands for diagnosis of Alzheimer's disease	3 years	18,72,265/-	Professor M.S. Degani		Arun Bhusari
ICMR	Nanotechnology based diagnostic module for detection of Brucellosis	3 years	18,44,524/-		Professor M.S. Degani	-
TEQIP	Microwave assisted Halogenation reactions using flow reactor	1 year	27,00,000/-	Professor M.S. Degani		-
Golden Jubilee Research Fund / ICT Research Fund	Potential of PLGA-TMC nanoparticles for delivering therapeutic nucleic acid molecules	One year (2012-2013)	50, 000/-	Dr. Prajakta Dandekar Jain		Mr. Uday Koli, Ph.D. (Sci.)/ co-guide
DST (Ramanujan fellowship)	Knocking down pathways responsible for intra-macrophage survival of Mycobacterium tuberculosis: RNAi-Nano approach	Five years (2012-2017)	25,00, 000/-	Dr. Prajakta Dandekar Jain		Dr. Prajakta Dandekar Jain

UGC (Startup Research grant)	Exploring biodegradable polymer combination for developing nanoparticles for delivering therapeutic nucleic acids	Two years (2012-2014)	6,00,000/-	Dr. Prajakta Dandekar Jain		Dr. Prajakta Dandekar Jain
DAE-BRNS	CD44 Targeted Hyaluronic acid- siRNA Bearing COS Nanoplexes	Three years (2013-2016)	16,95, 000/-	Dr. Prajakta Dandekar Jain		Mr. Uday Koli, Ph.D. (Sci.)/ co-guide
DBT	NANOCOS": -COS-siRNAnano-plexes for inhibiting intracellular mycobacteria	Two years (2013-2014)	19, 99,000/-	Dr. Prajakta Dandekar Jain		Mr. Sathish Dyawanapelly, RA
Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maharashtra, 2014-2017	3D cell culture Technology for Developing Affordable Bioengineered Skin for Burn Patients	Three years (2014-2017)	85,10,000/-	Dr. Prajakta Dandekar Jain		Mr. Rohan Chhabra, RA
Indian Council of Medical Research	Quality Standards of Indian Medicinal plants and Preparation of Monographs thereon	Three years (2012-2015)	31,51,539/-	Professor K. S. Laddha		Mr. Awdhut Pimpale Ph.D (Tech) and Mr. Shriniwas Patil
Rajiv Gandhi Science and echnology Commission	Developing technology for extraction and isolation of Anti-Arthritic drugs from plants indigenous to Maharashtra.	Two years (2013-2015)	55,16,999/-	Professor K. S. Laddha		Mrs. Pooja Bowlekar Ph.D (Tech)
UKIERI (UK-India Education and Research Initiative) funded by British council	Hot melt extrusion assisted solid dispersions for oral bioenhancement of poorly bioavailable drugs under collaborative project 'process analytics enabled green technologies for processing of poorly soluble drugs'	2012 -2014	40,00,000/-	Professor G. D. Yadav	Professor V. B. Patravale, Professor P. V. Devarajan, Professor V. G. Gaikar	Desai Preshita
AICTE	Process engineering for fabrication of micro/ nano particles	2012-2015	18,00,000/-	Professor V. B. Patravale		NA
DBT-ICMR	Rectal microbicidea-nanotherapeutics for hiv/aids	2012-2015	65,42,400/-	Professor V. B. Patravale	Professor A. Bandivdekar	Mirani Amit

ICMR	Nanotechnology-based diagnostic module for detection of brucelosis	3 Years	18,44,524/-	Professor V. B. Patravale	Professor S. Maji	Vyas S wati
Department of Biotechnology	Development and evaluation of Fixed Dose Combination (FDCs) for Tuberculosis using Hot Melt Extrusion Technology	3 Year	45,78,000/-	Dr. Sadhana Sathaye		Devang Sarvaiya PhD (Tech)
Department of Science Technology	Evaluation of anti epileptic activity of medicinal plants in animal models of epilepsy	3 Year	30, 11, 782/-	Dr. Sadhana Sathaye		Pankaj Jain PhD (Tech)
All India Council for Technical Education (RPS)	Isolation standardzation and pharmacokinetic profiling of herbal drug	3 Year	22,66,667/-	Dr. Sadhana Sathaye		Madhav Seervi
Golden Jubilee R esearch Fund/UICT	Evaluation of medicinal Phytoconstituents	1 year	Rs. 75,000/-	Dr. Sadhana Sathaye		Sachin Patil, Pankaj Jain
University Grand Commission	Design and Synthesis of Anti-diabetic agents	3 Years	12,40,000/-	Vikas N. Telvekar		Not appointed
UGC	Design, Synthesis and Biological Evaluation of 2-Phenyl-4,5-(substituted) thiophene3-carboxylic acid derivatives as Anti-inflammatory agents.	3 years	7.52 lakh	Ganesh U. Chaturbhuj		
AICTE	Design, synthesis and evaluation of peripherally restricted cannabinoid receptor 2 selective agonist for treatment of neuropathic pain	3 years	16 lakh	Ganesh U. Chaturbhuj		

PRIVATE AGENCIES (INDUSTRIAL PROJECTS)

Sponsor	Title	Duration	Total amount	Principal Investigator	Research Fellows
Abbott Healthcare	Validation of HPLC method	2013 (3 Months)	10,00000	Professor P. V. Devarajan	Mr. Sagar Bacchav
Phoenix Pharmaceuticals	Oral Controlled Drug Delivery Systems	2012-2015 (3 years)	US $ 31,000	Professor P. V. Devarajan	-
Phoenix Pharmaceuticals	Controlled Drug Delivery Systems	2013-2016 (3 years)	US $ 34,000	Professor P. V. Devarajan	Mr. Sidhartha Pati
Phoenix Pharmaceuticals	Formulation of controlled and novel drug delivery systems	2014-2017 (3 years)	US $ 34,000	Professor P. V. Devarajan	Mr. Harsh Joshi

Coromandel International	Synthesis of Reference Compounds for Impurity Profiling	Two year	13.5 Lakhs	Professor K. G. Akamanchi	
Bajaj Healthcare Ltd	Novel Drug Delivery System	Jan 2013– March 2014	1.86 Lakhs	Professor P.D. Amin	Ms. Harita Desai
Evonik Degussa India Pvt Ltd		6 months	1.5lac	Professor P.D. Amin	
Merck India Pvt Ltd		6 months	7.5 lac	Professor P.D. Amin	
Arihant		6 months	1.5 lac	Professor P.D. Amin	
Dow		5 weeks	4.07 lac	Professor P.D. Amin	
PT Pharmacon		6 months	1.56 lac	Professor P.D. Amin	
Spring Bank Pharma, MA, USA	Medicinal chemistry services	2 year	Approx. 7,00,000/-	Professor M.S. Degani	-
M/s. Total Herb Solutions P.ltd	Development of analytical method for Herbal drugs and formulations	6 months (May 2012- October 2012)	50,000/	Professor K. S. Laddha	-
Alkem Pharmac-eutical Pvt. Ltd	Development of micro / nacosuspension of an antimalarial moiety	2014	10,00,000/-	Professor V. B. Patravale	NA
Grand Challenges Explorations Grants Round 11, Bill & Melinda Gates Foundation	Nanovaccine for brucellosis using green technology	2013-2014	1,00,000 $ INR ~60,00,000/-	Professor V. B. Patravale	Vyas Swati, Dhoble Sagar, Ghodke Vinod
Sahajanand Medical Technologies Pvt. Ltd.	Development of smart drug eluting stents	2013-2015	8,50,000/-	Professor V. B. Patravale	Agrawal Amit
Omniactive Health Technologies	In vitro anti-oxidant activity of compounds	1-3 months	1,13,753/-	Dr. Sadhana Sathaye	Sachin Patil, Devang Sarvaiya, Vaibhavi Peshattiwar, Suraj Muke
Yogesh Chimanpure, Mumbai	Evaluation Of polyherbal formulations for antiobesity Activity	July 2013-Feb 2014	1,00,000/-	Dr. Sadhana Sathaye	Gauresh Somani
Omniactive Health Technologies	In vitro P-glycoprotein inhibition assay	Sept 2013	2,38,765/-	Dr. Sadhana Sathaye	Madhav Seervi

Science & Engineering Research Board (SERB), Govt. of India	Design, Synthesis and Evaluation of Novel Hypoglycemic Agents	2 Years	12,00,000/-	Vikas N. Telvekar	Yogesh Manohar
Uni Sankyo Pvt. Ltd	Development of controlled release formulations	3 years	18,00,000 Rs	Professor P. R. Vavia	
Lubrizol Advanced Materials Pvt. Ltd.	Hot melt Extrusion	2 years	3,00,000 Rs	Professor P. R. Vavia	
Nippon Synthetic Chemicals Pvt. Ltd.	Development of controlled release formulations	3 years	7,30,000 Rs	Professor P. R. Vavia	
Lotus Surgicals Pvt. Ltd	Development of antimicrobial formulations	3 years	8,54,000 Rs	Professor P. R. Vavia	
ArEx Laboratories Pvt. Ltd	Development of controlled release veterinary formulations	2 years	-	Professor P. R. Vavia	
Coromadel International Pvt. Ltd.	Synthesis of impurities for Agrochemicals	1 year	13 Lakh	Prof. K.G. Akamanchi	

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

NATIONAL COLLABORATIONS

- ACTREC, Mumbai
- BARC, Mumbai
- BVC, Mumbai
- Haffkine Institute, Mumbai
- National JALMA Institute of Leprosy & Other Myco-bacterial Diseases, Agra
- NCL, Pune
- NIIH, Mumbai
- NIRRH, Mumbai
- RMC, Mumbai
- TIFR
- Department of Biochemistry and Jamunalal Bajaj Tropical Disease Research centre, Mahatma Gandhi institute of Medical Sciences, Sevagram, Wardha-442102, Maharashtra, India
- IIT, Mumbai
- Govt. Dental College, Mumbai
- IIT Delhi
- CDRI, Lucknow
- Amity University, Noida
- National Burns Centre, Navi-mumbai
- National, Institute of Mental Health and NeuroSciences, Bangalore

INTERNATIONAL-UNIVERSITY/ INSTITUTE

- Bradford University, UK
- Tokyo University of Science, Japan
- School of Health Sciences, University of KwaZulu-Natal, Durban, KwaZulu-Natal, South Africa.
- Open Innovation Drug Discovery, Eli Lilly and Company, Lilly Corporate Center, Indianapolis, IN 46285, USA
- Professor R. Mueller, Berlin, Germany
- University of Geneva, Switzerland
- Hoshi University, Japan
- University of Bradford, UK
- University of Delaware, USA
- Miami University, USA
- Atlanta Georgia, USA

INTERNATIONAL-INDUSTRY

- Abbott Ltd.
- Pfizer
- Phoenix, USA

PUBLICATIONS

No.	Title and authors	Journal	Vol. No.	Pages	Year	Impact Factor
PROFESSOR P. V. DEVARAJAN						
1	D'Souza A.A.; Jain P.; Galdhar C.N.; Samad A.; Degani M.S.; Devarajan P.V. Comparative in silico-in vivo evaluation of ASGPR Ligands for hepatic targeting of Curcumin Gantrez nanoparticles	AAPS	15(3)	696-706	2013	4.39
2	More, A.B.; Patel M. D.; Malshe V.C.; Devarajan P.V.; Vanage G.R. Genotoxicity and Mutagenicity Evaluation of Polyethylene Sebacate Nanoparticles	Journal of Nanophar-maceutics & Drug Delivery.	1(3)	301-310	2013	-
3	Devarajan P.V.; Joshi V.M.Scale Up of Doxycycline Hydrochloride Lipomer By Nanoprecipitation Using An Air Atomization Technique.	Am. J. Pharm Tech Res.	3(4)	657-673	2013	0.98
4	Patel M. D.; Date P.V.; Gaikwad R.V.; Samad S.; Malshe V.C.; Devarajan P.V. Comparative evaluation of polymeric nanoparticles of rifampicin comprising Gantrez and poly (ethylene sebacate) on pharmacokinetics, biodistribution and lung uptake following oral administration.	Journal of Biomedical Nanotech-nology	10(4)	687-94	2014	5.26
5	Swati A. Guhagarkar, Devang Shah, Mitesh D. Patel, Sadhana S. Sathaye, Padma V. Devarajan Polyethylene sebacate-silymarin nanoparticles with enhanced hepatoprotective activity.	Journal of Nanoscience and Nanotech-nology	14	1-4	2014	1.15
6	Soni M.K.; Shelkar N.; Gaikwad R.V.; Vanage G; Samad A.; Devarajan P.V., Buparvaquone loaded solid lipid nanoparticles for targeted delivery in theileriosis	Journal of Pharmacy & Bioallied Sciences	6(1)	22-30	2014	-
7	Khandekar S.V.; Kulkarni M.G.; Devarajan P.V. Polyaspartic acid functionalized gold nanoparticles for tumor targeted Doxorubicin delivery,	Journal of Biomedical Nanotech-nology	10(1)	143-153	2014	5.26

8	Patil N.; Devarajan P.V. Drug Delivery. Insulin loaded alginic acid nanoparticles for sublingual delivery.	Drug Delivery	Article in press		10.3109/107 17544. 20 14.916 769	2.015
9	Benival D.M.; Devarajan P.V. In Situ Lipidization as a New Approach for the Design of a Self Microemulsifying Drug Delivery System (SMEDDS) ofDoxorubicin Hydrochloride for Oral Administration	Journal of Biomedical Nanotechn-ology	10	1-10	2014	5.26
PROFESSOR K. G. AKAMANCHI						
1	Phosphine free tetradentatesalic-ylaldimine ligand complexed with palladium: first application in heck reaction: Kalhapure, R.S.; Akamanchi, K.G.; Govender, T.	Synthetic Communication	doi.org/10.1 080/003979 11.2014.94 1501	2014	1.06	
2	Synthesis and Antibacterial Activity of Silver Nanoparticles Capped With A Carboxylic Acid Terminated Generation Oleodendrimer	Chemistry Letters	53	1110-1112	2014	1.594
3	Aryl-Free Radical-Mediated Oxidative Arylation of Naphthoquinones Using O-Iodoxybenzoic Acid and Phenylhydrazinesand Its Application Toward the Synthesis of Benzocarbazoledione Patil, P.; Nimonkar, A.;Akamanchi, K.G.	Journal of Organic Chemistry	79	2331-2336	2014	4.564
4	Novel Oleic Acid Derivatives Enhance Buccal Permeation of Didanosine Kalhapure, R.S.;Akamanchi, K.G.; Govender, T.	Drug Development and Industrial Pharmacy	40	657-668	2014	1.539
5	Dendrimers- From Organic Synthesis to Pharmaceutical Applications: An Update Kalhapure, R.S.;Kathiravan, M.K.;Akamanchi, K.G.;Govender, T.	Pharmaceutical Development and Technology		1-19	2013	1.333

6	An Efficient Protocol for Regioselective Ring Opening of Epoxides Using Sulfated Tungstate: Application in Synthesis of Active Pharmaceutical Ingredients Atenolol, Propranolol and Ranolazine. Pathare, S.P.; Akamanchi, K.G.	Tetrahedron Lett.	54	6455-6459	2013	2.397
PROFESSOR P. D. AMIN						
1.	Recent Development and Achievements In Solubility and Dissolution Enhancement of Itraconazole: A Review Jaywant N. Pawar, Tarique M. Ali, Kailash K. Moravkar, Rahul K. Patole , Divakar R. Jaiswar and Purnima D. Amin	International Journal of Pharmaceutical Sciences and Research	5(8)	1000-10.	2014	0.54
2.	Preparation and Characterization of Lafutidine Solid Dispersion Systems using Hot Melt Extrusion Technique: Investigating drug-polymer miscibility with advanced characterization. Ritesh Fule, Purnima D. Amin et al.	Asian Journal of Pharmaceutical Sciences	9 (2)	92–106	2014	0.39
3.	Investigational studies on highly purified Fenugreek gum as emulsifying agent. Ajay R. Sav, Tarique S. Meer, Ritesh A. Fule, Purnima D. Amin	Journal of Dispersion Science and Technology	34(5),	657-662	2013,	0.6
4.	Recent Advancements in solubility and dissolution enhancement of Simvastatin: A Review Ajay Kumar Sav, Purnima D. Amin	American Journal of PharmTech Research	3(2)	127- 144	2013	0.98
5.	Design and optimisation of extended release metoprolol succinate formulation using melt granulation technique. Vanita J. Sharma, Purnima D. Amin	International journal of pharmacy and pharmaceutical sciences,	5(3)		2013	0.54
6.	Development of extended release matrix tablet of rifampicin by hot melt Extrusion technology. Vanita J. Sharma, Purnima D. Amin	Journal of Applied Pharmaceutical Science	3(10)	030-038	2013	0.35

7.	Artemether-Soluplus Hot-Melt Extrudate Solid Dispersion Systems for Solubility and Dissolution Rate Enhancement with Amorphous State Characteristics. Ritesh Fule, Tarique Meer, Ajay Sav and Purnima D. Amin	Journal of Pharmaceutics		1-15,	2013	
8.	Solubility and Dissolution Rate Enhancement of Lumefantrine using Hot Melt Extrusion Technology with Ritesh A. Fule, Tarique S. Meer, Ajay R. Sav, Purnima D. Amin	Physicochemical Characterisation.	43, 4, ,	305-321	2013	
9.	Preparation and Characterization of Lornoxicam Solid Dispersion Systems using Hot Melt Extrusion Technique. Ritesh A. Fule, Purnima D. Amin et. al.	Journal of Pharmaceutical Investigation			2013	
10.	Development and Evaluation of Artemether-Aeroperl® 300 Pharma Granular Solid Dispersion Powder with Enhanced Solubility, Dissolution Rate and Physicochemical Characterisation. Ritesh A. Fule, Tarique S. Meer, Deepak	Am. J. PharmTech Res.	3 (2)	487-506	2013	0.98
11.	Enhanced solubility and dissolution of simvastatin by HPMC-based solid dispersions prepared by hot melt extrusion and spray-drying methodSharadchandra D. Javeer, Rahul K.Patole & Purnima D. Amin*	Journal of Pharmaceutical Investigation	43 (4)		Aug 2013	
12.	Fabrication of Cyclodextrin-templated mesoporous silica for improved dissolution of Carbamazepine	Delivery and Translational Research	3 (3)	pp 235-242	2013,	
13.	Solubility modulation of bicalutamide using porous silica. Tarique Meer, Ritesh Fule, Deepak Khanna, Purnima D. Amin	Journal of Pharmaceutical Investigation	43	279–285	(2013):	
14.	Porous starch: a novel carrier for solubility enhancement of Ali Meer Tarique, Fule Ritesh, Sav Ajay kumar, Purnima D. Amin	AAPS PharmSciTech. Carbamazepine	14 (3)	919-26	2013	4.38

15.	Formulation development of venlafaxine hydrochloride extended release pellets by extrusion spheronization method Bagdiya Omprakash, Sav Ajay, Purnima D. Amin	Int J Pharm	3 (1)	152-15	2013	
16.	Carbamazepine Co-crystals by Solvent Evaporation technique: Formulation and Characterization Harita Desai, Purnima D Amin	American Journal of Pharm Tech Research	4		2013	
DR. G. U. CHATURBHUJ						
1	Triazole hybrids as new type of anti-fungal agents. Miniyar P.B.; Mahajan A.A.; Mokale S.N.; Shah M.U.; Kumar A.S.; Chaturbhuj G.U.	Arabian Journal of Chemistry	-	1-5	2013	2.684
2	Copper catalyzed Gomberg–Buchmann–Hey reaction using aryldiazoniumtosylate. Chaturbhuj G.U.; Akamanchi K.G.,	Tetrahedron Letters	52	4950 – 4953	2011	2.391
PROFESSOR M. S. DEGANI						
1	Puneet P. Jain, Mariam S. Degani, Archana Raju, Muktikanta Ray, M. G. R. Rajan, Rational drug design based synthesis of novel arylquinolines as anti-tuberculosis agents	Bioorganic & Medicinal Chemistry Letters	23	6097-6105	2013	2.33
2	Archana Raju, Manisha A. Khedkar and Mariam S. Degani, Optimization of Mycobacterium tuberculosis DHFR production from recombinant Saccharomyces cerevisiae	International Journal of Current Microbiology and Applied Sciences	2(6)	70-79	2013	
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BOOK CHAPTERS

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
1	Anisha D'souza, Bhagyashri Joshi, Padma V. Devarajan	Novel Drug Delivery Systems	N. Uduppa	Prism Publications	Bengaluru	2014	1-45
2	Padma V. Devarajan and Maheshkumar P. Soni	Targeted Nanomedicine Strategies for Livestock Infections	Sudhi Ranjan Garg	Daya Publishing House	New Delhi	2014	61-98
3	Sharmila B. Majee, Prashant R. Suryawanshi, Naresh R. Kulkarni, Praveen V. Date, Manoj D. Kakwani, Rajiv V. Gaikwad, Anilkumar S. Bannalikar, Padma V. Devarajan, Mariam S. Degani and A. Samad	Targeted Drug Delivery Using Nanoparticles for Tuberculosis	Sudhi Ranjan Garg	Daya Publishing House	New Delhi	2014	157-172
4	Dandekar Prajakta, Jain Ratnesh,	Polymeric Nanoparticles for Nucleic Acid in Nanoparticles for Catalysis, Energy and Drug Delivery Delivery	Ramesh S. Chaughule and Anant R. Kapdi	American Scientific Publishers	USA	2014	
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7	K.S.Laddha	Abrus precatorius	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	1
8	K.S.Laddha	Aegle marmelos	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	69
9	K.S.Laddha	Aesculus hippocastanum	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	88
10	K.S.Laddha	Amaranthus tricolor	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research		2014	109
11	K.S.Laddha	Buchnania lanzan	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	163
12	K.S.Laddha	Cassia fistula	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	186
13	K.S.Laddha	Clerodendrum phlomidis	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	196
14	K.S.Laddha	Derris indica	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	206
15	K.S.Laddha	Dryopteris filix-mas	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	227
16	K.S.Laddha	Eucalyptus globules	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi		237

17	K.S.Laddha	Lepidium sativum	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	299
18	K.S.Laddha	Sesamum orientale	Neeraj Tandon and Parul Sharma	Indian Council of Medical Research	New Delhi	2014	351
19	V. Patravale, P. Prabhu	Lipid based drug delivery systems. In book entitled, "Recent Trends in Novel Drug Delivery"	N. Udupa and Srinivas Mutalik	Prism Books Pvt. Ltd	India	2014	80-167
20	V. Patravale, S. Vyas	Molecular nanotechnology: Rapid detection of microbial pathogens in food. In book entitled, "Microbial Food Safety and Preservation techniques"	V. Ravishankar Rai and A Jamuna Bai	Taylor and Francis Group, CRC Publishers	India	2013	In press

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No.	Inventors	Title	Country	Funding agency
PROFESSOR (MRS.) M. S. DEGANI				
1	Arundhati Lele, Archana Raju, Mariam Degani	Novel diamino nitrogen heterocyclic compounds as folate inhibitors (Provisional patent)	India	Self
2	Archana Raju, Mariam Degani	Anti-mycobacterial activity of plant phenols/ polyphenols targeting the folate pathway (Provisional patent)	India	Self
3	Mihir Khambete, Mariam Degani	Nitroheterocyclic compounds as anti-infective agents (Provisional patent)	India	Self
PROFESSOR (MRS.) V. B. PATRAVALE				
1.	V. Patravale, S. Jain, P. Prabhu, S. Pathak, S. Sharma	Nanodrug delivery based on combination therapy for treating parasite infections (3567/MUM/2013).	India	Self
2.	V. Patarvale. A Arsiwala, D. Gugulothu	Highly porous dosage forms (3441/ MUM/2013)	India	Self
3.	V. Patravale, Vyas S.	Point-of-care diagnostic test for rapid detection of brucellosis (3183/MUM/2013).	India	Self
4.	V. Patravale, S. vyas, P. Prabhu	Non-invasive vaccine delivery system for immunization against brucellosis using green technology (2920/MUM/2013).	India	Self
PROFESSOR P. R. VAVIA				
1	Professor P. R. Vavia, Achyut Khire	Pharmaceutical composition containing acrylate type aqueous based pressure sensitive adhesive for transdermal delivery	India	Self

2	Professor P. R.Vavia, Ketan Patel	Composition for parenteral delivery of anticancer drug	India	Self
3	Professor P. R.Vavia, PreetiWavikar, Mayank Patel	Pharmaceutical compositions of thiocolchicoside	India	Self
4	Professor P.R.Vavia, Ketan Patel, Vinit Bajaj	Proliposomal formulation for parenteral delivery of anticancer agent	India	Self
5	Professor P.R. Vavia, Sharad Darandale, Subhash Ingle	Pharmaceutical composition of Clomiphene citrate	India	Self
6	Professor P.R. Vavia, SmitaPawar, Mayank Patel	Pharmaceutical composition of Diclofenac and salt thereof alone or in combination with other pharmaceutically active agents	India	Self
7	Professor P.R. Vavia, Ketan Mahajan, Vinit Bajaj	Sophorolipid based niosomal/proniosomal formulations	India	Self
8	Professor P. R. Vavia	Modified release pharmaceutical composition of an antimuscarinic agent	India	Self

ENDOWMENT FELLOWSHIPS AND LECTURES ORGANIZED

Sr. No	Date of Lecture	Fellowship	Distinguished speaker/Affiliation	Title of Lecture
1	05/03/ 2014	Dr. R.S Baichwal Seminar	Professor Dhiren R Thakker Ferguson distinguished professor and associate dean for Entrepreneurial Development and Global Engagement, UNC Eschelman School of Pharmacy, UNC, USA	Creation of Intellectual Property and Entrepreneurism: An Integral Part of Academic Pursuit in 21st Century
2	05/03/ 2014	Dr. R.S Baichwal Seminar	SundeepDugar, PhD President/CEO/ Founder SphaeraPharma, Singapore	Academy as an engine of Innovation: From the perspective of a Biotech CEO
3	05/03/ 2014	Dr. R.S Baichwal Seminar	KasimMookhtiar, PhD Chief Scientific Officer and EVP, Drug Discovery, Advinus Therapeutics Ltd, India	Intellectual Property Creation in Indian Technology Intensive institutions: Been there-done it or new horizons?
4	28/03/ 2014	Dep. of Sci. & Tech.	Professor Dr. Ganesh Thakur Northeastern University, Boston, USA	Tuning Endocannabinoid System for Therapeutic gain
5	11/02/ 2014	Themis Chemicals visiting fellowship	Dr. AbhayHarsulkar Professor and Head, Pharmaceutical Biotechnology, Poona College of Pharmacy, BVU, Pune	Nutrigenomics or nutrient-gene interaction with reference to disease pathologies.
6	28/01/ 2014	Professor S.K. Pradhan Endowment Lecture	Dr. G. Mugesh Professor, Depatment of Inorganic & Physical Chemistry, Indian Institute of Science	1. Synthesis and Biological activity of reduced graphene oxide nanosheets 2. Antioxidant nanoxymes
7	23/10/ 2013	Dr. (Mrs.) M.R. Baichwal Endowment Lecture	Amit Misra Associate Professor, Principal Scientist and In-charge; Pharmaceutics Division CSIR, Lucknow	Inhalable particles targeting drugs affecting host responses to tuberculosis
8	10/09/ 2013	Cipla distinguished visiting fellowship	Theresa M. Allen, Professor of Pharmacology and Adjunct Professor of Oncology, University of Alberta	Development of liposomal nanoparticles foranticancer applications

ORAL/ POSTER PRESENTATIONS

- Joshi R.; Devarajan P.V. Cytotoxicity and cell uptake of anionic docetaxel self microemulsifying drug delivery system on A-549 (human alveolar carcinoma) cell line presented in the 40th annual meeting and exposition of the Controlled Release Society 20-24 July, 2013 held at Honolulu, Hawaii, USA.
- Mande P. P., Devarajan P.V.; ESA- SMEDDS: An Innovative Approach for Bioenhanced Curcumin presented in the 40th annual meeting and exposition of the Controlled Release Society 20-24 July, 2013 held at Honolulu, Hawaii, USA.
- Joshi V.M.; Das S. Insitu nanocarboplex of primaquine phosphate: A pioneering nano drug delivery system in NIPICON 2014, Jan 23-25 2014 at Nirma University, Ahmedabad.
- Pranatharthiharan S.; Devarajan P.V. Asialoglycoprotein receptor mediated hepatocyte targeted delivery of polymeric nanoparticles of Doxorubicin in NIPICON 2014, Jan 23-25 2014 at Nirma University, Ahmedabad.
- Dalvi B.; Devarajan P.V. Surface functionalized nanoparticles of NVP-An improved strategy to tackle deadly HIV infection in HIV science 2014, International science symposium on HIV and infectious diseases, 30 Jan-1 Feb 2014 held at Chennai.
- Dalvi B.; Devarajan P.V. Influence of nano and surface functionalization on anti HIV potential of PES-NVP-AUNPs in Nanoscitech, Feb 13-15 2014 held at Punjab university
- Shinde R.; Devarajan P.V. Improved activity of curcumin and albendazole sulfoxide microemulsion on taenia solium cysts in neurocysticercosis therapy" in Nanoscitech, Feb 13-15 2014 held at Punjab university
- Joshi R.; Devarajan P.V. A combination strategy for enhanced permeation of docetaxel from docetaxel smedds in Nanoscitech, Feb 13-15 2014 held at Punjab university.
- Mande P. P., Devarajan P.V. ESA- SMEDDS: An Innovative Approach for Bioenhanced Tadalafil in Nanoscitech, Feb 13-15 2014 held at Punjab university.
- Dawre S.; Devarajan P.V. Design and evaluation of controlled release in situ gel of arteether for single shot therapy in Nanoscitech, Feb 13-15 2014 held at Punjab university.
- Dalvi B.; Devarajan P.VDesign of surface functionalized nanoparticles with a novel targeting ligand (TL) for macrophage targeting in Rasayanam 2014, 3-4 March 2014 held at ICT, Mumbai
- Malode V.; Devarajan P.V. Floating Gastro Retentive Extrudates of Metoprolol Succinate By Hot Melt Extrusion in 7th International Conference organized by South Asian Chapter of American College of Clinical Pharmacology on "Clinical Pharmacology-Translational Research: Patient to Public Health",17-20 April 2014, held at Nehru Centre, Worli, Mumbai.
- Shinde R.; Devarajan P.V. Enhanced brain delivery of microemulsion of novel combination of curcumin and albendazole sulfoxide for neurocysticercosis therapyin 7th International Conference organized by South Asian Chapter of American College of Clinical Pharmacology on "Clinical Pharmacology-Translational Research: Patient to Public Health",17-20 April 2014, held at Nehru Centre, Worli, Mumbai.
- Chawla S.; Devarajan P.V.Nano diagnostic approach for blood group detection in 7th International Conference organized by South Asian Chapter of American College of Clinical Pharmacology on "Clinical

Pharmacology-Translational Research: Patient to Public Health",17-20 April 2014, held at Nehru Centre, Worli, Mumbai.

- Jahagirdar P.S.; Devarajan P.V. Effect of dissolution apparatus on in vitro release profile of rifampicin from polymeric nanoparticles prepared by two different methods in Disso Asia 2014, 5-6 May 2014, held at the Lalit Mumbai.
- Dawre S.; Devarajan P.V. Ex vivo dissolution method for intramuscular in situ depot formulations in Disso Asia 2014, 5-6 May 2014, held at the Lalit Mumbai.
- Molecular docking as a tool for studying protein-excipient interactions: an approach to protein stabilization, 5-7th Dec. 2013 held at the Bioprocessing India 2013 held at IIT, New Delhi.
- Development of novel oleic acid based heterolipid E1E and its application for nanomedicine, 19-20th April 2014 held at International annual conference on "Clinical Pharmacology-Translational Research: Patient to Public Health"Organized by South Asian Chapter of ACCP at Nehru center, Worli, Mumbai.
- Mihir P. Khambete, Nilesh R. Tawari, Harish S. Kundaikar, Arundhati C. Lele, Mariam S. Degani, "Prediction of mutagenic potential of nitroaromatics by atom based QSTR and Density Functional Theory Calculations", Recent Advances in Computational Drug Design, IISc, Bangalore, India, September 2013
- Harish S. Kundaikar, Mihir P. Khambete and Mariam S. Degani, "Aminoacid-specific Preferential Binding Site for Ligands Aβ peptides to Rationalize Drug Design for Alzheimer's Disease", Recent Advances in Computational Drug Design, IISc, Bangalore, India, September 2013
- ArunBhusari, Mariam Degani, Harish Kundaikar, MachhindraBochare, Harikesh Janamanchi, Mihir Khambete, M.G.R.Rajan, Lakshminarayanan N. "Design, synthesis and in vitro evaluation of potential 18F-fluorinated molecules as PET tracers for Alzheimer's disease. December 2013, Society of Nuclear Medicine, India, Mumbai.
- MachhindraBochare, Harish Kundaikar, ArunBhusari, Mariam Degani, "Computational studies for optimization of organo-catalysts in Kryptofix-free synthesis of 18F radiotracers, December 2013, Society of Nuclear Medicine, India, Mumbai
- Harish Kundaikar, ArunBhusari, Harikesh Janamanchi, Machhindra Bochare, Mariam Degani, M.G.R.Rajan, Lakshminarayanan N. "Application of structure based drug design for synthesis of PET radio-ligands for Alzheimer's disease. December 2013, Society of Nuclear Medicine, India, Mumbai
- Deepavali R. Thanekar, Jayesh B. Dhodi, Dharmendra K. Khatri, Parikshit R. Juvekar, Archana R. Juvekar. Comparison between different extracts of Cinnamomum tamala (Buch.- Ham.) T. Nees & Eberm for their in vitro cytotoxic activity on cancer cells. 4th International Conference on Stem Cells and Cancer (ICSCC-2013) Proliferation, Differentiation and Apoptosis on dated Oct 19, 2013.
- Dharmendra K. Khatri, Manjula Konka, Archana R. Juvekar, Mimusops elengi L. Leaves- A potential plant source for the treatment of inflammation. 6th International Conference of South Asian Chapter of ACCP on "Innovation in 21st Century: Clinical Pharmacology in current and Future environment" held on 19th-22nd April 2013 in Mumbai, India.
- Dnyaneshwar M. Nagmoti, Pankaj S. Kothavade, Vipin D. Bulani, Archana R. Juvekar. Antidiabetic and antihyperlipidemic activity of Pithecellobium dulce (Roxb.)

Benth. in streptozotocin induced diabetic rats. 6th International Conference of South Asian Chapter of ACCP on "Innovation in 21st Century: Clinical Pharmacology in current and Future environment" held on 19th-22nd April 2013 in Mumbai, India.

- Dnyaneshwar M. Nagmoti, Pankaj S. Kothavade, Vipin D. Bulani, Nitin B. Gawali, Archana R. Juvekar, Extenuating effects of n-butanol fraction of pithecellobium dulce seeds on blood lipids in streptozotocin induced diabetic rats. ., 46th Annual Conference of Indian Pharmacological Society, held at bangaluru, on 16th -18th Dec. 2013.
- Pankaj S Kothavade, Dnyaneshwar M Nagmoti, Nitin B Gawali, Dharmendra K Khatri, Archana R Juvekar, Bioassay guided fractionation for identification and evaluation of anti-inflammatory compounds from seeds of celastrus paniculatus willd., 46th Annual Conference of Indian Pharmacological Society, held at bangaluru, on 16th -18th Dec. 2013.
- Dharmendra Kumar Khatri, Preeti N Tupe,Samee M Fazal, Archana R. Juvekar, "Indian Medicinal Plant- A Rich Source for Treating Parkinson's Disease" at International Symposium on Emerging Trends and Challenges in Neuroscience & 31 Annual Conference of Indian Academy of Neurosciences October 25 – 27, 2013 Allahabad, U.P. India.
- Dharmendra Kumar Khatri, Puja Sandbhor, Deepavali Thanekar, Parkshit Juvekar, Archana Juvekar, "Albizia lebbeck leaves – A potential key plant for the treatment of cancer", at 4th International Conference on Stem Cells and Cancer (ICSCC-2013): Proliferation, Differentiation and Apoptosis, to be held in Mumbai, India from October 19-22 2013.
- Dharmendra K. Khatri, Manjula M. Konka, Deepavali R. Thanekar, Vipin D. Bulani, Pankaj S. Kothawade, Sabir H. Attar, Parikshit R. Juvekar, Archana R. Juvekar, "In-Vitro, In-Vivo Anti-Inflammatory Evaluation of Mimusops Elengi Leaves Extracts" at 7th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN), October 5–8, 2013,Quebec City, Quebec, Canada.
- Sabir H. Attar, Dharmendra K. Khatri, Deepavali R. Thanekar, Vipin D. Bulani, Pankaj S. Kothavade, Parikshit R. Juveakar, Archana R. Juvekar, "Evaluation of Cardioprotective Potential of Murraya Koeingii Leaves Extract" at 7th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN), October 5–8, 2013,Quebec City, Quebec, Canada.
- Karthik Manohar, Dharmendra K. Khatri, Parikshit R. Juvekar, Archana R. Juvekar, "Preliminary Evaluation of an Anti-Diabetic Polyherbal Formulation" at 7th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN), October 5–8, 2013,Quebec City, Quebec, Canada.
- Deepavali Thanekar, Jayesh Dhodi, Nitin Gawali, Pankaj Kothavade, Dharmendra Kumar Khatri, Vipin D.Bulani, Sabir Husain Attar, Parikshit R. Juvekar, Archana R. Juvekar, "Evaluation of Anti-Angiogenic and In Vitro Cytotoxic Activity on Cancer Cells of an Indian Spice Plant" at 7th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN), October 5–8, 2013,Quebec City, Quebec, Canada.
- Archana R. Juvekar, Deepavali R. Thanekar, Jayesh Dhodi, Pankaj Kothavade, Vipin D. Bulani, Dharmendra Kumar Khatri, Sabir Husain Attar, Parikshit R. Juvekar, Nitin Gawali, "Bioactivity Guided Fractionation of Crude Extracts of Two Indian Spices for Their Potential to Use as Nutraceuticals on Breast Cancer" at 7th Congress of

the International Society of Nutrigenetics/Nutrigenomics (ISNN), October 5–8, 2013, Quebec City, Quebec, Canada.

- Dharmendra Kumar Khatri, Archana R. Juvekar, To evaluate anti-parkinson potential of methanolic extract of Hyoscyamus Niger seeds(MHN) in stereotaxically induced rotenone rat model of Parkinson's disease. at 3rd World Parkinson Congress (WPC 2013), October 1-4, 2013 in the Palais des congres Montreal, Québec, Canada.
- Sabir Husain F. Attar, Dharmendra K khatri, DnyneshwarM Nagmoti,Archana R. Juvekar,_Manasi, R. Juvekar "Acute and Sub-acute oral toxicity study of L-dopa and Hyoscine hydrobromide in combination in rodents" at 3rd World Parkinson Congress (WPC 2013), October 1- 4, 2013 in the Palais des congres Montreal, Québec, Canada.
- Dharmendra Kumar Khatri, Parikshit V Chudhari, Parkshit Juvekar, Archana R. Juvekar, "Anti-Epileptic Activity of Methanolic extract of Ervatamia Coronaria leaves in Strychnine Induced mice model" at international conference on Colloquium on Drug-Resistant Epilepsy organized by National Institute of Mental Health & Neuro Sciences Bangalore, India & American Epileptogists of Indian Origin, USA at Convention Center, NIMHANS, Banglore, India from August 16-18, 2013.
- Archana R. Juvekar, Mrugaya P. Kulkarni, Dharmendra K. Khatri, Parkshit Juvekar, "Anti-Epileptic Activity of Aqueous Extract of Nelumbo nucifera Leaves in Strychnine Induced Mice Model" at international conference on Colloquium on Drug-Resistant Epilepsy organized by National Institute of Mental Health & Neuro Sciences Bangalore, India & American Epileptogists of Indian Origin, USA at Convention Center, NIMHANS, Banglore, India from August 16-18, 2013.
- Khatri Dharmendra, Juvekar Archana, Hule Amolkumar, "In vitro proliferative/ cytotoxic potential of the extracts of Bacopa Monnieri" International Symposium on Drug Discovery for Infectious Diseases and Cancer, Held at Institute of Chemical Technology, Mumbai on 16th-17th January 2013
- Dnyaneshwar M. Nagmoti, Nitin B. Gawali, Pankaj S. Kothavade, Vipin D. Bulani, Archana R. Juvekar. Inhibitory activities of semi-purified fractions of vernonia anthelmintica willd seeds against carbohydrate hydrolyzing enzymes (α-amylase and α-glucosidase). 46th Annual Conference of Indian Pharmacological Society, held at bangaluru, on 16th -18th Dec. 2013.
- Vipin D Bulani, Dnyaneshwar M Nagmoti, Nitin B Gawali, Dharmendra K Khatri, , Archana R Juvekar, Characterization And Evaluation Of Ellagic Acid-B-Cyclodextrin Inclusion Complex For Anti-Inflammatory Activity.46th Annual Conference of Indian Pharmacological Society, held at bangaluru, on 16th -18th Dec. 2013.
- Neha Verma, A.R. Juvekar, "Hypertension and Diabetes" 22nd National Conference of the Indian society of Hypertension (BPCON 2012) held at Mumbai on 2nd-4th November 2013.
- GauravKapadnis, Prajakta Dandekar and Ratnesh Jain (2013), Pepsin catalyzed hydrolysis of Chitosan to synthesize Chitosan Oligosaccharides (COS) with improved water solubility Poster Presentation at ICT NanoBio 2013, Institute of Chemical Technology, Mumbai, India, November 2013.
- Krishnan Harini, BachhavBhagyashree, Jain Ratnesh, Dandekar Jain Prajakta (2013): Cationic PLGA Nanoparticles for nucleic acid delivery. ICT Nano-Bio - Workshop on Advances in Biomaterials and Nanobiotechnology,

India, November 2013.

- Krishnan Akhil, Dandekar Jain Prajakta, JainRatnesh (2013): A Novel Ultrasound assisted route for the synthesis of Low Molecular Weight Chitosan (LMWC). ICT Nano-Bio - Workshop on Advances in Biomaterials and Nanobiotechnology, India, November 2013.
- Anomitra Dey, VishwanathDalvi, Prajakta Dandekar, Ratnesh Jain (2013): In-silico based study of Chitosan-Sodium tripolyphosphate (Ch-TPP) Nanoparticles: A mechanistic approach towards their interaction. Workshop on Advances in Biomaterials and Nanobiotechnology, India, November 2013.
- Pofali Prasad, DandekarJain Prajakta, Jain Ratnesh (2013): Dual Benefit of Preservative free action and antimicrobial activity in silver nanoparticle vanishing cream. Workshop on Advances in Biomaterials and Nanobiotechnology, India, November, 2013.
- Ratnesh Jain, Prajakta Dandekar, BrigittaLoretz, Gerhard Wenz, and Claus-Michael Lehr (2013): Cationic Polymethacrylate Nanoparticles downregulate Bfl-1/A1 Gene: Anew approach for intracellular infection. 40th Annual Meeting and Exposition of the Controlled Release Society, Honolulu, Hawaii, July, 2013.
- ERS (European Respiratory Society) Annual Congress, Valencia, Spain, September 5-10, 2013
- Podium presentation on paper entitled, Hot Melt Extrusion: Rejuvenating Clinical Potential of Curcumin at the 6th International conference on Drug metabolism and Pharmacokinetics, NIPER, Chandigarh, India, 27th February – 2nd March 2014
- Polymeric Nanoparticulate Delivery of Curcumin-Ellagic acid: Synergistic Potential for Inflammatory Bowel Disease Therapy, Pukale S., Gugulothu D. Patravale V. at seminar on Advances in Pharmaceutical Technology & Its Business Potential, Yadavrao TasgaonkarInstitue of Pharmacy Raigad, India, February 2014
- SANS investigation of a micellar drug delivery system formed by a novel antioxidant- lipid bioconjugate. Desai P. Aswal V. Hassan P. Patravale P. at Conference on Neutron Scattering 2014", Pune, India , 10-12th February 2014
- Development of mathematical model to predict release of a water soluble drug from tamarind seed polysaccharide matrices. Patale R., Desai P., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- Design Expert®: An integration of software solution for Nanoformulation experimentations. Gite S., Mirani M., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- PCP-V3: Simplifying dissolution studies. Mohurle S., Mirani A., Gite S., Gugulothu D., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- Mandeley desktop: The unsoiled way to manage your research. Joshi P., Ghune M., Kadwadkar N., Gugulothu D., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- Endnote for research. Vyas S., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- Graphpad Prism: Avaluable tool for statistical analysis of experimental data. Prabhu P., Patravale V. at National Seminar on "Software

in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014

- Design expert: A link application tool in development of a solid oral dosage form. Chogle M., Gite S. Mirani A. Kadwadkar N. Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- Inclusion of pdf viewer and Hex 8.0 for drug screening: A case study. Kamble M., Talkar S. Gugulothu D., Patravale V. at National Seminar on "Software in Drug Discovery and Development", Kolhapur, India, 21-22nd January 2014
- In vivo investigation of anticancer activity and treatment associated toxicity of tamoxifen-loaded cationic lipomerShete H., Desai P., Vanage G., Patravale V. at 65th Indian Pharmaceutical Congress, Delhi, India, 20-22nd December 2013
- Self nanoemulsifying system of etoposide-curcumin combination for enhanced bioavailability in lung cancer therapy. Joshi P., Patel C., Gorakshakar A., Patravale V.at 65th Indian Pharmaceutical Congress, Delhi, India, 20-22nd December 2013
- Development of clotrimazole polymeric nanoparticles by continuous process. Khan I., Sane M., Patravale V. at 65th Indian Pharmaceutical Congress, Delhi, India, 20-22nd December 2013
- Influence of Newly Synthesized Mono-Guanidine Heterolipid based Cationic Nanocarriers in Treatment of Melanoma Tumor in C57BL/6 mice. Shete H. , Prabhu N. , Akash N., Vanage G., Patravale V. at the Convention Center of the NH Laguna palace Hotel in Venice-Mestre, Italy jointly organized by Veneto Nanotech, National Research Council (CNR), AIRI - Associazione Nazionale Ricerca Industriale and the Italian Institute of Technology (IIT),on 27th to the 29th of November 2013.
- Hydrogel nanoparticles of curcumin: potential in treatment of diabetes; Gugulothu D., kharkar P., Ghune M., Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013),Mumbai, November 2013.
- Nanostructured lipid carriers of Curcumin-Arteether Combination: Evaluating Drug Synergy in Malarial Model. Gugulothu D., Mirani A., Pathak S., Sharma S., H.Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013),Mumbai, November 2013.
- Lymphtarg for tamoxifene: Potential in breast cancer treatment; Shete, Chatterjee S., De A., Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013), Mumbai, November 2013.
- Assessment of genotoxicity and mutagenicity of novel amphiphilic cationic heterolipid; Shete H, Vyas S., Selkar N., Vanage G., Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013),Mumbai, November 2013.
- Biological evaluation of lipid-polymer based oral nanodepot of curcumin; Fernandes C., Agrawal A., Mohrule S., Kelkar M., De. A., Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013),Mumbai, November 2013.
- Ellagic acid loaded PLGA Vs pH sensitive nanoparticles: A therapy for inflammatory bowel disease. Gugulothu D., Kadwadkar N., Joshi P., Patravale V. at the Workshop On Advances In Biomaterials And Nanobiotechnology (ICT Nano-□Bio 2013),Mumbai, November 2013.
- Seabuckthorn berry Oil and Co-Enzyme Q-10: A Supplement Duo against photoaging Pol A.,

Kadwadkar N., Mirani A., Singhal R., Patravale V. at the Omics group of conferences, Pharmacognosy, Phytochemistry& Natural products, BluRaddison Plaza, Hyderabad, October 2013.

- Optimization of Ellagic Acid Extraction from Pomegranate Rind Powder : Application in In-vitro cytotoxicity studies; Dandekar P., Joshi P., Ghune M., Patravale V., at the Omics group of conference Pharmacognosy, Phytochemistry& Natural Products. RaddisonBlu Plaza, Hyderabad, India, October 21-23, 2013.
- Super Critical extraction method optimization of Seabuckthorn (SBT) berry oil B.O: Exploiting its role in anti-ageing; Pol A., Mirani A., Kadwadkar N., Singhal R., Patravale V., at the Omics group of conference Pharmacognosy, Phytochemistry& Natural Products. RaddisonBlu Plaza, Hyderabad, India, October 21-23, 2013.
- Attended workshop on"Honing mentoring skills- a holistic approach" organized by Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai, India, May 2014.
- Attended Conference on 'Adult Neurogenesis' organized by Tata Institute of Fundamental Research, Mumbai, 6th-8th February, 2014.
- Attended conference 'Toxicity, Safety, Biocompatibility Evaluation of Materials, Medical Devices and Combination Products' organized by Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, 17th-19th February, 2014.
- Thymol ameliorates diabetic complications through suppression of oxidative stress and antiglycating activity, TEQIP, 7th International Annual Conference South Asian Chapter of American College of Clinical Pharmacology, 17th – 20th April 2014, Mumbai.
- Zebra fish as a model for rapid screening of novel therapeutics in treatment of epilepsy-7th International Annual Conference South Asian Chapter of American College of Clinical Pharmacology, 17th – 20th April 2014, Mumbai.
- Nigella sativa ameliorates oxidative stress in kidneys of streptozotocin induced diabetic rats, DBT, The world diabetes congress, 2nd – 6th December 2013, Melbourne, Australia
- Antidiabetic and Antioxidant Potential of Couroupita guianensis Leaves in Streptozotocin Induced Diabetic Rats, DBT, The world diabetes congress, 2nd – 6th December 2013, Melbourne, Australia
- Saraca indica fraction prevents cataract development and progression in streptozotocin-induced diabetic rats,Juvenile Diabetes Research foundation,13th International Congress of the Immunology of Diabetes Society (IDS), 2nd – 6th December 2013, Mantra Lorne, Victoria, Australia.
- Control of postprandial hyperglycemia-An essential aspect of diabetes treatment-International workshop on "Research writing skills – publish or perish" 12th –13th November, 2013, Mumbai.
- Advanced glycation end products and RAGE: a common thread in Aging, Diabetes, Neurodegeneration, and Inflammation -International workshop on "Research writing skills –publish or perish" 12th –13th November, 2013, Mumbai.
- Acetylcholinesterase—new roles for an old actor in alzheimer's disease-International workshop on "Research writing skills – publish or perish" 12th –13th November, 2013, Mumbai.
- Antiepileptogenic Potential of Thymol in Pentylenetetrazole Induced Kindling Model -Colloquim on Drug Resistant Epilepsy, National Institute of Mental Health and Neurosciences,

Bangalore, India & American Epileptologist from Indian origin, NIMHANS, 16th -18th August 2013, Bangalore.

- Antiepileptogenic Evaluation of Pistacia integerrima essential Oil in Pentylenetetrazole Induced Kindling Model -Colloquim on Drug Resistant Epilepsy, National Institute of Mental Health and Neurosciences, Bangalore, India & American Epileptologist from Indian origin, NIMHANS, 16th -18th August 2013, Bangalore.
- Anticonvulsant activity of Thymol in acute models of epilepsy, TEQIP,Colloquim on Drug Resistant Epilepsy, National Institute of Mental Health and Neurosciences, Bangalore, India & American Epileptologist from Indian origin, NIMHANS, 16th -18th August 2013, Bangalore.
- Bioactive fraction of Saraca indica prevents cataract development and progression in Streptozotocin-induced diabetic rats,TEQIP,7th International Annual Conference South Asian Chapter of American College of Clinical Pharmacology, 17th – 20th April 2014, Mumbai.
- Chemoenzymatic Epoxidation of Karanja Oil,TEQIP,Asian Congress on Biotechnology, 15-19th Dec 2013,New Delhi
- Neuroprotective activity of cubebin in Morris water maze vi9a acetylcholinesterase and anti-oxidant properties in amnesic mice, Abhyankar Travel Grant,Indian Pharmacological Society 16-18th Dec 2013, Banglore
- Exploration of active phytoconstituents for pancreatic lipase activity by use of enzymatic assay and molecular docking, Abhyankar Travel Grant,Indian Pharmacological Society, 16th -18th December 2013, Bangalore.
- Sharad Darandale, Pradeep Vavia, Folic acid anchored cyclodextrin based nanosponges: Promising approach for active targeting to tumor, European conference on Cyclodextrins, Oct 2013, Antalaya, Turkey
- Ketan Mahajan, Jasmin Monpara, Vinit Bajaj, Ketan Patel, Uday Annapure, Pradeep Vavia , Proniosomal formulation of Lutein for oral delivery, BIONANO 2013, Amity University, Gwalior, Oct 2013, Gwalior
- Subhash Ingle, Pradeep Vavia, Silica Microspheres: A Novel strategy for sustained delivery of highly water soluble drugs, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Mayank Patel, Shweta Mapari, Smita Pawar, Ketan Patel, Pradeep Vavia, Succinylated gelatin stabilized nanosuspenion of clarithromycin for parenteral delivery, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Jamiluddinfakhruddin, Ketan Patel, GaureshSomani, SadhanaSathaye, Pradeep Vavia
- Evaluation of lipase inhibitory activity of various orlistat formulations and excipients, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Ganesh Shevalkar, NitinJadhav, Pradeep Vavia, Polymeric interactions study of poorly soluble weakly acidic drug for solubility enhancement using milling and extrusion technique, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013,Delhi
- Ketan Y. Mahajan, Smita K. Pawar, and Pradeep Vavia , Pharmacokinetic And Toxicity Evaluation Of Glucosamine Anchored Targeted Nano-niosomal Formulation Of Doxorubicin For Anticancer Therapy, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi

- Ketan Patel, AnandPatil, Miten Mehta, VikramGota and Pradeep Vavia, Oral delivery of Paclitaxel Nanocrytal (PNC) with a dual Pgp-CYP3A4 inhibitor: Pharmacokinetic and in vivo evaluation in tumor bearing mice, Workshop On "Advances In Biomaterials And Nanobiotechnology", Nov 2013, Institute of Chemical Technology, Mumbai
- Ketan Patel, Pankaj Jadhav, Mahendra Prajapati, Pradeep Vavia, Development of taste masked extended release formulation of azithromycin using hot melt extrusion, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Nikhil Lanjewar, Ketan Patel, Pradeep Vavia,Development of PCL-PVA-PEG graft copolymer stabilized nanosuspension of tadalafil for enhanced solubility and dissolution, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Sharad Darandale, PankajJadhav, Pradeep Vavia, Pronano (Propofol nanoemulsions) A novel formulation approach to reduce pain on injection, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- DhawalChobisa, JuiliShelke, Ketan Patel, PradeepVavia ,Proliposomal clarithromycin: A novel approach for H.Pyroli infection, 65th Indian Pharmaceutical Congress, Indian Pharmaceutical Congress Association, Dec 2013, Delhi
- Jasmin Monpara, Ketan Patel, Monica Tyagi, Lalit Vora, Sanjay Gupta, Pradeep Vavia, Arginoplexes: An Arginine anchored nanoliposomal carrier for gene delivery

MEMBERSHIP OF IN- HOUSE COMMITTEES

PROFESSOR P. V.DEVARAJAN

- Academic Committee-Undergraduate and post-graduate programmes
- Student Affairs And Human Resource Development-Women's Cell
- Student Affairs And Human Resource Development-Anti-ragging
- Student Affairs And Human Resource Development-Disciplinary Action
- Internal Quality Assurance Cell (IQAC) and academic Audit
- Stores Committee
- TEQIP
- Procurement of Goods, Work and Services
- Industry Institute Interaction Cell
- Planning and Monitoring Committee
- Internal performance audit
- Financial management

PROFESSOR K.G. AKAMANCHI

- R C member dept of chem.
- Co-ordinator TEQIP R & D committee
- Admission comittee for PG Pharma Dept.
- Fellowship enhancement committees
- Research Assistants selection committee.
- Member academic council

PROFESSOR P. D. AMIN

- Unfair Means committee

PROFESSOR M. S. DEGANI

- Member of the RRC for Biotechnology and Pharmaceutical Depts
- Coordinator for BPT course for Pharmaceutical Dept
- Member of Merit cum means scholarship committee
- Chairperson of Canteen Committee
- Member of Editorial Board, Bombay Technologist

PROFESSOR A. R. JUVEKAR

- Lab co-ordinator
- Time-Table Co-ordinator
- Co-ordinator for PhD (Pharma) entrance exam

DR. PRAJAKTA DANDEKAR JAIN

- Preparation of time tables for undergraduate and post-graduate students of DPST
- Member of committee to

revamp the Institute website
- TEQIP co-coordinator for DPST
- Member of MIS committee of the Institute

PROFESSOR K. S. LADDHA

- Dean Infrastructure and Campus Development
- Chairman, Purchase Committee
- Telecom Incharge

PROFESSOR V. B. PATRAVALE

- Editor, Bombay Technologist
- Lab in-charge, Under-graduate Pharmaceutics Laboratory
- TEQIP co-ordinator, Department of Pharmaceutical sciences and Technology
- Member, Examination Committee
- In-charge, B. Tech. Projects, Department of Pharmaceutical Sciences and Technology
- In-Charge, Pharmacy Council of India, Department of Pharmaceutical Sciences and Technology

DR. S. SATHAYE

- Chair person of Institutional Animal Ethics Committee
- Co-ordinator for placements of Dept. of Pharmaceutical Sciences and Technology
- Member of Safety Committee
- Student's welfare Committee
- Member of examination squad

DR. V. N. TELVEKAR

- Member of Scrap Committee;
- In-Charge of In plant training;
- In-Charge of Industrial visit;
- In-Charge of Community service

PROFESSOR P. R. VAVIA

- Dean (Academic)
- In-charge Controller of examination
- Colloquium in-charge
- In-plant training co-ordinator, Pharmaceutical Department
- Member, Institutional animal ethics committee
- Chairman, Examination committee
- Member, Equal Opportunity Cell
- Member, Fee's committee

INVITED LECTURES:

PROFESSOR P. V. DEVARAJAN

- Key Note Speaker at the DBT- JRF Regional Meet (Western Region) organized at ICT, delivered a talk on Pharmaceutical Biotechnology- Opportunities and Challenges, Mumbai, November 2013.
- Chief guest and Keynote speaker at SVKM's Dr. Bhanuben Nanavati College of Pharmacy for the graduation ceremony and delivered a talk on "Designer Nanoparticles for Splenotropic Drug Delivery", Mumbai, July 2013
- Nano Particle Shape And Splenotropy- A Serendipitious Discovery, AICTE sponsored three days National Level seminar on Frontiers of formulation and develoment technology, Allana College of Pharmacy, Pune, August 22, 2013
- Serendipitious Findings In Targetted Drug Delivery, University of Bradford, September 2013
- Chronotherapy, Continuing Medical Education on 'Human Circadian Rhythym and its Clinical Applications' Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, September 25, 2013
- Pulmonary Targeting Using Orally Administered Nanocarriers- A RevolutionaryApproach in Tuberculosis Therapy in 2nd Nirma Institute of Pharmacy International Conference, January 23 – 25, 2014 "Fostering Innovation in Drug Discovery & Development"
- Technologies for polymer based solid dispersion; organized by Shinetsu Singapore Pvt. Ltd. at Cyberabad Convention Centre, Hyderabad, 13 March, 2014

- Role of PEGylation in Oncology drugs in 7th International Conference on "Clinical Pharmacology" Translational research: Patient to Public health, SAC ACCP, 17th – 20th April, 2014, Mumbai, India.

PROFESSOR M. S. DEGANI

- Lecture delivered at Master Class, Vortex 2013, entitled "Serendipity and Drug Discovery" on 20th October 2013, at Institute of Chemical Technology, Mumbai
- Lecture delivered at AICTE National seminar on "Softwares in Drug Discovery and Development" entitled "Physicochemical properties in Drug design and Development" at Varananagar, Kolhapur. 22nd January 2014

PROFESSOR V. B. PATRAVALE

- Panel member and academic representative at focus group discussion with Pharma Leaders on the topic entitled, " Indian Pharma Industry: Vision 2025 & Moving up the technology curve through Innovation", BASF India Pvt. Ltd, Mumbai, 4th April 2014
- Delivered a lecture entitled, "Lymphatic Targeting Using Long Chain Lipidic Nanoparticles" at AICTE Sponsored National Seminar on "Nanomedicines: Risk and Benefit ratio", Manipal College of Pharmaceutical Sciences, Manipal, Karnataka, India, 24 – 25th January 2014
- Delivered a lecture entitled, "Intracellular delivery of therapeutic actives: Potential of lipid nanocarriers" at AICTE sponsored National seminar on "Nanomedicines : Recent Development and future prospectus, Institute of Pharmaceutical Education and Research, Wardha, India, 18th January 2014
- Delivered a lecture entitled, " Nano Drug Delivery Systems: Rejuvenating Clinical Potential of Curcumin at National Symposium on Recent Trends in Nutraceuticals, St. Johns Institue of Pharmacy, Mumbai, India, 17th January 2014
- Nanosuspensions: An Effective Strategy For Bio-enhancement" at UKIERI seminar
- on green processing technologies for poorly soluble drugs, Institute of Chemical Technology, Mumbai, india, 9th January 2014.
- Delivered a lecture entitled, "Semisolids for topical/ transdermal delivery"at " at Dr.J.D. Pawar College of Pharmacy, India, 5th January 2014
- Current trends in research in the field of pharmaceutics at MET Institute of Pharmacy, Mumbai India, 21st December 2013.
- Delivered a lecture entitled, "Nanonisation Techniques and Pharmaceutical Product Developments: Advances, Opportunities and Challenges" at Faculty Development Programme (FDP), BharatiVidyapeeth College of Pharmacy, Kolhapur, India 7th December 2013.
- Delivered a lecture entitled, "Lymphatic targeting for treatment of breast cancer" at One Day national Seminar on Current Trends in Formulation Development and Regulatory Affairs,
- Rashtrasant Tukadoji Maharaj Nagpur University Campus, Nagpur, India 3rd December, 2013.
- Delivered a lecture entitled, "Cationic heterolipid based nanocarriers for anticancer therapeutics "at Polymer Process engineering conference, University of Bradford, UK, 26-28th November 2013
- Novel cationic heterolipid based nanocarrier system to improvise intracellular availability of therapeutic actives, at AICTE sponsored Faculty development programme, Principal
- Padmashree Dr. D. Y.Patil College of Pharmacy, Pune, India 22nd November 2013
- Delivered a lecture entitled, "Intracellular availability of therapeutic actives: Potential of lipid nanocarriers" at Interdisciplinary Perspe-ctives: Defence Studies, Earth System Science

and Bio-Medical Science (IPDEB-2013) conference, Sardar Patel University Vallabhvidyanagar, Ahmedabad, India, 16th November 2013

- Delivered a lecture entitled, "Hot Melt Extrusion: A Scalable Technology towards Development of BioenhancedBioactives at Pam Glatt Conference, India, 14th November 2013.
- Delivered a lecture entitled, "Novel cationic heterolipid based nanocarrier system to improvise intracellular availability of therapeutic actives at the first Indraprastha International Conference on Biotechnology, University School of Biotechnology, Guru Gobind Singh Indraprastha University, New Delhi, India, 22 – 25th October 2013
- Current research application of nanotechnology in medicine, D. Y. Patil Institute of pharmaceutical sciences and research, Pune, India, 19th October 2013.
- Invited speaker to deliver a talk on "Polysaccharide based Scaffolds for wound healing" at National Burns Centre, Navi- Mumbai India, 13rd July 2013

EVENTS ORGANIZED

Conference/ Symposia/ Workshop	Title	Duration
International workshop	Research writing skills "Publish or Perish"	12-13th Nov, 2013
Lecture	Lecture by Mohd. Farooq Shaikh [Lecturer at Monash University, Malaysia] on "Adult Zebrafish a better Model for antiepileptic screening	3rd December 2013
Lecture	UGC-CAS guest lecture by Dr. R. P. Iyer	7th January 2014
Seminar	UKIERI Seminar - Green Processing Technologies forPoorly Soluble Drugs	9thJanuary 2014
Lecture	Multi Colour Imaging in Confocal Microscopy' by Dr. Amit Kumar Bhattacharya	February 2014
Seminar	'Careers in Clinical Research' by Dr.Shekhar Dawkhar	February 2014.
Workshop	Honing Mentoring Skills -- A Holistic Approach, Sessions I and II, Trainer: Mrs. Lakshmi Raju	May 5-9 and July 3-8, 2014
Workshop	Stress Management workshop, Trainer: Mrs. Lakshmi Raju	June 18-24, 2014 (3 sessions)
Workshop	Writing and presentation skills for the PG students of DPST	June-July, 2014 (10 sessions)

INDUSTRIAL CONSULTANCY

Faculty	Name of Company	Area of Advice	Period
Professor P.V. Devarajan	Emcure Pharmaceuticals	Pharmaceuticals and drug delivery systems	Sept 2013- Present
	Phoenix Pharmaceuticals Ltd	Pharmaceuticals and drug delivery systems	2007- present
	Abbott Healthcare	Pharmaceuticals and drug delivery systems	2013
Professor K. G. Akamanchi	M/S Aarti Healthcare Ltd	Process development	2013-2014
	M/S Reliance Life Sciences	Organic synthesis	2013-2014
	M/S Laxmi Organics	Organic synthesis	2013-2014

Professor P. D. Amin	Evonik	Excipients	6 month
	Merck	Nutracuticals	6 month
	Dow	Solubilization	1-2 month
	PT Pharmacon	IUD	6 month
	Arihant	Excipients	6 month
	VVF	Nutracuticals	6 month
Professor M. S Degani	Rubicon	R & D	October 2013-March 2014
Professor V. B. Patravale	Sahajananad Technologies Pvt. Ltd.	Pharmaceuticals	2001-ongoing
	CadilaPharma Ltd.	Pharmaceuticals	2003-ongoing
	Cavinkare Pvt. Ltd.	Pharmaceuticals and cosmeceuticals	2012-ongoing
Dr. Ganesh U. Chaturbhuj	Coromadel International Pvt. Ltd.	Impurity profiling.	2013-2015
	Russan Pharma.	Demethylation of opioid drug intermediate.	2013-2014
	Sapna surfactant	Benzothiazole dye synthesis	2013-2014

DETAILS OF POST- GRADUATE/ Ph.D STUDENTS WHO PASSED OUT

Name	Course	Title
Professor P. V DEVARAJAN		
Soni Mahesh	PhD (Tech)	Targetted drug delivery systems for veterinary infections
Joshi Vishvesh	PhD (Tech)	Design of Controlled and Innovative Drug Delivery Systems
Khandekar Sameera	PhD (Tech)	Polymeric Drug Delivery Systems
Patil Nilam	PhD (Tech)	Nanoparticulate Carriers for Delivery of Biotech Drugs
Professor K. G. AKAMANCHI		
Pathare Sagar P.	Ph.D (Tech.)	E-factor and Hazard Minimization Focused Alternative Processes for Synthesis of Active Pharmaceutical Ingredients and Intermediates.
Jadhav Ravindra R.	Ph.D (Sci.)	Transformations Using Hypervalent Iodine (V) Reagents and Mechanistic Investigations
Nimonkar Abhay D.	Ph.D (Sci.)	Development of Synthetic Methodology for Organic Chemistry
Professor P. D. AMIN		
Sav Ajaykumar	PhD(Tech.)	Evaluation of hydrocolloids for emulsification and release retarding properties
Meer Tarique Ali	PhD (Tech.)	Release modification designs for poorly water soluble drugs
Professor M. S. DEGANI		
Dighe Mahesh	PhD (Tech)	Design and synthesis of novel anti-infectives
Professor K. S. LADDHA		
Ferreira Galvina	Ph.D. (Tech)	Studies on Benzoquinones and Naphthoquinones from medicinal plants
Katekhaye Shankar	Ph.D. (Tech)	Studies on Pithecellobium dulce
Professor V. B. PATRAVALE		
Pol Anuradha	Ph.D. (Tech.)	Nanocarrier based topical delivery of antioxidants
SheteHarshad	Ph.D. (Tech.)	Development of nanocarriers for cancer treatment
GugulothuDalapathi	Ph.D. (Tech.)	Curcumin nanoparticles for improved therapeutic efficacy

DR. S. SATHAYE		
Sancheti Jayant	Ph.D Tech	Antiepileptic evaluation of selected medicinal plant: A mechanistic Approach
Redkar Rupali	Ph.D Tech	Investigation on secondary metabolites and neuropharmacological studies on Ocimum Sanctum L for its Therapeutic role in Parkinson's Disease
DR. V. N. TELVEKAR		
Kavitkumar Patel	Ph. D (Tech)	Bioactive Molecules: Design and Synthesis
Professor P. R. VAVIA		
Darandale Sharad	PhD (Tech.)	Studies on nanoformulations and cyclodextrin nanosponges for improved efficiency of parenteral dosage forms
Khire Achyut	PhD (Tech.)	Development of bioequivalent transdermal patch containing aqueous (acrylic) dispersion type pressure sensitive adhesive
PawarSmita	PhD (Tech.)	Exploring N-acetylglucosamine for targeted drug delivery system
Patel Ketan	PhD (Tech.)	Amino acid based nanocarriers for anticancer therapy

M. PHARM

Name	Title	Supervisor
Survase Rahul	In-Situ Gelling Nasal Drug Delivery System for Emergency Treatment in Epilepsy	Professor P. V. Devarajan
Kothari Priya	Synthesis and evaluation of novel oleodendrimer E1E as potential pharmaceutical excipient	Professor K. G. Akamanchi
Patil Akshata	Formulation and Evaluation of topical NSAIDS	Professor P. D. Amin
Agre Neha	Bicyclic [4.4.0]nitrogen heterocycles as biologically active agents	Professor M.S. Degani
Patel Sagar	Nitrogen containing [4.3.0] bicyclic ring systems as biologically active compounds	Professor M.S. Degani
Verma Neha	Studies on Bioactivity Profile of Natural Anti-Oxidants in Combination	Professor A. R. Juvekar
Surwade Jayshree	Evaluation of Psycho-Pharmacological activity of Indian medicinal Plant in Laboratory Animal.	Professor A. R. Juvekar
Ghodke Sharwari	Extraction and isolation of phytoconstituents from Asparagus racemosus	Professor K.S. Laddha
Gunjan Parpiani	Extraction and isolation of phytoconstituents from Centella asiatica	Professor K.S. Laddha
Badgujar Hitesh	Fabrication of Polymeric scaffold for tissue engineering	Professor V. B. Patravale
Patel Chinmay	Development of nanotechnology based anticancer combination therapy	Professor V. B. Patravale
Patel Dishan	Design and Characterization of Push Pull Osmotic Pump	Professor P. R. Vavia
Chormale Sharad	Development and Evaluation of SMEDDS	Professor P. R. Vavia
Mundlod Krishna	Design and synthesis of antimicrobial agents	Dr. V. N. Telvelkar
Ghodse Shrikant	Synthesis of bioactive compounds as antiinfectives	Dr. V. N. Telvelkar
Snehlata Autade	Synthesis of Raloxifene intermediates.	Dr. Ganesh U. Chaturbhuj
Jyoti Salve	Synthesis and development of impurity standards for ImatinibMesylate.	Dr. Ganesh U. Chaturbhuj

M. TECH. (PHARMA)

Name	Title	Supervisor
Tiwari Hitendranath K	Continuous Processes in the fine Chemical and Pharmaceutical Industries	Professor K. G. Akamanchi
Dolas Atul	Study in Organic reactions by sulfated tungustate catalysed	Professor K. G. Akamanchi
Rahul Shete	Solubilisation of Artemether	Professor P. D. Amin
Abhijit Shinde	Method optimization in fluorination reactions	Professor M. S. Degani
Lanjewar Nikhil	Nanoformulation approach to improve solubility and bioavailability of the drug	Professor P. R. Vavia
M.TECH. (BPT)		
Redkar Gargi	The isolation and purification of drug target enzyme from an infectious micro-organism	Professor M. S. Degani
Kole Sushmita	Supercritical fluid extraction of the bio-actives from Anogeissuslatifolia	Professor V. B. Patravale
HaveleOnkar	Optimizing enzymatic conversion of castor oil to ricinoleic acid as the first step towards maximizing the production of sebacic acid	Dr. P. Dandekar Jain
Pratik Pawar	Biosynthesis and characterization of active ingredients using enzymes or cell assemblies and analytical method development thereof.	Dr. Ganesh U. Chaturbhuj

TRAVEL GRANT AWARDS FOR PRESENTATION AT INTERNATIONAL CONFERENCES

Name of Student	Funding Agency	Name of Conference
Rohit Joshi	DBT	40th annual meeting and exposition of the Controlled Release Society 20-24 July, 2013 held at Honolulu, Hawaii, USA
Prashant Mande	DBT/Phoenix	40th annual meeting and exposition of the Controlled Release Society 20-24 July, 2013 held at Honolulu, Hawaii, USA
Dharmendra Khatri	ICMR	3rd World Parkinson's Congress (WPC-2013), 1-5 Oct, 2013 held at Montreal, Canada
Dharmendra Khatri	CICS-INSA	7th Congress of International Society of Nutrigentetics/ Neutrigenomics (ISSN), 5-8th Oct, 2013 held at Quebec city, Canada
Dharmendra Khatri	Melvin Yahr International Parkinson disease foundation and their association of Parkinsonism and related disorders	XX World Congress on Parkinson's disease and related disorders, 8-11th Dec, 2013 held at Geneva, Switzerland
Achut Khire	ICMR	4th World Congress on Bioavailability and Bioequivalence: Pharmaceutical R&D Summit (BABE) 2013
Sharad Darandale		European conference on Cyclodextrins,Oct 2013, Antalaya, Turkey
Ajay Sav	DBT	Pharmaceutical and Biomedical analysis (PBA), Bologna, Italy held on 30th June-3rd July, 2013
Rahul Patole	DBT	Pharmaceutical and Biomedical analysis (PBA), Bologna, Italy held on 30th June-3rd July, 2013
Priyanka Prabhu		NanotechItaly 2013 at Venice-Mestre, Italy held on 27th to 29th of November 2013

ABSTRACT OF THESIS

M.PHARM / M. TECH

Name of Student: Rahul Survase

Name of Supervisor: Professor Padma V. Devarajan

FORMULATION AND EVALUATION OF A PARTICULATE DRUG DELIVERY SYSTEM

Epilepsy is a common and diverse set of chronic neurological disorders leaving the individual at risk of bodily harm. Pharmacological therapy is the mainstay of epilepsy treatment and Lamotrigine is a choice of drug in all forms of epilepsy. Although the most popular route of administration of antiepileptic drug is oral, epileptic emergencies preclude this route of administration. Hence an alternative route of administration could provide a major therapeutic advantage. ATIS gel is a novel 'polymer-free' fluid microemulsion based in situ gelling system that gels instantaneously when sprayed onto a wet surface like the nasal mucosa. The unique feature of ATIS gel is that WATER acts as the trigger for conversion of an isotropic low viscosity microemulsion to highly viscous lyotropic liquid crystalline phases which are Mucoadhesive, thus enabling their exploration for nose to brain delivery.

Analytical method development: A UV spectrophotometric method was developed, for routine analysis of Lamotrigine. A validated stability indicating reverse phase HPLC method was developed for evaluation of drug content. A simple and validated HPLC method with UV detection was developed for determination of Lamotrigine in rat plasma and CNS homogenate.Development and in vitro evaluation of ATIS gel of Lamotrigine: Equilibrium solubility of Lamotrigine was evaluated in ATIS gel components (oil, surfactant, cosurfactant, water). Different oils viz. Capmul MCM, IPM, oleic Acid; surfactants like solutol, tween80 and cosurfactants such as Transcutol, PG were screened for ATIS gelling Property and pseudo ternary diagram were plotted. Capmul and Oleic acid with Tween80 and PG were chosen for formulation of ATIS gel. Drug loading capacity was determined in all the formulations which show ATIS gelling property. Based on Drug loading capacity the formulation containing Capmul MCM (L1) and Capmul MCM-Oleic acid (L2) Combination as a oil phase with a dose of 5mg/100μL actuation were further selected for in vitro evaluation. ATIS gel was a clear yellow liquid with a refractive index of L1 and L2 1.630±0.01. and 1.633±0.03 respectively. pH of the microemulsion was found to be 5.4 and 5.5 respectively. Drug content by U.V. of L1 was found to be 101.41±0.91% and that of L2 was found to be 100.42±0.37% per spray actuation. Globule size of L1 and L2 was found to be 178±3.56 nm and 170±4.27 nm. Formulation was readily sprayable and exhibited reproducible spray pattern. The nasal ATIS gel exhibited instantaneous gelling when sprayed on a wet tissue paper supported on a glass slide and when dropped into beaker full of water. Polarization optical microscopy revealed the presence of liquid crystalline phases in the gelled region which were absent in the fluid microemulsion. The gelled formulation showed sharp deflections in small angle range when evaluated for XRD. SANS revealed a strong interaction peak in the gelled formulation. A significant increase in bioadhesion from 250 ±5.64 mg to 1100+7.43mg in L1 and from 270±5.64 mg to 1410 ± 7.43 mg in L2 following gelling was also observed. Gelled formulations L1 and L2 showed higher viscosity 4310 cps and 4326 cps than microemulsion viscosity 65.46 cps and 67.75 cps respectively. In vitro drug release profile were comparable with > 50 % of release in 10 min. The

formulation was found to be stable on dilution, centrifugation and when subjected to heating cooling cycle. The formulation was found to be stable for 3 months when evaluated for stability as per ICH guidelines. Pharmacokinetics and CNS uptake study of Lamotrigine ATIS gel: Pharmacokinetic study revealed rapid absorption with high Cmax (1100.45 ng/ml) and low Tmax was observed with ATIS gel formulations containing Capmul MCM and Capmul MCM-Oleic acid combination as the oil phase. The AUC0-24 hrs values suggest that LTG was 1.99 - 2.47 times more bioavailable from ATIS gel as compared to plain solution ($p<0.05$). Brain uptake study revealed the significantly higher concentration of LTG ($p<0.05$) from ATIS gel formulations as compared to solution at 30 mins. ATIS gel formulations. showed 4.8-5.8 fold increase in brain uptake as compared to plain solution of Lamotrigine at 30 min.

Name of Student: Ashish Gupta

Name of Supervisor: Professor K. G .Akamanchi

DESIGN, SYNTHESIS AND EVALUATION OF NOVEL ANTIBACTERIAL AGENTS

Diseases caused by microorganisms affect millions of people throughout the world and are leading causes of death. Treatment of infectious diseases still remains an important and challenging problem because of emergence of resistance to currently available chemotherapeutic agents.After the development of Linezolide an oxazolidinedione class of antimicrobial agent no new class of antibiotic has been approved. Most of the bacteria now became resistant to the drugs so called last resort like vancomycin used for methicillin resistant S.areus (MRSA) treatment. The emergence and spread of MDR and XDR tuberculosis has become nightmare of the health department. To overcome the problem of resistance there is need to develop novel candidates which would act on different target in bacteria and thus would have low potential for development of resistance.

The present study deals with exploring a target involved in the synthesis of cell wall of bacteria. The cell wall of bacteria is target of most of the available antibiotics. In present study Mur E enzyme of E.coli is selected as target. Docking study has shown most of the compounds had better docking score and biological evaluation of those molecules against E.coli and S.aureus has given two compounds A2 and A4 as potent antibacterial agents with a MIC of less than 15.62 mcg/ml.

Name of Student: Sagar Patel

Name of Supervisor: Dr. M. S. Degani

NITROGEN CONTAINING [4.3.0] BICYCLIC RING SYSTEM AS BIOLOGICALLY ACTIVE COMPOUNDS

Aldehyde oxidase (AOX) a cytosolic enzyme, recently shown to have high impact on metabolism of nitrogen heterocycles. Many drug candidates have been removed from drug development pipeline due to extensive metabolism by AO. In this context, to study the effect of metabolism by AO, 1,2,4-triazolo[1,5-a] pyrimidine and xanthine derivatives were designed and synthesized. Homology modeling of mammalian aldehyde oxidase was done since the crystal structure of the same was not available. All the compounds showed AOX turnover less than xanthine derivative, showing metabolic stability of these derivatives for AOX mediated metabolism. Triazole derivatives have been reportedly shown promising anti-infective activity hence synthesized molecules were further tested for their anti-infective activity against Gram positive bacteria (S. aureus), Gram negative bacteria (E-coli) and Mycobacterium tuberculosis. Some of these molecules showed promising results against Mycobacterium tuberculosis. Being small molecular weight compounds they can be further studied using Fragment based drug design

approach leading to possible leads against Mycobacterium tuberculosis.

Name of Student: Neha Agre
Name of Supervisor: Dr. M. S. Degani

BICYCLIC [4.4.0] NITROGEN HETEROCYCLES AS BIOLOGICALLY ACTIVE AGENTS

Aldehyde oxidase has for many years been recognized as a metabolizing enzyme contained within the cytosolic compartment of many tissues and in many species. It is a member of non-cytochrome P450 enzymes called molybdenum hydrolases. It has been increasingly recognized in this past decade that AO, through its unique structure, distribution, and substrate recognition, has an important role to play in the metabolism of drugs. Many drugs have been withdrawn from the drug development pipeline due to their extensive metabolism by aldehyde oxidase. Due to this reason, understanding the effect of various structural features present in the molecule on its metabolic susceptibility by aldehyde oxidase is very important from drug development point of view. For this purpose, a suitable series of pteridines were designed as aldehyde oxidase ligands and synthesized successfully. The designed molecules were characterized by IR, 1H NMR and MS. These compounds were tested for aldehyde oxidase activity using a UV based ferricyanide assay. A combination of substrates, inhibitors and inactive compounds was obtained. A structure activity relationship (SAR) was proposed based on the obtained results. Secondly, a 3D QSAR model of 2,4-diamino-5-deazapteridines as human dihydrofolatereductase (DHFR) inhibitors was developed. It can be used to predict the likelihood of a novel compound being a potential hit for human DHFR inhibitory activity.

Name of Student: Chinmay Patel
Name of Supervisor: Professor V. B. Patravale

DEVELOPMENT OF NANOTECHNOLOGY BASED ANTICANCER COMBINATION THERAPY

Etoposide, widely used for the treatment of small cell lung cancer and to some extent for breast cancer, exhibits low bioavailability after oral administration due to its resistance and low aqueous solubility. The objective of the present study was to formulate etoposide self nano emulsifying drug delivery system (SNEDDS) with aid of combination approach to overcome the barriers of poor aqueous solubility and resistance thereby enhancing its bioavailability. Curcumin, ellagic acid and quercetin are the plant polyphenols, found to be useful for combination purpose. Screening and selection of these polyphenols were done by cytotoxicity assay using 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) and intestinal permeation study. Curcumin was selected for combination purpose due to its synergistic activity and permeation enhancing property better than other polyphenols. Etoposide SNEDDS with curcumin was formulated and evaluated for cytotoxicity study and intestinal permeation study. Pharmacokinetic studies in rats indicated a significant increase in the rate and extent of drug absorption. Most importantly, the AUC0–t of etoposide in rats treated with SNEDDS with curcumin was significantly enhanced over 7.1 fold than that of marketed formulation ($P < 0.001$). Results implicated that combination with nanotechnology approach can aid in achieving full therapeutic potential and efficacy of etoposide.

Name of Student: Hitesh Badgujar
Name of Supervisor: Professor V. B. Patravale

FABRICATION OF POLYMERIC SCAFFOLDS FOR TISSUE ENGINEERING

Polymeric constructs have been widely explored to accelerate wound healing in case of

trauma, burn, accidents. Most commonly used polymeric constructs involve the use of ubiquitous polymer viz. chitosan. Recently, there are also emerging evidences of potential role of metal ions especially zinc ions in wound healing. Thus, the focus of the present study was to fabricate the polymeric constructs of Chitosan-Zinc complex and explore indigenous polymer viz. tamarind seed polysaccharide in wound healing. The overall work encompassed fabrication of scaffolds of the aforementioned polymers along with their detailed physicochemical and biological characterization. Briefly, Chitosan-Zinc complex was synthesized to obtained the complex in different molar ratios of Chitosan-Zinc :: 1:0.5, 1:1, 1:2. Thereafter, an optimum concentration of synthesized polymer complexes as well as tamarind seed polysaccharide was used for fabrication of polymeric constructs. Due to extreme hydrophilicity, tamarind saccharide polymeric constructs were found to be unsuitable to support cellular growth, suggesting the need for chemical modification. On the contrary, in in vivo animal wound excisional model, Chitosan-Zinc (1:2) complex scaffold demonstrated superior wound healing ability and was found to be comparable to active containing marketed formulation BACTIGRAS® (Smith & Nephew Inc.).

Student Name: Atul Bharadwaj
Name of Professor: Dr. Sadhana Sathaye

ISOLATION OF PHYTOACTIVES FROM ECLIPTA ALBA FOR POTENTIAL ANTI-EPILEPTIC ACTIVITY

Eclipta alba(EA) is been used in traditional system of medicine and also by traditional healer specially in South region of India for the treatment of epilepsy since ancient times. The objective of the study is to isolate different phytochemical fractions from crude extract of EAand evaluate their antiepileptic potential in various acute models of epilepsy. Total alkaloids, flavonoids, sterols, triterpenoids and coumarins were isolated from the crude extract of EA. The phytochemical fractions were screened in zebra fish model of epilepsy. LD50 determination study of coumarin fraction (i.p.) was performed in mice. Coumarin fraction (50, 75 and 100mg/kg, i.p.) was evaluated for its anticonvulsant activity in Pentylenetetrazole (PTZ) and Maximal Electroshock (MES) model in rodents Phytochemical characterization was done by Thin Layer Chromatography and HPLC analysis. Coumarin fraction exhibited potent anti convulsant activity in zebrafish model which was confirmed in PTZ and MES model in rodents. The results of various in-vivo models studies indicate that anti epileptic activity of EA may be due to the presence of coumarin compounds such as wedelolactone.

Student Name: Mruniya Nahire
Name of Professor: Dr. Sadhana Sathaye

BIOACTIVITY GUIDED FRACTIONATION OF MEDICINAL PLANTS FOR POTENTIAL ANTI-EPILEPTIC ACTIVITY

Epilepsy is one of the most common, serious neurological conditions, affecting more than 50 million people worldwide. In the present study, our aim was to carry out the bioactivity guided fractionation of Eclipta alba Hass (EA)leaves using various solvents and to evaluate its potential anti-epileptic activity using Zebra fish and rodent models of epilepsy.

Standardization of Zebra fish (ZBF) model was done using convulsant agent Pentylenetetrazol (PTZ) (225mg/kg, intraperitonial (i.p.). The biofractions (methanolic, ethyl acetate, n-butanol, water) were screened in the PTZ induced convulsions in ZBF model for its potential antiepileptic activity. The active fractions screened in ZBF model were further evaluated for the pharmacological effects in acute experimental rodent models of epilepsy.

The present study revealed that both methanolic and ethyl acetate extract of EA

possess potent antiepileptic effect. The antiepileptic activity could be due to their effect on sodium channels and GABAA receptors also due to its anti-inflammatory, anti-oxidant effect and their ability to increase GABA levels in the brain.

M. TECH.

Name of Student: Atul J. Dolas

Name of Supervisor: Professor K. G. Akamanchi

STUDY IN ORGANIC REACTIONS BY SULPHATED TUNGUSTATE CATALYSED

Heterogenation of the chemical systems is active field in industrial and laboratorial chemistry because of simplification in handling procedures, reduction of corrosion, green chemistry point of view, avoidance of byproducts, easy and clean reaction and simple work-up. Sulfated tungstate which is mild acid catalyst is effectively used as heterogeneous catalyst for the synthesis of 4-((4-methoxybenzyl) oxy)but-2-en-1-ol, N-(4-((4-methoxybenzyl)oxy)but-2-enyl)aniline. Further for the cyclization of N-(4-((4-methoxybenzyl)oxy)but-2-enyl) aniline requires a strong acid catalyst. Thus polyphosphoric acid is used as strong acid catalyst for cyclization.

Reaction kinetics also studied for first two steps. A simple power law model was used to express rate of etherification of PMBA. Activation energy of reaction was calculated by using kinetic constant of power law which was found to be 26.04 kJ/mol. A dual site L-H kinetic model with same type of active sites and non-dissociative diol adsorption & surface reaction as controlling step was found to be in good agreement for PMBA etherification.

Also a power law used to express N-alkylation of 4-((4-methoxybenzyl)oxy) but-2-en-1-ol. Activation energy of reaction calculated using Arrhenius equation was found to be 41.97 kJ/mol. A dual site L-H kinetic model with same type of active sites and non-dissociative aniline adsorption & surface reaction as controlling step was found to be in good agreement with experimental results in wide range of conditions.

Name of Student:Gargi Redkar

Name of Supervisor: Professor M. S. Degani

THE ISOLATION AND PURIFICATION OF DRUG TARGET ENZYME FROM AN INFECTIOUS MICRO-ORGANISM

Research for newer drugs to tackle drug resistance in Tuberculosis involves identification of newer targets. The screening of New Chemical Entities (NCEs) for their chemotherapeutic activity requires pure and active forms of the enzymes to be targeted. This thesis targets the purification of three sequential enzymes of the Folate pathway: Dihydropteroate Synthase and DihydrofolateReductase from Mycobacterium smegmatis and M.tbFolylpolyglutamate Synthase cloned in E.coli. Purification was carried out using Affinity chromatography. Sulphonamide-Rink amide resin (Sulphorink) was synthesized for the affinity purification of DHPS. Also, synthesis of the substrate for DHPS was carried out from precursor. DHFR was purified using the affinity resin Methosep, Methotrexate attached to Sephabead EP EB-105. Purification of the recombinant FPGS enzyme was done by Immobilized Metal Affinity Chromatography using Ni-IDA resin. DHPS and DHFR enzymes were assayed spectrophotometrically while development of enzyme assay for FPGS was attempted.

Name of Student: Onkar Shashikant Havele

Name of Supervisor:Dr. Prajakta Dandekar Jain

OPTIMIZING ENZYMATIC CONVERSION OF CASTOR OIL INTORICINOLEIC ACID AS THE FIRST STEP TOWARDS MAXIMIZING THE PRODUCTION OF SEBACICACID

Ricinoleic acid (RA); a hydroxyl fatty acid is the

principal component present incastor oil. RA can be obtained from hydrolysis of castor oil by chemical or enzymaticmethods. However, specifically in the case of castor oil, the chemical methods usuallylead to formation of by-products. The use of 1,3- regiospecific lipases has beenspeculated to decrease this by-product formation. Thus, the main objective of ourstudy was to evaluate the use of 1, 3- regiospecific lipase in hydrolysis of castor oil toreduce/eliminate by-product formation and maximize the conversion of castor oil toRA. Hydrolysis was conducted using a specific (Candida rugosa Lipase; CRL) andnon-specific lipase (Candida antarctica Lipase B; CAL B). The reaction wasoptimized with respect to various parameters to maximize castor oil hydrolysis. Boththe enzymes showed optimum activity at pH 6.5-7.0, temperature between 45-50°C,enzyme concentration of 20 U and an agitation speed of 800 rpm, when the reactionwas conducted in phosphate buffer pH 7.0. Purity of RA was determined by HPLC,
while the absence of estolide during CRL hydrolysis was confirmed by FTIR andNMR analysis. Hydrolysis with CRL thus indicated the potential of the process forlarge-scale synthesis of pure RA

Name of Student: Sushmita Koley
Name of Supervisor: Professor V. B.Patravale

SUPERCRITICAL FLUID EXTRACTION OF THE BIO-ACTIVES FROM ANOGEISSUS LATIFOLIA

Plant resources have been used traditionally in producing cure to a number of diseases. One such plant is Anogeissus latifolia which has been used for its effectiveness in curing skin ailments. Present in an abundance in India, this plant seems to show potential effects of antioxidant and antimicrobial property. Such effects are mainly required in the healing of dermal wounds, an area which is less researched. The work, therefore, deals with the extraction of the bio-actives from Anogeissus latifolia. Since not much research on the extraction techniques have been performed with this plant earlier, the present work explores various techniques, viz. conventional extraction, supercritical fluid extraction and sonication assisted extraction on the plant. Supercritical fluid extraction and sonication assisted extraction have not been performed earlier on this plant. Hence, the originality lies in the use of these novel technologies in the extraction of the bio-actives from Anogeissus latifolia.

ABSTRACTS OF THESIS- PH.D(TECH)/ PH. D. (SCI.)

Name of Student: Vishvesh Joshi
Name of Supervsior: Professor Padma V. Devarajan

DESIGN OF CONTROLLED AND INNOVATIVE DRUG DELIVERY SYSTEMS

Development of controlled drug delivery systems enable improved therapeutic efficacy and enhanced safety profile of drugs by more precise control over spatial and temporal placement within the body compartment. This facilitates reduction of both the quantity and number of doses and permits achievement of targeted drug action by using carriers to deliver the drug to a particular target cell type.

PART I: ISRADIPINE CONTROLLED RELEASE TABLET (AN ALTERNATIVE TO OROS)

Isradipine is calcium channel antagonist effective in the treatment of hypertension and angina pectoris. A controlled release (CR)formulation of these agent produce a gradual and sustained drop in peripheral vascular resistance, thereby avoiding reflex sympathetic stimulation, and the deleterious effects that have been reported with short-acting preparations.

The present study deals with development of Isradipine CR formulation using combination of cellulose polymer blend to match release profile

with Dynacirc CR (RLD). Preformulation studies were done to support formulation development. The formulation development was evolved with QBD approach. Quality Target Product Profile (QTPP) and Critical Quality Attributes (CQA) were defined and risk analysis was carried out to identify Critical Material Attributes (CMA) and Critical Process Parameters (CPP). Formulation was optimized for release profile using factorial design by design of expert (DOE) to find out design space. Critical process parameters were optimized by changing one variable at a time. Model was developed and validated. Bio batch was manufactured to match predefined QTPP.

A randomized, balanced, open label, two treatment, two period, two sequence, single dose crossover , bioequivalence study under fed and fasted conditions were carried out in 14 healthy male human volunteers. Dynacirc CR 10 mg was selected as reference treatment. Bioequivalence was established at a 90% confidence interval with a Cmax (T/R) - 85.92 %, AUC 0-t (T/R) - 85.13 % and AUC 0-∞ -85.64% for fed study. For fasted study, Cmax (T/R) – 88.62 %, AUC 0-t (T/R) – 88.77 % and AUC 0-∞ -88.48 was achieved. Formulation was stable as per ICH stability norms. Developed Isradipine CR 10 mg formulation with simple matrix technology offers cheaper alternative to OROS Dynacirc CR 10mg.

PART II: DESIGN OF HEPATIC TARGETING PRIMAQUINE PHOSPHATE CARBOPLEX

Malaria infection starts with injection of sporozoites from salivary gland of mosquito. Sporozoits travel to liver and stay within hepatocytes. Primaquine phosphate is only drug which is active against radical cure of malaria. Targeting Primaquine to its site of action, liver (hepatocytes) could substantially reduce its toxicity and possibly reduce therapeutic dose. Primaquine Phosphate (PP) a high solubility drug is difficult to entrap in nanocarrier for hepatocyte targeting. The present study deals with an innovative approach for hepatocyte targeting of PP. CARBOPLEX – Complex of PP and negatively charge carbohydrate polymer was formed and stabilized using Lutrol F68. Ligand having affinity for hepatocytes was adsorbed on CARBOPLEX. Effect of formulation variables were evaluated on particle size and complexation. Optimized CARBOPLEX with a % complexation of 75% and particle size of < 250 nm was achieved. Biodistribution & pharmacokinetic studies of PP & CARBOPLEX (1 mg/Kg) were carried out in female Sprague – Dawley rats by i.v (tail vein) and oral route. After administration, rats were sacrificed at 1 h & 4 h and PP concentration in various organs was measured. High concentration of PP in liver was achieved using CARBOPLEX compare to PP solution. PP-CARBOPLEX revealed long circulation half life. To monitor uptake by hepatocytes rats were administered PP solution and CARBOPLEX by tail vein. Hepatocytes and non parenchymal cells were isolated after 1 h and 4 h post dosing and PP concentration was measured. High concentration of PP in hepatocytes compare to PP solution revealed hepatocytes targeting of CARBOPLEX.

PART III: OPTIMIZATION AND SCALEUP OF DOXYCYCLINE HYDROCHLORIDE LIPOMER: LIPOMER is a combination of Lipid and polymerdesigned to give high RES uptake and entrapment efficiency of hydrophilic drugs. Splenotropic LIPOMER of DH was designed in our laboratory by modified nanoprecipitation method. Translation of LIPOMER from laboratory to clinic poses challenges of cost, scaleup, sterilization, toxicity and clinical study. This study focuses on scaleup aspects of LIPOMER.A detailed understanding formulation variable is crucial for successful scaleup. The present study deals with the formula optimization to reduce solvent load. Effect of change in non solvent ratio, non solvent volume, solvent volume & surfactant

concentration on particle size and % entrapment efficiency were studied. Formulation was optimized with reduction in solvent and taken for scaleup. For Process optimization Effect of agitator RPM, type, number of blades and number of baffles in the system on PS and %EE was studied.LIPOMER was scaled up to 240 fold using novel atomized microdroplet addition (AMDA) revealed 25 times faster solvent addition with a PS < 500nm, % EE 38.89 and having irregular shape similar to lab scale batch using atomized microdroplet addition.

Name of Student: Mahesh Soni

Name of Supervsior: Professor Padma V. Devarajan

TARGETTED DRUG DELIVERY SYSTEMS FOR VETERINARY INFECTIONS

Theileriosis and brucellosis are two important intracellular infections that cause heavy economic losses to farmers and are difficult to eliminate with currently available drugs. In fact these two diseases pose a major constraint in implementing the genetic improvement program since crossbreds are more susceptible. The present study focuses on targetted drug delivery systems for theileriosis and brucellosis. The work is divided into two parts

Part I: Buparvaquone (BPQ) loaded solid lipid nanoparticles (SLN) by green technology for targeted delivery in theileriosis

Part II: Toxicity profiling of asymmetric polymer lipid hybrid nanoparticles of Doxycyline hydrochloride (DH LIPOMER)

PART I- SOLID LIPID NANOPARTICLES OF BUPARVAQUONE

Buparvaquone (BPQ) is marketed as Buatlex®, single dose intramuscular injection for treatment of theileriosis. However, often two or more doses are required for treatment and the drug is costly. SLN represents an attractive carrier for targeted intracellular delivery of BPQ. BPQ is highly hydrophobic drug hence good candidate for incorporation in SLN, with additional advantages of the SLN being safe, low cost and are easily scalable.

a. **Formulation of BPQ SLN and In Vitro Evaluation:** BPQ SLN was prepared by hot melt method, a green technology approach and freeze dried. Average particle size of optimized batch was 580.8±12 nm and PDI 0.318±0.06. Sustained drug release of BPQ, upto 72 h was best explained by first order model. DSC and XRD study revealed decreased crystallinity of BPQ. BPQ SLN showed < 8% haemolysis and good serum stability up to 120 min. Rapid uptake of BPQ SLN by U937 macrophage cell line suggests the possibility of high uptake in the Reticuloendothelial system (RES) the site of theileirial infection.

b. **Biodistribution and Efficacy:** BPQ SLN was tagged with 99mTc and evaluated for biodistribution in rat model by gamma scintigraphy. At the end of 6 h, more than 75% BPQ SLN accumulated in the RES organs mainly liver, spleen and lung. BPQ in the RES organs was also quantified by HPLC. HPLC data confirmed RES targetting. Efficacy of BPQ SLN was evaluated in cows naturally infected with theileriosis. Animals found positive for theileriosis were injected with single dose of BPQ SLN at 1, 0.5 and 0.25, mg/kg bw through jugular vein. Butalex injected intramuscularly at 2.5 mg/kg bw, served as reference. SLN at 0.5 mg/kg bw and greater, was comparable with Butalex at 2.5 mg/kg bw. Negative PCR, marked regression in lymph node size and significant reduction in elevated body temperature up to 30 day was observed. Haematological study also suggests good recovery. Assay for liver biomarkers such as suggest no hepatotoxicity.

c. **Toxicity and Mutagenicity evaluation of BPQ SLN:** Toxicity studies were performed in male and female rats at 1/5/15 mg/kg bw

- Acute and subacute toxicity: Acute and subacute toxicity of BPQ SLN and blank SLN was performed in rat using standard procedure. BPQ SLN and blank SLN were injected intravenously. Maximum tolerable dose (MTD) of BPQ SLN was 75mg/kg bw and No observed adverse effect level (NOAEL) 15mg/kg bw.
- Genotoxicity: Genotoxic evaluation using the standard battery of tests namely the Micronucleus assay, Chromosomal aberration test, and Comet assay. The result of study suggests BPQ SLN and blank SLN was non genotoxic at all the doses studied.
- Developmental toxicity: Pregnant rats were injected with BPQ SLN and blank SLN intravenously on alternate day throughout the period of organogenesis. At the end of 21 day following caesarean section, pups were removed and examined. No visceral or skeletal abnormalities were observed. Fertility index and postimplantation loss were comparable with vehicle treated group suggest no developmental toxicity.
- Mutagenicity Study (Ames test): Ames assay confirmed the non mutagenic property of the BPQ SLN.

The efficacy of BPQ SLN at significantly lower dose and its safety suggest it as a promising alternative in theileriosis.

PART II- TOXICITY PROFILING OF DH LIPOMER

Our group has reported asymmetric DH LIPOMER of average size 400-600 nm are preferentially taken up by spleen. Efficacy study in cows naturally infected with brucellosis, a spleen resident infection, has shown promise. To translate such potential nano drug delivery system to clinic, toxicity study is a key requirement. Toxicity studies were performed in rats, at 1.5, 3 and 6 mg/kg bw following intravenous administration through the tail vein.

a. **Acute and subacute toxicity:** Acute and subacute toxicity of DH LIPOMER and blank LIPOMER was performed in rat using standard procedure. MTD of DH LIPOMER and Blank LIPOMER was found to be 18 mg/kg of DH and 2000 mg/kg bw respectively. NOAEL of DH LIPOMER was found to be 6 mg/kg bw.

b. **Genotoxicity:** Genotoxicity evaluation was carried out as above. A significant increase in percent micronuclei, percent chromosomal damage and comet parameter were seen at 3 mg/kg bw and higher. However, DH LIPOMER at 1.5 mg/kg bw revealed no genotoxicty.

c. **Developmental toxicity:** This test was carried out in pregnant rats as described above. No visceral or skeletal abnormalities were observed. Fertility index postimplantation loss were comparable with vehicle control group suggest no developmental toxicity.

Student Name:Kamlesh V. Katkar

Name of Professor:Professor K. G. Akamanchi

DEVELOPMENT OF GREEN METHODOLOGIES FOR SYNTHESIS OF ACTIVE PHARMACEUTICAL INGREDIENTS AND INTERMEDIATES

In the last two decades it has become increasingly clear that the chemical and allied industries, such as pharmaceuticals, are faced with serious environmental problems. Many of the classical synthetic methodologies have broad scope but generate copious amounts of waste and the chemical industry has been subjected to increasing pressure to minimize or, preferably, eliminate this waste. Clearly, the best scenario is one in which no waste is produced.

In the present work, recently we have introduced sulfated tungstate, as solid acid catalyst and its easy preparation, mild acidity, stability, reusability and eco-friendliness has inspired us to explore its potential to catalyze many other useful reactions. The objective of the work was to develop new methodologies or upgrade the known methodologies such as Ritter reaction, preparation of benzylic ethers, benzylation of 1,3-dicarbonyl compounds, amidines synthesis, homoallylic amines synthesis, heterocycles construction and selective mono amide synthesis, based on sulfated tungstate. Application of these methodologies was elegantly demonstrated for synthesis of Active Pharmaceutical Ingredients and intermediates such as diphenhydramine, N-phenethylbenzamide (for solifenacin) and 8-oxo-8-(phenylamino)octanoic acidis (for vorinostat).

Student Name: Abhay D .Nimonkar

Name of Professor: Professor K. G. Akamanchi

DEVELOPMENT OF SYNTHETIC METHODOLOGY FOR ORGANIC CHEMISTRY

One of the important contemporary areas of organic synthesis is development of efficient, selective, mild and new synthetic methodologies for the known transformation or through development of new transformations. A transformation indicates the conversion of substrate into a particular product(s), irrespective of reagent, condition and mechanism involved.

Hypervalent iodine compounds such as IBX, DMP, having very mild reactivity depending on nucleophilicity order S, N, O used for chemo selectivity in various natural product synthesis. Reaction of IBX with hydrazine hydrate is highly exothermic in nature leads to faster evolution of N2 gas, it can be used in generation phenyl radical by reaction of IBX with Phenyl hydrazine and trapping of phenyl radical into 1,4 naphthoquinone . The mild oxidising ability of hypervalent iodine reagents and desulfurization capacity of copper (II) acetate in ammonia solution are exploited towards development of a new system for conversion of 1-aryl thioureas into N-aryl cyanamides.

Reactivity of IBX with different co-reagents and solvents are different. IBX in aqueous ammonia is become very mild. These observations and study with different co-reagents in depth investigation was under taken leads to further developing new methodologies for construction of five member heterocycles using iodine. Reaction proceeds through initial activation of π bond either through a charge transfer complex or via an iodoiranium / iodoirenium intermediate, followed by an intramolecular attack by a nucleophile (nitrogen, oxygen from hydrazone , oxime derivatives of 1-phenylbut-3-en-1-one) either in an endo or exo fashion to give respective heterocycles.

In the present research, investigations have been carried out based on the mechanistic understanding and new methodologies particularly for C-C, C-O, C-N bond formation using hypervalent iodine reagents and oxidative desulfurization leads to C≡N bond formation have been developed.

Name of Student: Ravindra Jadhav

Name of Supervisor: Professor K. G. Akamanchi

TRANSFORMATIONS USING HYPERVALENT IODINE(V) REAGENTS AND MECHANISTIC INVESTIGATIONS

TRANSFORMATIONS USING HYPERVALENT IODINE(V) REAGENTS AND MECHANISTIC INVESTIGATIONS

One of the important contemporary areas of organic synthesis is development of efficient, selective, mild and new synthetic methodologies for the known transformation or through development of new transformations. Mechanistic Investigation provide insight into chemistry of transformation/

methodologies and would be useful for refinement and may also give direction/clue for new transformation.

Oxidative fragmentation of olefins, diols, carbonyl compounds and oxiranes are important reaction in organic chemistry and useful for fragmentation of molecule at desired site. Oxidative fragmentation of C-C bonds have been achieved using primarily such as ozone, NaIO4, and variety of transition metal oxidant systems. In almost all of these methods there are problem of selectivity, recovery of spent oxidants for possible reoxidation and recycle, when metal oxidants are used environmental issues crop up. Improvement of some of these method is an attractive research area.

Hypervalent iodine(V) reagents, mainly o-iodoxybenzoic acid (IBX) and Dess-Martin periodinane (DMP), have become alternative oxidizing reagents for various metal oxidants. The versatility of these reagents is firmly established by the variety of transformations they cause, like oxidative C-C coupling, oxidative cyclization, oxidative rearrangement, oxidative ring expansion and contraction, etc. However no attention has been given to understand their potential for C-C bond fragmentation reaction although NaIO4, a hypervalent iodine reagents is routinely used for this purpose. Drawback of NaIO4 is difficulty in recovery of spent oxidant for recycle. On the contrary it is very easy to recover spent oxidant from IBX or DMP and reoxidize for recyle. Because of their mildness and chemoselective nature, they are preferred reagents in total synthesis of complex molecule, including natural products. In the present research, investigations have been carried out based on the mechanistic understanding and new methodologies particularly for C-C bond fragmentation have been developed.

Name of Student: Anuradha Pol

Name of Supervisor: Professor V. B. Patravale

NANOCARRIER BASED TOPICAL DELIVERY OF ANTIOXIDANTS

Skin lipids greatly contribute to the penetration barrier. Lipid carriers which allow lipid exchange with skin surface appear very promising for improving dermal penetration and for epicutaneous skin targeting. These are ideal delivery systems to explore topically active compounds, because of their advantages like enhancement in protection, high entrapment efficiencies and lower toxicity. Thus development of nanocarrier based topical delivery systems for natural antioxidants and other actives to surmount the numerous problems encountered with the conventional formulations in treatment of various skin disorders for deeper skin targeting is essential.

Part I: Studies on Sea buckthorn extracts: Sea buckthorn (SBT), extracts are widely used for treating various skin disorders owing to the presence of large amount of antioxidants and phytoconstituents. Although SBT oils have many traditional uses and a wide research potential, there is lack of information available about their formulation development. The purpose of this investigation was to fabricate SBT berry and seed oil based nanocarrier formulations. Both the oils were extracted by in house developed and validated supercritical extraction methodology, were utilized as raw materials for further studies.

I.a Studies on SBT berry oil: Microemulsion (ME), nanostructured lipid carriers (NLC) and nanocapsules based gels have been developed and characterized for physicochemical parameters (particle size, rheology, occlusivity and texture analysis), TEM and photodegradation in comparison with the marketed formulations. The formulations were also evaluated for in vitro antioxidant and enzymatic anti-aging activity. The ex vivo skin deposition in porcine skin at pH 7.4 demonstrated deeper skin targeting of nanogels. Therefore the developed nanogels showed enhanced efficacy when evaluated in vivo in oxazolone induced atopic dermatitis and

UV-B induced photoaging in rats. Formulations were found safe for topical application when inferred from in vitro cytotoxicity in murine fibroblasts and in vivo skin irritation studies in rabbits. Stability studies as per the ICH guidelines were carried out for all the formulations up to period of 6 months.

I.b Studies on SBT seed oil: SBT seed oil based microemulsions and conventional creams were developed. These formulations were evaluated physicochemically. The optimized formulation showed enhanced ex vivo retention in porcine ear skin and did not show irritation potential in vivo.

Part II: Studies on Co-enzyme Q 10 based nanocarriers in combination with SBT berry oil

Co-enzyme Q 10 was incorporated in previously developed SBT berry oil nanocarriers. The developed NLC gels exhibited enhanced permeation and deposition in whole thickness porcine skin. The in vitro SPF potential was determined and further supported with in vivo photoaging efficacy studies in rats. The formulations were found to be non-irritant and stable up to 6 months as per ICH guidelines.

Part III: Studies on nanocarriers based gels of Ropinirole hydrochloride

Ropinirole based microemulsion and NLC were formulated using pseudoternary phase diagrams. For transdermal application ME and NLC were gelled using a Carbopol® Ultrez 10. Ex vivo skin permeation study of developed gel formulations was assessed using rat and porcine skin model. The skin irritation potential was evaluated in healthy rabbits. Pharmacodynamic efficacy of the developed formulations and in combination with SBT berry oil formulations was evaluated in rotenone induced Parkinsonism in rats. All formulations were subjected to stability studies as per the ICH guidelines up to period of 6 months.

Overall, the studies indicated strong commercial potential of developed formulation.

Name of student: Harshad Shete

Name of Supervisor: Professor V. B. Patravale

DEVELOPMENT OF NANOCARRIERS FOR CANCER TREATMENT

Part I: Long chain lipid based nanostructured lipid carrier system (NLC) for lymphatic targeting of Tamoxifen

Tamoxifen citrate (Tmx) was formulated in NLC using long chain solid lipids (LCSL) and oils (LCO) with the aim to target lymphatic system to improve its bioavailability in plasma and lymph nodes (initial sites for metastasis) and reduce its drug associated toxicity. Preformulation studies were performed to evaluate drug solubility in various excipients and drug-excipient compatibility. Solvent diffusion based technique was employed to formulate Tmx-NLC and was optimized for excipient ratios and drug loading. Freeze dried Tmx-NLC was characterized by FT-IR, DSC, XRD, TEM, in vitro GI stability, in vitro release study and stability assessment as per ICH guidelines. The developed NLC were examined further for in vitro antiproliferative activity, cell uptake and nuclear co-localization studies, pharmacokinetics, assessment of drug concentration in mesenteric lymph nodes, in vivo anticancer efficacy & treatment associated toxicity in tumor bearing mice.

Part II: Synthesis of novel lipid based excipient & its application in formulating nanocarrier systems

Part IIA: Synthesis & toxicity assessment of mono-guanidine heterolipid

Mono-guanidine heterolipid (MGH) was synthesized by amidation of Boc protected amino acid followed by deprotection and guanidation using S-methylisothiourea hemisulphate. MGH was characterized by FT-IR, 1H NMR, 13C NMR, ESI-MS, refractive index, density and rheological properties. MGH was tested for its oral acute and sub-acute toxicity in Wistar rats. MGH was further assessed for genotoxicity (Chromosomal aberration, Micronucleus & Comet assay), mutagenicity (AMES assay).

Part IIB: Application of MGH in fabrication of Tmx loaded lipid-polymer hybrid nanoparticles

(Tmx-Lipo)

Tmx-Lipo was formulated by solvent diffusion based technique and was optimized for excipient ratios, zeta potential and drug loading. Developed Tmx-Lipo was freeze dried and further characterized by DSC, XRD, TEM, in vitro GI stability, in vitro release study and stability assessment as per ICH guidelines. The developed Tmx-Lipo was examined further for in vitro antiproliferative activity, cell uptake and nuclear co-localization studies, pharmacokinetics, assessment of drug concentration in mesenteric lymph nodes, in vivo anticancer efficacy & treatment associated toxicity in tumor bearing mice.

Part IIC: Etoposide loaded cationic SMEDDS for intratumoral delivery

MGH incorporated cationic SMEDDS were formulated using Etoposide as a model drug. Microemulsion template technique was employed to formulate Etoposide loaded cationic SMEDDS (ECS). The developed ECS were characterized for globule size, polydispersity index, zeta potential, drug loading, robustness to composition of aqueous phase, robustness to pH, stability under stress conditions, effect of sterilization method and stability assessment as per ICH guidelines. ECS were examined further for in vitro antiproliferative activity, clonogenic assay, cell cycle analysis, cell uptake and intracellular trafficking studies. In vivo anticancer efficacy & treatment associated toxicity for developed ECS were studied in B16F10 melanoma tumor bearing C57BL/6 mice.

Part IID: Fabrication of Monoguinoplex for gene therapy

Monoguinoplex was formulated by complexing MGH incorporated cationic SLN and plasmid DNA (p53 tumor suppressor plasmid & GFP-based plasmid). Hot microemulsion congealing technique was employed to formulate Monoguinoplex and was characterized for particle size, zeta potential and polydispersity index. The developed Monoguinoplex were further examined for DNA complexation assay, DNAase protection assay, antiproliferative assay, and transfection studies were evaluated using fluorescence microscope, flow cytometry, and confocal microscope.

Name of Student: Dalapathi Gugulothu

Name of supervisor: Professor V. B. Patravale

CURCUMIN NANOPARTICLES FOR IMPROVED THERAPEUTIC EFFICACY

Curcumin is a polyphenolic bioactive with plethora of pharmacological activities, but its clinical use is impeded owing to poor oral bioavailability and instability at alkaline pH. Thus, nanoparticulate carries of curcumin were investigated to enhance its efficacy and stability. The research work was divided into 2 parts:

Part I: Formulation development and evaluation of polymeric nanoparticles of curcumin

HPMC, PLGA, HPC and pH sensitive Eudragit® S100 polymeric nanoparticles of curcumin were developed using solvent evaporation technology and were evaluated for physicochemical parameters such as particle size, zeta potential, encapsulation efficiency, drug content, FTIR, DSC, XRD, surface morphology using TEM, in vitro drug release and pH degradation profile. Further, nanoparticles were subjected to stability studies as per ICH guidelines over the period of 6 months. Pharmacokinetics and biodistribution studies of developed nanoparticles of curcumin were performed in female Wistar rats at oral dose of 100 mg/kg.

Part Ia: Studies on Polymeric nanoparticles of curcumin as an antidiabetic therapy

HPMC, HPC and PLGA nanoparticles of curcumin were subjected to comparative antidiabetic efficacy studies owing to the higher pancreatic accumulation and prolonged drug release profiles. For this study, streptozotocin induced diabetes model in male Wistar rats was investigated and parameters such as fasting blood glucose and lipid profile were monitored and compared

over a treatment period of 14 days and glycogen estimation was performed post treatment period.

Part Ib: Studies on Polymeric nanoparticles of curcumin and combinations thereof as an ulcerative colitis therapy

Anti-inflammatory potential of curcumin was investigated using colon targeted pH sensitive Eudragit® S100 nanoparticles for treatment of ulcerative colitis. Understanding the need of combination therapy, pH sensitive Eudragit® S100 nanoparticles of celecoxib (specific COX-2 inhibitor) and ellagic acid (anti-inflammatory agent) were formulated. Also PLGA nanoparticles ellagic acid was optimized. All the aforementioned nanoparticles were evaluated for various physicochemical parameters such as particle size, zeta potential, encapsulation efficiency, drug content, FTIR, DSC, TEM, in vitro drug release. Further, nanoparticles were subjected to stability studies as per ICH guidelines over the period of six months. In vivo anti-ulcerative colitis efficacy studies of the pH sensitive nanoparticles of curcumin, ellagic acid, celecoxib, curcumin-ellagic acid and curcumin-celecoxib combinations as well as PLGA nanoparticles of curcumin, ellagic acid and curcumin-ellagic acid combination were evaluated using trinitro benzene sulfonic acid induced murine ulcerative colitis model in male Sprague Dawley rats. Evaluation parameters involved visual assessment of erythema, edema, bleeding, erosion, ulcer, and tissue necrosis followed by histopathological analysis. Furthermore, myeloperoxidase, superoxide dismutase and lipid peroxidase enzyme estimation assays were performed.

Part II: Formulation development and evaluation of lipid nanoparticles of curcumin

Solid lipid nanoparticles (SLNs) and nanostructured lipid carriers(NLCs) of curcumin developed using nanoprecipitation technique and microemulsion template technique respectively; were evaluated for physicochemical parameters such as particle size, zeta potential, encapsulation efficiency, drug content, FTIR, DSC, TEM, in vitro drug release and pH degradation profile. Further, nanoparticles were subjected to stability studies as per ICH guidelines over the period of six months. Pharmacokinetics and biodistribution studies of developed nanoparticles of curcumin were performed in female Wistar rats at oral dose of 100 mg/kg.

Part IIa: Studies on lipid nanoparticles of curcumin and combinations thereof as an antimalarial therapy

Owing to higher liver uptake and reported selective lipid nanoparticle uptake by malaria infected RBCs, lipid nanoparticles of curcumin were investigated for antimalrial potential either alone or in combination. SLNs and NLCs of arteether and SLNs of ellagic acid were developed and evaluated for physicochemical parameters such as particle size, zeta potential, encapsulation efficiency, drug content, FTIR, DSC, XRD, TEM, in vitro drug release and pH degradation profile. Further, nanoparticles were subjected to stability studies as per ICH guidelines over the period of six months. Antimalarial efficacy of lipid nanoparticles of curcumin, ellagic acid, arteether, curcumin-arteether, ellagic acid-arteether combination were evaluated using 'Peter's four day suppressive test' in infected male Swiss mice using lethal strain of P. berghei.

Student Name: Jayant Sancheti
Name of Professor: Dr. Sadhana Sathaye

ANTIEPILEPTIC EVALUATION OF SELECTED MEDICINAL PLANT: A MECHANISTIC APPROACH

Epilepsy is one of the most common, serious neurological conditions, affecting more than 50 million people worldwide. The present research work includes evaluation of of Pistacia integerrima and Thymol for its anticonvulsant and antiepileptogenic potential.

The essential oil of Pistacia integerrima (PI) and Thymol was evaluated for acute intraperitoneal toxicity, anticonvulsant activity [Maximal electroshock (MES), Pentyelenetetrazole

(PTZ), Strychnine (STR) and 4-aminopyridine (4-AP) model], effect on locomotion and antiepileptogenic activity. The phytoconstituents (α and β pinene) of PI were then explored in MES and PTZ models for evaluation of their anticonvulsant activity. To confirm the mechanism of action of phytoconstituents of PI, they were evaluated for their possible binding and interactions with Na+ channels and GABAA receptors using in-silico molecular docking studies. The present study revealed that both PI and Thymol possess potent anticonvulsant and antiepileptogenic effect.

Student Name: Rupali Redkar
Name of Professor: Dr. Sadhana Sathaye

INVESTIGATION ON SECONDARY METABOLITES AND NEUROPHARMACO-LOGICAL STUDIES ON OCIMUM SANCTUM L FOR ITS THERAPEUTIC ROLE IN PARKINSON'S DISEASE

The present study unravels the 'antioxidant approach' as therapeutic intervention in Parkinson's disease (PD) by understanding probable mechanism of neuroprotection at the biochemical, cellular and molecular levels. Acute toxicity studies and screening of neuroprotective property of active extract of Os were carried out in a modified Anti-Parkinson's MPP model (MPTP as a neurotoxin + probenecid as an adjuvant) in male mice. Any synergism in neuroprotective property by co-administration of bromocriptine with HM extract of Os was also evaluated. On in vitro level, the sagittal slices of whole brain of the decapitated animal were simulated in cold artificial cerebrospinal fluid (ACSF) and effects of ursolic acid and eugenol were studied on brain slices for few selected biomarkers. The findings supported that Os exhibited reduction in oxidative stress and improved the biochemical and neurochemical biomarkers, which were significantly affected in MPTP-inflicted experimental animals thus providing an approach to its therapeutic role as 'neuroprotective' primarily through its influences on stress markers.

MAJOR GRANTS RECEIVED BY THE DEPARTMENT

No.	Sponsoring Agency	Amount / Year	Title
1.	DST-FIST	Rs.150 lakhs	DST-FIST Programme
2.	UGC-CAS	Rs.150 lakhs 2009-2014	UGC CAS Phase – I Programme

PLACEMENT DATA 2013-14

No.	Name of student	Industry	Degree
1	Rahul Patole	Merck	PhD Tech
2	Rahul Chaudhari	Godfrey Phillips	PhD (Tech) Pharmacology
3	Jadhav Ravindra R.	Glenmark, Mumbai	PhD (Sci)
4	Smita Pawar	Zydus Healthcare Pvt. Ltd.	Ph.D. (Tech.)
5	Achyut Khire	Mascot Engg. Pvt. Ltd.	Ph.D. (Tech.)
6	Pathare Sagar P.	Syngene, Bangalore	PhD (Tech)
7	Ketan Patel	Florida A &M University, USA	Ph.D. (Tech.)
8	Kunal pagar	Micro Labs Ltd.	Ph.D. (Tech.)
9	Ajay Sav	Macleods	PhD Tech
10	Meer Tarique Ali	Panacea Biotech	PhD Tech
11	Preeti Tupe	Cognizant Technology Solutions	Ph.D
12	Nilesh Saindane	Wockhardt Ltd.	Ph.D. (Tech.)
13	Sameera Khandekar	Godrej consumer Products Limited	Ph.D(Tech)
14	Mahesh Soni	McLeods Pharma	Ph.D(Tech)

15	Surendra Sardar	Glenmark Pharmaceuticals Pvt. Ltd.	Ph.D. (Tech.)
16	Gaurav Yeola	Panacea Biotech Ltd.	Ph.D. (Tech.)
17	Jayant Sancheti	Wockhardt	PhD (Tech) Pharmacology
18	Neha Verma	Tata Consultancy Services	M. Pharm
19	Dishan Shah	Dr. Reddy's Laboratories Ltd.	M. Pharm.
20	Sharad Chormale	Dr. Reddy's Laboratories Ltd.	M. Pharm.
21	Gupta Ashish	Evalueserve, Gurgaon	M Pharm
22	Jayshree Surwade	Cognizant Technology Solutions	M. Pharm
23	Anushri Rajvir	Hospira	B.Tech Pharma
24	Raveena Bhosle	Hospira	B.Tech Pharma
25	Sahil Gupta	Evalueserve	B.Tech Pharma
26	Dhruvika Chawalla	WNS Global Health Pvt. Ltd.	B.Pharm

IN PLANT TRAINING2013-14

B. PHARMA

No	Name	Name of Industry
1	Pritesh Patil	Alkem Laboratories Ltd., Thane
2	Nehal Shah	Rubicon Research Pvt., Ltd., 221, Bhandup (W)
3	Aarti Kamraj	Rubicon Research Pvt., Ltd., 221, Bhandup (W)
4	Shashikal Bhute	Rubicon Research Pvt., Ltd., 221, Bhandup (W)
5	Pranjali Kanvinde	Sandoz Pvt., Ltd., Turbhe
6	Madhura Rege	Sandoz Pvt., Ltd., Turbhe
7	Ashutosh Dikshit	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
8	Priya Pujari	Raptokos Brett and Co Pvt. Ltd, Thane 400 606
9	Puja Gangurde	Raptokos Brett and Co Pvt. Ltd, Thane 400 606
10	Kashish Shah	Aarti Industries Ltd, , Aarti Helth care API division, Thane
11	Disha Prabhu	Aarti Industries Ltd, , Aarti Helth care API division, Thane
12	Swapnil Sheth	Aarti Industries Ltd, , Aarti Helth care API division, Thane
13	Akshay Kapadia	Aarti Industries Ltd, , Aarti Helth care API division, Thane
14	Heta Mehta	IPCA Pvt. Ltd., 142 AB, Kandivli Industrial Estate, Kandivli (West), Mumbai 400 067, Maharashtra
15	Akkash Gandhi	Glanmark Pharmaceutical Pvt. Ltd, Mhape, Thane
16	Rahul Sonawane	Manbro Pharm Ltd, W/66, MIDC, Phase II, Dombivli (E) 421 204
17	Pallavi Rane	Watson Pharma, Mumbai
18	Saylee Ghag	Macleods Pvt. Ltd
19	Paritosh Chandwade	Macleods Pvt. Ltd
20	Sharvari Ugaonkar	Macleods Pvt. Ltd
21	Sannidhi Modi	Ajantha Pharma Ltd, Kandivali
22	Ankita Bagul	Glaxo Smithkline Pharmaceutical Ltd., A-10, MIDC, Ambad Pathardi Block, Nashik 422 010

B. TECH. PHARMA

No	Name	Name of Industry
1	Surabhi Talele	Reckitt Benckiser India Limited, plot No 48, Institutional Area, Sector 32, Gurgaon, Haryana 122001
2	Nikita Aware	Glaxo Smithkline Pharma Ltd. Ambed, Nashik
3	Apoorva Patil	
4	Yohann Pitale	Lupin India Ltd. Pune
5	Saimanaz Momin	Bioxera Pharma Pvt. Ltd., MIDC Ambernath , Thane
6	Mayuri Khandagale	
7	Abhinav Temani	Aaarti Drugs Ltd, Plot no N-198, MIDC Tarapur. Thane
8	Rupesh Vishwakarma	Sandoz Pvt., Ltd., Turbhe
9	Junay Nagori	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
10	Harish Agarwal	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
11	Ashwini Ranade	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
12	Shrishit Pitti	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
13	Riddhi Patel	Cipla Ltd, Manufacturing Division, MIDC Patalganga 410 220
14	Sanghamitra Shirodkar	Johnson & Johnson Ltd, Mulund
15	Aakash Parikh	Manbro Pharma Pvt. LTD, Dombivali (E)
16	Chinmay Kulkarni	Manbro Pharma Pvt. LTD, Dombivali (E)
17	Aniket Akhade	Manbro Pharma Pvt. LTD, Dombivali (E)
18	Siddhart Agarwal	Manbro Pharma Pvt. LTD, Dombivali (E)
19	Kirtesh Raut	Novartis Pharma Pvt Ltd. Mumbai

RESEARCH GROUP

PROFESSOR P. V. DEVARAJAN RESEARCH GROUP

From Left to Right: Sidhartha Pati (Ph.D. Tech), Krantisagar More (Ph.D. Tech), Darsheen Kotak (Ph.D. Tech), Kishor Kande (M.Tech), Vilas Malode (Ph.D. Tech), Prashant Mande (Ph.D. Tech), Sagar Bachhav (Ph.D. Tech) **Middle Row (L to R):** Shweta Chawla (Ph.D. Tech), Harsh Joshi (Ph.D. Tech), Umesh Shinde (M.Pharm), Banteilang Ranee (Ph.D. Tech), Sagar Sonawane (M. Pharm), Rohit Joshi (Ph.D. Tech), Satish Rojekar (M. Pharm), Anila Chaturvedi (Ph.D. Tech), Saugandha Das (Ph.D. Tech) **Front Row (L to R):** Bhagyashree Dalvi (Ph.D. Tech), Bhagyashri Dalvi (Ph.D. Tech), Shilpa Dawre (Ph.D. Tech), Sandhya P. (Ph.D. Tech), Rajshree Shinde (Ph.D. Tech), Priyanka Jahagirdar (Ph.D. Tech), Heena Maithania (Ph.D. Tech) **Seated:** Prof. P.V. Devarajan **In absentia:** Sameera Khandekar (Ph.D. Tech), Nilam Patil (Ph.D. Tech), Amit Lokhande (M.Pharm)

PROFESSOR M. S. DEGANI RESEARCH GROUP

From Left to Right: Sandeep Sabale, Rupesh Shelke, Puneet Jain, Harikesh Nandkishore, Arun Busari, Parshad Hirapara, Lalit Khare, Deepak Mishra, Harish Kundaikar, Macchindra Bochare **Front Row (L to R):** Sachin Lonkar, Sagar Patel, Irfan Sheikh, Aakriti Kapoor, Archana Raju, Prof. M. S. Degani, Arundhati Lele, Neha Agre, Hemlata Mali, Vishakha Raval, Arati Antaram.

DR. V. N. TELVEKAR RESEARCH GROUP

From Left to Right: Juee Raut (MPharm), Neha Desai (PhD Tech), Jaishreee Mali (PhD Tech) Saket Bhagat (PhD Tech),Yogesh Sutar (PhD Tech), Deelip Rekunge (MPharm), Shrikant Ghodse (PhD Tech), Krishna Mundlod (PhD Tech), Ajit Nagarkar (PhD Sci), Nikhil Jadhav (PhD Tech), Afsar Ali (PhD Sci) Seated: Dr. V. N. Telvekar

PROFESSOR K. G. AKAMANCHI RESEARCH GROUP

Back Row (L to R): Dinesh M. Dhumal (Ph.D. Tech), Pankaj Patil (M. Tech), Kapil S. Chaudhari (Ph.D. Tech) **Middle Row (L to R):** Smita S. Kale (Ph.D. Tech), Dhiraj Patil (Ph.D. Tech), Ganesh D. Wagh (Ph.D. Sci), Sachin D. Veer (Ph.D. Sci) **Front Row (L to R):** Archana Ghorpade (Ph.D. Sci), Ashishkumar Jain (Ph.D. Tech), Prof. K. G. Akamanchi, Kamlesh Katkar (Ph.D. Tech), Shweta Mapari (Project Fellow)

PROFESSOR P. D. AMIN RESEARCH GROUP

From Left to Right: Mr. Santosh M. Gejage, Mrs.GeetaU. Yadav, Mr. Divakar R. Jaiswar, Ms.Pradnya N.Vaingankar, Mr. Avinash B. Gangurde, Mr. Ashish S. Rajput, Prof. (Dr.) P. D. Amin, Mr.Sharad D. Javeer, Mr.Durgesh Kr.Jha, Mr. Jaywant N. Pawar, Ms. Harita R. Desai.

PROFESSOR K. S. LADDHA RESEARCH GROUP

From Left to Right : Mr. Aditya Arvindekar (Ph.D. Tech), Mr. Chirag Thakkar (M. Pharm), Mr. Awdhut Pimpale (Ph.D. Tech), Mr. Mandar Mulik (Ph.D. Tech), Mr. Prashant Shinde (Ph.D Tech), Prof. K. S. Laddha, Ms.Meenakshi Akhade (Ph.D. Tech), Ms.Poonam Agrawal (Ph.D. Tech), Mrs. Manasi Gholkar (Ph.D. Tech), Ms. Snehal Bhandare (Ph.D. Tech), Ms. Aditi Lambe (M. Pharm)

DR. PRAJAKTA DANDEKAR JAIN RESEARCH GROUP

From Left to Right: Onkar Havele, Uday Koli, Sachin Karande, Vijay Yadav, Dr. Prajakta Dandekar Jain, Prachi Bangde, Bhagyashri Bacchav, Vijaya Waghmare, Sathish Dyawanapelly

PROFESSOR V. B. PATRAVALE RESEARCH GROUP

Back Row (L to R): Mr. Milind Vellhal (Ph.D. Tech.), Mr. Amit Mirani (Ph.D. Tech.), Mr. Sagar Dhoble(SRF), Mr. Sandip Gite (Ph.D. Tech.), Mr. Gaurav Alande (M. Pharm), Mr. Shivraj Naik (Ph.D. Tech.) **Middle Row (L to R):** Mr. Ankit Agarwal (Ph.D. Tech.), Mr. Mangesh Sane (Ph.D. Tech.), Mr. Sudeep Pukale (M. Pharm.), Mr. Swapnil Talkar (Ph.D. Sci.), Mr. Vinod Ghodake (SRF), Mr. Raju Tayde (M. Pharm.), Mr. Swapnil Mohurle (Ph.D. Tech.) **Front Row (L to R):** Ms. Manasi Chogle (Ph.D. Tech.), Ms. Priyanka Prabhu (Ph.D. Tech.), Ms. Swati Vyas (Ph.D. Tech.), Ms. Rashmi Prabhu (Ph.D. Tech.), Prof. Vandana B. Patravale, Ms. Prachi Kharkar (Ph.D. Tech.), Ms. Preshita Desai (Integrated Ph.D. Tech.), Ms. Namrata Kadwadkar (Ph.D. Tech.) **In absentia:** Ms. Ronak Bhuptani (Ph.D. Tech.), Mrs. Sonia Jain (Ph.D. Tech.), Mr. Sushant Patil (Ph.D. Tech.), Mr. Parth Joshi (M. Pharm.), Ms. Meenal Ghune (M. Pharm.)

DR. SADHANA SATHAYE RESEARCH GROUP

Back Row (L to R): Pankaj Jain, Jayant Sancheti, Shweta Lotankar, Divya Kanchan, Mruniya Nahire, Suraj Muke **Middle Row (L to R):** Madhav Seervi, Devang Sarvaiya, Dipali Mendhe, Dr. Sadhana Sathaye, Rufi Tambe, Vaibhavi Peshattiwar, Atul Bharadwaj, Ashutosh Aher **Front Row (L to R):** Rahul Chaudhari, Sachin Patil, Priya Ghumatkar, Gauresh Somani.

PROFESSOR A. R. JUVEKAR RESEARCH GROUP

Back Row (L to R): Dharmendra kumar Khatri, Vipin D. Bulani, Snehal N. Mestry, Nitin B. Gawali, Jayesh B. Dhodi, **Front Row (L to R):** Sangita Kumbhar, Deepawali Thanekar, Prof. A. R. Juvekar, Padmini S. Deshpande, Amrita Chowdhury

DR. GANESH U. CHATURBHUJ RESEARCH GROUP

Back Row (L to R): Trupti Khatal, Tanmeet Arora, Manisha Deore **Front Row (L to R):** Chetan Khatri, Dr. Ganesh Chaturbhuj, Krishna Indalkar

PROFESSOR P.R. VAVIA RESEARCH GROUP

Front Row (L to R): Mahendrakumar Prajapati, Ganesh Shevalkar, Mrunal Patil, Prof. P. R. Vavia, Preeti Wavikar, Mayank Patel, Jasmin Monpara **Middle Row (L to R):** Nikhil Agrawal, Manoj Pawar, Nisha yadav, Neha Bhujbal, Avinash Chaudhary, Pankaj Jadhav, Atul Raut, Nitin Jadhav **Back Row (L to R):** Subhash Ingle, Alok Shukla, Lalitkumar Vora, Rohan Pai, Ketan Mahajan, Nilesh Dhakar

PHOTO GALLERY

EVENTS ORGANIZED

International Seminar on Research Writing Skills "Publish or Perish"

Prof. R.S Baichwal Seminar

Dr. (Mrs.) M.R. Baichwal Endowment Lecture

Themis Chemicals visiting fellowship

Prof. S.K. Pradhan Endowment Lecture

UKIERI Seminar-Green Processing Technologies forPoorly Soluble Drugs

PREFACE

DEPARTMENT OF POLYMER & SURFACE ENGINEERING

"This department have the equipped laboratory comparable with or better than laboratories in many advanced countries"

PROFESSOR P. A. MAHANWAR, ***Ph.D. (Tech)***
Professor of PolymersTechnology,
Head of Department PSE

In the inception this division offered a B.Sc (Tech) course for two years in Technology of Plastics and Technology of Paints, Pigments and Varnishes. In 1952, along with other divisions three years B.Sc (Tech) program was introduced. Dr. T. N. Mehta was the only staff member initially. Later on, the division progressed under stewardship of Late Professor N.R. Kamath who was a visionary. After he joined IIT, Professor S. P .Potnis carried the torch with great ability. From 1991 to 2005, Professor D. D. Kale was head of the Division who shared a major contribution for the development of this department. Prof. M.A. Shenoy, Prof V.C. Malshe, Professor P. A. Mahanwar and Prof. R.N.Jagtap are the past HODs of Polymer & Paints Departments respectively. Presently from 1st August 2012 Prof. P.A.Mahanwar is the Head of Department.

The intake strength was only four students per year in Polymer and surface engineering Technology branches. Later on, the strength was increased to 8 per year and now it is 16 per year in each of these two technology courses. From 1998, the three year B. Sc (Tech) course has been replaced by four year post H.S.C course. In addition to under graduate program, the department has Master's and Doctoral Programs also. The department received a grand donation of Plastindia Foundation, Mumbai in 1997 to initiate the new program – three semesters M. Sc (Tech) in Plastics Processing. In the year 1999, the department received donation of modern equipments worth USD 100,000 from Gratag Macbeth of USA in association with Advanced Graphics Systems, India.

Today, this department boosts of being the best equipped laboratory comparable with or better than laboratories in many advanced countries.

postgraduate students.

MAJOR THRUST OF RESEARCH AREAS:

- Polymer Recycling, Blends, Rheology, Polymer Processing.
- Synthesis of Nanomaterials and nanocomposites
- Ecofriendly coatings, Hybrid coatings
- Structure property relationship
- Living Radical Polymerization,
- Synthesis of Functional monomers
- Polymer Blends and alloys

PROFESSOR P. A. MAHANWAR

Ph.D. (Tech)
Professor of Polymer Technology

SUBJECTS TAUGHT:

- Polymer Science & Technology I
- Structure property relationship
- Colorants and Additives For Polymers
- Advanced Polymer Science
- Polymer Processing & Technology II
- High Polymer Chemistry

RESEARCH INTERESTS:

- Synthesis and Characterization of specialty polymers for Controlled release,
- Surface coatings, nanocomposites,
- Bionanocomposites,
- Utilization of non conventional energy for polymerization,
- Super Absorbents

RESEARCH STUDENTS:

Ph.D.(Tech.) : 06
Ph.D.(Sci.) : 06
M.Tech. : 07

PROFESSIONAL ACTIVITIES:

- Member, Board of Governors, UDCT Alumni Association, Mumbai
- Secretary, The Color Society, Mumbai
- Member, Technical Advisory Committee Ministry of Science & Technology, Government of India, New Delhi
- Course Co-ordinator DPAT, Garware Institute University of Mumbai
- Member, MUPTA, Mumbai
- Member, Indian Plastics Institute, Mumbai
- Member, BANE, India
- Member, Polymer Science Society
- Member, BSTA

PROFESSOR R. N. JAGTAP

B.Sc. Tech, M.Sc. Tech, Ph.D Tech
Professor of Paint Technology

SUBJECTS TAUGHT:

- Paint Tech. III
- Paint Tech. II
- Technology of Printing Inks
- Corrosion Science and Prevention
- Environment Friendly Coatings
- High Performance Coatings
- Advanced Paints Technology II
- Advanced Surface Coating Technology II

RESEARCH INTERESTS:

- Living Radical Polymerization for Tailor-made Polymers,
- Nanomaterials and Nanocomposite,
- Recycling of e-waste,
- Antimicrobial Paints,
- Heat reflective coatings,
- Corrosion,
- Eco friendly coating

RESEARCH STUDENTS:
Ph.D.(Tech.) - 04
Ph.D.(Sci.) - 06
M.Tech. - 07

RESEARCH PUBLICATIONS:
International - 04
National – 02
Peer-reviewed - 01
Conference proceeding - 02

PATENTS :
Indian – 2

SPONSORED PROJECTS:
Government - 1
Private - 01

PROFESSIONAL ACTIVITIES:
- Member of UAA
- Member Governing council of ICPE
- Member of IPI
- Member of Colour society

DR. S. T. MHASKE

Assistant Professor in
Technology of Plastics & PPV

SUBJECTS TAUGHT:
- Compounding and Polymer Processing – I,
- Polymer & Processing Technology – III,
- Analysis & Characterization of Polymers,
- Synthesis & Characterization of Polymers,
- Paints Processing,
- Packaging and Nanotechnology

RESEARCH INTERESTS:
- Novel approached synthesis of Nano particles,
- Polymer melt Rheology,
- Cellulose based Polymer Nanocomposites,
- Bio Nanocomposites,
- Synthesis of resins from renewable resources,
- Water Borne Coatings,
- Insulating Varnishes,
- Conductive coatings,
- Anticorrosive coatings,
- Polymer Processing and Coloration and Colour Matching

RESEARCH STUDENTS:
Ph.D.(Tech) -08
Masters - 16
Ph.D.(Sci.)- 01

RESEARCH PUBLICATIONS :
International - 10,
National - 20,
Conference Proceedings - 3
Peer-reviewed - 08

SPONSORED PROJECTS:
Government: 01
Private: 02

PROFESSIONAL ACTIVITIES:
- Secretary, Indian Plastics Institute, Mumbai Chapter.
- Member The Color Society, India
- Governing Member, The Society for Polymer Science, India
- Visiting Faculty in Amravati University
- Visiting Faculty for Indian Plastics Institute

RESEARCH ACTIVITIES:
- At present most of the work is being done on synthesis of nanometerials such as Titanium dioxide, zinc oxide, nanocellulose (whiskers, particles and nanofibers) etc. using conventional & cavitation approach and its applications in polymer (synthetic as well as biopolymer) composites and coatings to enhance their performance properties.
- Synthesis of Polyamide hot melt adhesives and its applications.
- Modification of fly ash and its applications in polymer composites and coatings to enhance their performance.
- Synthesis of Nanoemulsions using conventional methods as well as acoustic cavitation like polystyrene, PMMA etc.
- Discoloration and dewaxination of Shellac
- Preparation of conductive coatings.

SHRI. ADARSH RAO

M. Tech (persuing Ph.D.)
Assistant Professor in Polymer Technology

SUBJECTS TAUGHT

- Technology of Thermoplastics – I
- Technology of Thermoplastics – II
- Technology of Thermoplastics – III
- Synthesis & Characterization of resins & polymers-I
- Synthesis & Characterization of resins & polymers-II
- Synthesis & Characterization of resins & polymers-III
- Processing of Polymers-I
- Processing of Polymers-II
- Processing of Polymers-III
- Compounding and Polymer Processing-II

RESEARCH INTERESTS :

- Controlled/Living Radical Polymerization
- Polymer Nanocomposites,
- Nanocoatings,
- Polymer blends and alloys.

RESEARCH PUBLICATIONS:

International- 1
National - 2

SPONSORED PROJECTS:

Private- 1

PROFESSIONAL ACTIVITIES:

- Member of Color Society
- Member of UDCT Alumni Association

DR. ANAGHA SABNIS

Ph. D. (Tech)
Assistant Professor

SUBJECTS TAUGHT:

B.Tech.:

- Analysis & Characterization of raw materials & polymers - I
- Pigments & Additives for Polymers
- Paint Tech. I
- Processing of Paint II
- Insulating & Intumescent coatings
- Analysis & Testing of Paints
- Processing of paints IV
- Advanced Surface Coating Technology I
- Additives for Coatings

RESEARCH INTERESTS:

- Novel approached synthesis of Nano particles,
- Resin Synthesis from renewable resources,
- Water Borne Coatings,
- Conductive coatings,
- Anticorrosive coatings,
- Electric Insulation Coatings

RESEARCH STUDENTS:

M.Tech. 10
Sponsored Project: 02

RESEARCH PUBLICATIONS:

International - 2
Conference proceedings - 3

PROFESSIONAL ACTIVITIES:

- Member Colour Society

DR. VIKRANT SHERTUKDE

M.Sc (University of Mumbai), Ph.D. (Institute of Chemical Technology, Mumbai), DHE (University of Mumbai)
Emeritus fellow (All India Council of Technical Education),
Dept. of Polymer & Surface Engineering

SUBJECTS TAUGHT

- Polymer Science & Technology II
- Polymer Science & Technology III
- Technology of Thermosets – I
- Technology of Thermoset Polymers- III
- Technology of Elastomers
- Packaging & Decoration of plastics
- Polymer Blends & Alloys
- Smart Polymer

RESEARCH INTERESTS :

- Nanocomposites,
- Polymer blends & alloys,
- Recycling of plastics,
- Synthesis of specialty polymers,
- Surface & interfacial energy studies in polymeric systems.

RESEARCH STUDENTS :

Ph.D. (Tech.) - 01
Ph.D. (Sc) - 02
M.Tech. – 03

RESEARCH PUBLICATIONS:

International - 13
National - 22
Peer-reviewed - 13
Conference proceedings - 07

SPONSORED PROJECTS:

Government- 1
Private - 02

PROFESSIONAL ACTIVITIES:

- Life Member of UAA
- Life Member Colour Society
- Ex-Secretary Colour Society
- Management committee Member Colour Society
- Ex-Education committee Chairman Colour Society
- Advisory Board Member Crystal NanoClay

PROFESSOR M. R. SAWANT

Ph.D (Tech.) – Polymer Technology
Sir Homi Mehta Asso. Professor in High Polymers

RESEARCH INTERESTS:

- Catalysis,
- Surfactant science,
- Pesticide formulation

RESEARCH PUBLICATIONS :

International - 1

PATENTS:

Indian - 02

SPONSORED PROJECTS:

Government - 1

SPECIAL AWARDS/ HONOURS:

- Appointed as the Scientific Advisor to the Patent Office, Govt. of India

SUPPORT STAFF

D.R. Kadam
Instrument Mechanic

A.K. Dicholkar
Lab Assistant

S.K. Hasaye
Lab Assistant

M.A. Ansari
Lab Assistant

B. S. Satardekar
Lab Attendent

C.S. Kumbhar
Lab Attendent

P.D. Patkare
Lab Attendent

D.V. Karande
Lab Attendent

S. L. Gharat
Lab Attendent

STUDENTS' SEMINARS/PROJECTS/HOME PAPERS

SEMINAR (B.Tech.) POLYMER ENGINEERING & TECHNOLOGY

Sr.	Name	Topic
1	Chhabra Karan Tejendrakumar Kavita	Green Additives for polymers and coatings
2	Shivpriya S	Recent developments in extrusion coatings
3	Sanghvi Yash Dharmendra Nisha	Fluorescent Pigments
4	Paratkar Kunal Keshav Vaishali	Polymers used in Acoustic balancing
5	Kachole Riddhi Rajesh Archana	Biocomposites for Biodegradable Applications
6	Agarwal Rahul Niranjan Nirmala	Solid State Polymerization of PET
7	Pasari Sandesh Omprakash Santosh	Cellulose processing via ionic liquid
8	Basutkar Monali Naresh Namrata	Biopolymers for packaging applications
9	Waghmode Nitin Pandurang Maya	Recent developments Shape memory polymers
10	Surwase Atul Limbaji Sandhya	Electron Beam crosslinking of polymers suitable for heat shrinkable applications
11	Tripakkal Rahul Sunder Ashalatha	Antireflective coatings by Solgel Process
12	Chaudhari Nikhil Milind Monaly	Recent development usewd in plastics and rubbers
13	Deshmukh Vishal Shivaji Sharmila	Development in saturated polyesters used in powder coating applications.
14	Misra Saumya Rajeev Sarita	Developments in biobased non-epoxidized plasticizers
15	Sinha Nairiti Jivankumar Leena	Recent Development in Biomedical Polymers
16	Shinde Shekhar Shivaji Ushabai	Monomeric building blocks from biomass

SEMINAR (B. Tech.) SURFACE COATING TECHNOLOGY

Sr.	Name	Topic
1	Patel Shrish Sanjay Mayura	Stealth and Sound proofing coatings
2	Bhangaonkar Karan Rajeev Medha	Developments in anticondensation coatings
3	Deshpande Sanjana Protam Sandhya	Development in Antimicrobial Coatings
4	Gajare Siddesh Girish Jyoti	Nanoparticulate and their applications in coatings(High Temp Stable coatings reflective coatings scratch proff coating etc.)
5	Rawal Diganjay Shashikant Vrushali	Oxodegradable Polymers
6	Somkuwar Shradhda Balkrishna Lata	Studies in paper coatings
7	Deshmukh Ajinkya Arun Sadhana	Development in temporary coatings
8	Mavalkar Nikita Avinash Pranjali	Natural colorants
9	Marwah Gagandeep Hardeep Jasneet	Photoconductive polymers for solar applications
10	Pure Avdhut Mohanrao Malati	Green Coatings
11	Pagare Arun Eknath Shantabai	Replacement of Hexavalent chrome for pretreatement
12	Bangar Sagar Kisan Sunita	Development in construction chemicals
13	Jain Tanmay Pradip Ulka	Polymeric Materials and processing in printed electronics
14	Ghag Onkar Prashant Pooja	Multifunctional additives for coatings
15	Dalvi Siddhesh Narayan Maya	Coatings for energy conservations

SEMINAR (B.Tech.) POLYMER ENGINEERING & TECHNOLOGY

Sr.	Name	Topic
1	Chhabra Karan Tejendrakumar Kavita	Green Additives for polymers and coatings
2	Shivpriya S	Recent developments in extrusion coatings
3	Sanghvi Yash Dharmendra Nisha	Fluorescent Pigments
4	Paratkar Kunal Keshav Vaishali	Polymers used in Acoustic balancing
5	Kachole Riddhi Rajesh Archana	Biocomposites for Biodegradable Applications
6	Agarwal Rahul Niranjan Nirmala	Solid State Polymerization of PET
7	Pasari Sandesh Omprakash Santosh	Cellulose processing via ionic liquid
8	Basutkar Monali Naresh Namrata	Biopolymers for packaging applications
9	Waghmode Nitin Pandurang Maya	Recent developments Shape memory polymers
10	Surwase Atul Limbaji Sandhya	Electron Beam crosslinking of polymers suitable for heat shrinkable applications
11	Tripakkal Rahul Sunder Ashalatha	Antireflective coatings by Solgel Process
12	Chaudhari Nikhil Milind Monaly	Recent development usewd in plastics and rubbers
13	Deshmukh Vishal Shivaji Sharmila	Development in saturated polyesters used in powder coating applications.
14	Misra Saumya Rajeev Sarita	Developments in biobased non-epoxidized plasticizers
15	Sinha Nairiti Jivankumar Leena	Recent Development in Biomedical Polymers
16	Shinde Shekhar Shivaji Ushabai	Monomeric building blocks from biomass

SEMINAR (B. Tech.) SURFACE COATING TECHNOLOGY

Sr.	Name	Topic
1	Patel Shrish Sanjay Mayura	Stealth and Sound proofing coatings
2	Bhangaonkar Karan Rajeev Medha	Developments in anticondensation coatings
3	Deshpande Sanjana Protam Sandhya	Development in Antimicrobial Coatings
4	Gajare Siddesh Girish Jyoti	Nanoparticulate and their applications in coatings(High Temp Stable coatings reflective coatings scratch proff coating etc.)
5	Rawal Diganjay Shashikant Vrushali	Oxodegradable Polymers
6	Somkuwar Shradhda Balkrishna Lata	Studies in paper coatings
7	Deshmukh Ajinkya Arun Sadhana	Development in temporary coatings
8	Mavalkar Nikita Avinash Pranjali	Natural colorants
9	Marwah Gagandeep Hardeep Jasneet	Photoconductive polymers for solar applications
10	Pure Avdhut Mohanrao Malati	Green Coatings
11	Pagare Arun Eknath Shantabai	Replacement of Hexavalent chrome for pretreatement
12	Bangar Sagar Kisan Sunita	Development in construction chemicals
13	Jain Tanmay Pradip Ulka	Polymeric Materials and processing in printed electronics
14	Ghag Onkar Prashant Pooja	Multifunctional additives for coatings
15	Dalvi Siddhesh Narayan Maya	Coatings for energy conservations

PROJECT (B. Tech.) POLYMER ENGINEERING & TECHNOLOGY

Sr.	Name	Project Topics	Guide
1	Chhabra Karan Tejendrakumar Kavita	Blends of PBT/ABS	VVS
2	Shivapriya S	Recent methods for synthesis of Functional polymer /polymer nanocomposites applications	RNJ

3	Sanghvi Yash Dharmendra Nisha	Microencapsulation of biocides and fungicides as polymeric binder	PAM
4	Paratkar Kunal Keshav Vaishali	Development of thermoplastic vulcanizates	STM
5	Kachole Riddhi Rajesh Archana	Studies in Recycling of Waste Polyamides	ASS
6	Agarwal Rahul Niranjan Nirmala	Impact modification of PTT	ARR
7	Pasari Sandesh Omprakash Santosh		VVS
8	Basutkar Monali Naresh Namrata	Effect of colour on Oxodegradibility of LLDPE	RNJ
9	Waghmode Nitin Pandurang Maya	Studies in Biobased Plasticizers	ASS
10	Surwase Atul Limbaji Sandhya	PP nanocomposites	STM
11	Tripakkal Rahul Sunder Ashalatha	Studies in Synthesis of Fattyamides	ASS
12	Chaudhari Nikhil Milind Monaly	Blends of PP/PTT	ARR
13	Deshmukh Vishal Shivaji Sharmila		VVS
14	Misra Saumya Rajeev Sarita	New advancement in biodegradable Polymers	RNJ
15	Sinha Nairiti Jivankumar Leena	Degradation of PS by microwave irradiation	PAM
16	Shinde Shekhar Shivaji Ushabai	Synthesis of Nanoparticles by sol-gel	STM

PROJECT (B. Tech.) SURFACE COATING TECHNOLOGY

Sr.	Name	Project Topic	Guide
1	Patel Shrish Sanjay Mayura		VVS
2	Bhangaonkar Karan Rajeev Medha	Absorbent Coatings	RNJ
3	Deshpande Sanjana Pritam Sandhya	Development of Sound damping coatings	PAM
4	Gajre Siddhesh Girish Jyoti	Shellac Modification	STM
5	Rawal Diganjay Shashikant Vrushali	Studies in Biobased Epoxy Systems	ASS
6	Somkuwar Shradhda Balkrishna Lata	Nano-Zno filled epoxy coatings	ARR
7	Deshmukh Ajinkya Arun Sadhana		VVS
8	Mavalkar Nikita Avinash Pranjali	Studies of Natural Colorant Coating extracts in coating applications	RNJ
9	Marwah Gagandeep Hardeep Jasneet	Development of elastomeric heat insulation coating	PAM
10	Pure Avdhut Mohanrao Malati	Green Plasticizer Developement	STM
11	Pagare Arun Eknath Shantabai	Studies in Polymerization of isopropenylacetate	ASS
12	Bangar Sagar Kisan Sunita	UPR nanocomposite coatings	ARR
13	Jain Tanmay Pradip Ulka	Synthesis of acrylate copolymers	ARR
14	Ghag Onkar Prashant Pooja	Super Hydrophobic Coatings	RNJ
15	Dalvi Siddhesh Narayan Maya	Development of scratch proof coating using nanoparticle	PAM

RESEARCH PROJECTS Ph.D. (Tech)

Sr.	Name of Student	Previous Institute	Title and Project Supervisor
1	Ahire Yogesh	Institute of Chemical Technology	Studies in Controlled Radical Professor R. N. Jagtap
2	Rao Adarsh	Institute of Chemical Technology	Studies in ATRP Professor R. N. Jagtap

3	Gupta Prashnt	Institute of Chemical Technology	Environmentally Degradable polyolefins Professor R. N. Jagtap
4	Gaikwad Pravin Ramesh	Institute of Chemical Technology	Studies in thermoplastic microfiber and nanofiber composites Professor P.A. Mahanwar
5	Dongre Raviprakash Haribhau	Institute of Chemical Technology	Studies in speciality coatings Professor P.A. Mahanwar
6	Sharma Bhuvanesh Kumar	Institute of Chemical Technology	Development of high radiation high temperature and higher stress resistance polymer blend and composite for reactor, gasket and o ring Professor P.A. Mahanwar
7	Mali Manoj	Institute of Chemical Technology	Development of Polymer Composites
8	Shah Nidhi	Institute of Chemical Technology	Structure Property Behavior of Polymer Nanocomposites
9	Jamnik Vijay	Institute of Chemical Technology	Preparation and Characterization of a multifunctional polymer reinforcing Nanomaterials and its application
10	Yeole Kunal V.	Institute of Chemical Technology	Epoxy Based Coatings Dr. S.T. Mhaske
11	Kadam Pravin G.	Institute of Chemical Technology	Polymer Nanocomposites: Preparation and applications Dr. S.T. Mhaske
12	More Aarti	Institute of Chemical Technology	--
13	Sumit Sukhbasi Lal	UDCT, NMU, Jalgaon	--
14	Patil Ajit Patangrao	UDCT, NMU, Jalgaon	--
15	Dhanvijay Prarthana Umesh	Institute of Chemical Technology	Studies in multi-functional AdditvesDr. V.V. Shertukde

RESEARCH PROJECTS Ph.D. (Science)

Sr.	Name of Student	Previous institute	Title and Project Supervisor
1	Ingale Raghunath	North Maharashtra University	Synthesis of Novel monomers for surface coating Applications Professor R. N. Jagtap
2	Dhawde Prerna	Nagpur University	Antifouling Coatings Professor R. N. Jagtap
3	Tathe Dipak	Shivaji College of Art, Commerce and Science Akola	Modified Bio-sources Materials for coating applications. Professor R. N. Jagtap
4	Chambhare Sachin	Vidybharti Bharti Amravti	Studies in RAFT copolymerization for coatings
5	Lokhande Gunawant	Pratap Mahavidyalay Amalner	Synthesis of copolymer by control radical polymerization technique
6	Saidane Poonam	SNDT JHU	Studies on control radical polymerization
7	Deshmukh Pallavi	Institute of Chemical Technology	Electron beam curable nanocoating Professor P.A. Mahanwar
8	Umale Shweta Shaligram	Institute of Chemical Technology	Extraction , characterization and application of naturally occurring mineral base and vegetable based pigment Professor P.A. Mahanwar
9	Patil Rakesh Nama	Institute of Chemical Technology	Synthesis of hybrid epoxy resin emulsion for industrial coating application Professor P.A. Mahanwar

10	Kelkar Sundar Tukaram	Institute of Chemical Technology	Synthesis of polylactic acid from renewable resourcesProfessor P.A. Mahanwar
11	Lokhande Kumudini Baba	Institute of Chemical Technology	Synthesis of Bioplasticizers: Alternative for pthalates
12	Sahu Aabha	Institute of Chemical Technology	Professor P.A. Mahanwar
13	Satavalekar Sneha	Institute of Chemical Technology	Synthesis of Green Plasticizer and its ApplicationDr. S.T. Mhaske
14	Rane Ulka Ganpat	Institute of Chemical Technology	Studies in flame retardant epoxy coating system Dr. V.V. Shertukde
15	Gharat Vaishnav Dhanaji	Institute of Chemical Technology	Synthesis of polymer supported catalyst Dr. V.V. Shertukde

M. TECH. SEMINARS

Name	Topic	Guide
Vijay L. Kapse	Modification of PTFE waste and its applications	PAM
Vinayak M. Kamble	Nano-fibbers of conducting Polymers & Their applications	PAM
Nitesh S. Buchade	Photo oxy/oxy- biodegradable Polymers, blends & composites of Polyolefins	PAM
Amit Gawde	Bio-adhesive in drug delivery system	RNJ
Siddhant Bhavsar	Nano particles for corrosion inhibitors	RNJ
Tyagee Chavan	Ceramic membrane and their application	RNJ
Devendra Sonawane	Green solvents	RNJ
Madhav Vastani	Improvement in the shining and tape test of ink for untreated Polypropylene substrate	RNJ
Saad Ahemad		RNJ
Aakash Dongare	Different Blends of PC and PPO	VVS
Alpesh Vala	Literature survey on Bio-degradable Polymers and their application.	VVS
Priyanka Geed	Crack Blazing, Heat Reflecting Paint	VVS
Sushil Patil	Use of Nano Fillers in Coatings and adhesive.	VVS
Sahil Pinjari	Synthesis and Modification of pigments and applications.	VVS
Rakhi Sonkusare	Literature survey on Composite used in Automotive and Aviation Industries.	VVS
Arjit Gadgeel	Depolymerization of Polymer by Solution	STM
Swapnil Kokate	Utilization of Nanoparticle in water purification	STM
Parth Kapoor	High-performance coating using Sol-Gel	STM
Pooja Gaval	Recent Development in Pharmaceutical Packaging	STM
Sushmit Rithe	Coating Application in solar energy	STM
Roshan Gandodhar	Superhydrophobic Coating	STM
Pradhyna Rane	High Performance Coating	STM
Nikita Mhadeshwar	Shape memory polymers	ASS

M. TECH. PROJECT

Sr.	Research Scholar	Previous Institution	Project	Supervisor
1.	Joshi Kalyani Vivek	College of Engineering and Technology, Akola	Silane modification using acylates.	Dr. STM
2.	Phalak Ganesh Anil	UDCT, NMU,JALGAON	Utilization of Shellac in Coating Application	Dr. STM

3.	Khandagale Avinash Nivrutti	College of Engineering and Technology, Akola	Recent development in Thermoplastic Vulcanizates in Automotive Applications.	Dr. STM
4.	Arakh Amar Ashok	College of Engineering and Technology, Akola	Enhancement in toughening of Plastics by Using Reclaim Rubber	Dr. STM
5.	Choudhary Rishabh	Institute of Chemical Technology	Synthesis, modification and Application Of Nano Particles.	Dr. STM
6.	Iyer Anand	Institute of Chemical Technology	Dyed (meth)acrylate grafted PVC plastisol radiation indicator labels that are VOC-free	Dr. STM
7	Manoj Praharaj Bhatnagar	Mumbai University	Synthesis, Characterization of Engineering Polymer Nanofibers and their composites for automobile applications.	Professor P. A. Mahanwar
8	Nikesh Samarth	MIT, Pune	Synthesis of phthalate free plasticizer using Soya oil & Linseed oil via green chemistry and its application for PVC particulate composites.	Professor P. A. Mahanwar
9	Swapnil Darji	MIT, Pune	Development of polymer composite dosimeter for electron beam radiation.	Professor P. A. Mahanwar
10	Parag Kulkarni	MIT, Aurangabad	Studies in Depolymerization of Polyolefin Copolymer.	Professor P. A. Mahanwar
11	Tania Mallik	Mumbai University	Synthesis and characterization of nanofibers and study their effects on dispersion in coating system.	Professor P. A. Mahanwar
12	Ruchika Pache	LIT, Nagpur	Synthesis of phthalate free plasticizer using Karanja oil & Rice bran oil via green chemistry and its application for PVC particulate composites.	Professor P. A. Mahanwar
13	Trupti Panditkar	Institute of Chemical Technology	Comparative study of natural and synthetic polymer used in specific drug delivery system/tablet/ as a coating material.	Professor P. A. Mahanwar
14	Patil Deepak Madhav	UDCT, Jalgaon	Studies in anticorrosive coating compositions	Dr. A. S. Sabnis
15	Pathak Rohit Sunil	UDCT, Jalgaon	Studies in Bio-based Non- Isocyanate Polyurethane for Coating Application	Dr. A. S. Sabnis
16	Karande Rohit Dattatray	MIT, Aurangabad		Dr. A. S. Sabnis
17	Jamdar Vandana Sahayog			Dr. A. S. Sabnis
18	Wazarkar Kunal Dattatray	Institute of Chemical Technology		Dr. A. S. Sabnis
19	Hajare Amol Baburao	UDCT, Amravati	Modification of Vegetables oils for surface coating applications	Dr. A. S. Sabnis
20	Ajay M. Hajgude	COET, Akola	Study swollen state polymerization of poly(butylene terephthalate)	DR. V. V. Shertukde
21	Amarjeet A. Pal	MIT, Aurangabad	Study the stability of Superabsorbent Polymer	DR. V.V.Shertukde
22	Rohit S. Tarade	MIT, Aurangabad	Surface modification of PE films for water based Ink printing	DR. V.V.Shertukde
23	Ninad Hule	MIT, Pune	Optimization of mechanical and optical properties of polypropylene	DR. V.V.Shertukde

I. GOVERNMENT AGENCIES:

No.	Sponsor	Title	Duration	Total Amount (Rs.)	Principal Investi-gator
1	Board of Research in Nuclear Sciences (BRNS), Govt. of India	Development of volatile organic compound (VOC) free radiation indicator labels along with prototype product manufacturing in collaboration with Bhaba Atomic Research Centre, Mumbai	June 2012-2015)	24.45 lakh	Dr. S.T. Mhaske
2	DST, Govt India	Biodegradable Food Packaging	2012	32,73,000/-	Dr. S.T. Mhaske
3	TEQIP, CoE	Synthesis of Metal Oxide Nanoparticles		23,00,000/-	Dr. S.T. Mhaske
4	Board Of Research In Nuclear Sciences (Brns) Department Of Atomic Energy (Dae), Government of India	Development of volatile organic compound (VOC) free radiation indicator labels along with prototype product manufacturing,	April 2012 For 3 years	25,00,000	Dr. S.T. Mhaske

II. PRIVATE AGENCIES

No.	Sponsor	Title	Duration	Total Amount (Rs.)	Principal Investigator	Research Fellow
1.	Sawriya Polymers	Polymeric Nano-composites	2 Years	1,20,000	Professor R. N. Jagtap	Sanket Hushe
2.	Asian Paints Industries Ltd.	Anti carbonation coating	2 Years	2,67,000	Professor R. N. Jagtap	Niranjan Savadekar
3.	Kansai Nerolac Paints	Blocked Isocyanates	2 Years	3,00,000	Professor R. N. Jagtap	
4.	Technova Imaging Sytems Ltd.	Plastisol inks	3 Month	60,000	Professor R. N. Jagtap	Sanket Hushe
7	Godavari Biorefineries (Somaiya Group)	Studies in Polymerization of Isopropenyl Cetate for Caoting Applications	2 yrs	6.5 lacs	Dr. A S Sabnis	Nilesh Shinde
8	Universal Starch & Allied Chemicals, Mumbai	Studies in Synthesis of Biodegradable Polymers	4 yrs	20,18,490	Dr. A S Sabnis	Mr. Mayur Shinkar
9	Monopol Chemicals Pvt. Ltd	Synthesis of Biodiesel from Vegetable oils by Ultrasonication	2 yrs	7,00,000	Dr. A S Sabnis	Mr. Kiran Konge
10	UICT-Golden Jubilee	Impact modification of PTT	1 year	60,000	Shri A. R.Rao	
11	Ateems Ltd Thailand	Development of a technology for extracting colour from Shellac	2011-2013 (3 years)	8,00,000/-	Dr. S. T. Mhaske	

12	Jai corporation Ltd	PET waste Utilization	Dec 2012	20,00,000/-	Dr. S. T. Mhaske	
13	Gharda Chemicals Ltd.	Synthesis of Polyamide based Hot Melt Adhesive	2013-14	24,00,000/-	Dr. S. T. Mhaske	

PUBLICATIONS:

No.	Title and Authors	Journal	Vol. No.	Pages	Year
1.	Nano ZnO grafted on MAA/BA/MMA copolymer: An additive for hygienic coating T.K. Sontakke, R.N. Jagtap, Arvind Singh, D.C. Kothari	Progress in Organic Coatings	Vol-74	Issue-3, pp-582-588	2012
2.	Isocyanurate based fluorinated polyurethane dispersion for anti-graffiti coatings Gururaj N. Manvi, Arvind R. Singh, Ramanand N. Jagtap, D.C. Kothari	Progress in Organic Coatings	Vol-75		
3.	Characterization of the glass transition temperature of chitosan and its oligomers by temperature modulated differential scanning calorimetry Prerna P. Dhawade. and Ramanand N. Jagtap	Pelagia Research Library Advances in Applied Science Research			2012
4.	" Extraction of colorant from the leaves of Terminalia catappa using non-conventional technique, S.S.Umale,P.A.Mahanwar	International Journal of Basic and applied Sciences	Vol-12	pp-78-88	2012
5.	Corrosion Performance of Hybrid Epoxy Resin Coatings with Electrochemical impedance Spectroscopy, R. N. Patil, B.V. Sharma and P. A. Mahanwar	Pelagia Research Library		pp-458-467	2012
6.	Synthesis of one pack hybrid epoxy resin emulsion for coating application, R. N. Patil, B.V. Sharma and P. A. Mahanwar	Der Chemica Sinica		pp-378-390`	2012
7.	N. R. Savadekar, V. S. Karande, N. Vigneshwaran, A. K. Bharimalla and S. T. Mhaske, Preparation of nano cellulose fibers and its application in Kappa-Carrageenan based film	International Journal of Biological Macromolecules	In Press		2012
8.	P. Wasekar, P.G. Kadam and S. T. Mhaske, Effect of Cenosphere Concentrationon the Mechanical, Thermal, Rheological and Morphological Properties of Nylon 6	Journal of Minerals and Materials Characterization and Engineering	In Press		2012
9.	P. Wasekar and S. T. Mhaske, Dielectric coating of castor oil based polyurethane modified with Leucoemeralidine polyaniline,).	International journal of Polymeric Materials, 2012	In Press		2012
10.	N. R. Savadekar and S. T. Mhaske, Synthesis of nano cellulose fibers and effect on thermoplastics starch based films	Carbohydrate Polymers	89(1)	146-151	2012

11.	Mahajan L.H., Mhaske S.T., Composite microspheres of poly(o-anisidine)/TiO2	Materials Letters	68	183-186	2012
12.	S.S. Ramteke , P. A. Wasekar, A. C. Rao , S. T. Mhaske, Effect of nano polytetrafluoroethylene on epoxy melamine coating.	Surface Coating International	95(3)	134	2012
13.	Kunal Yeole and S. T. Mhaske, Novel approach for the preparation of conductive nanocomposites by using polypyrole/ MWCNT,	Journal of Polymer Materials	29(1)		2012
14.	Kadam P.G., Mhaske S.T., Effect of piperazine concentration on the properties of lower purity dimer acid synthesized polyamide hot melt adhesive	Journal of Adhesion Science and Technology	26	1267-1279	2012
15.	Synthesis and characterization of Tris (Nonyl) Phosphite and Interficial Study with karanja oil in acetonitrile solution Mane S. M., Thorat B. N., Sawant M. R.	Journal of Dispersion Science and Technology			
16.	Sabnis A., Kathalewar M., Raut P., Bhave V., Mare S., "New polyester polyol derived from recycled polyethylene terephthalate for coating application",	Archives of Applied Science Research	4(1)	85-93	2012
17.	Sabnis A., Kathalewar M., Balgude D., Shinde N., "Use of Novel Urethane Organosilane Precursor Prepared via NonIsocyanate Polyurethane Route for Sol Gel Based Protective Coatings",	Paints & Coatings News	3(3)	18-20	2012
18.	Effect of polypyrrole on the properties of conventional epoxy coatings Abhijit S., Prakash A. Mahanwar, V. A. Bambole	Pigment & Resin Technology	Vol-42	Issue-5, pp-317-325	2013
19.	Synthesis and Characterization of p-TSA doped Poly Aniline Nanofiber via Interfacial Polymerization Kulkarni Parag, Mahanwar Prakash	International Journal of Advances in Management, Technology and Engineering Sciences	Vol-II	Issue-6 (VIII)	2013
20.	Extraction of colorant from the leaves of Terminalia catappa using non-conventional technique, S.S.Umale, P. A. Mahanwar	International Journal of Basic and applied Sciences		Issue-12, pp-78-88	2012
21.	Corrosion Performance of Hybrid Epoxy Resin Coatings with Electrochemical impedance Spectroscopy R. N. Patil, B.V. Sharma and P. A. Mahanwar	Pelagia Research Library,		pp-458-467	2012
22.	Synthesis of one pack hybrid epoxy resin emulsion for coating application R. N. Patil, B.V. Sharma and P. A. Mahanwar	Der Chemica Sinica		pp-378-390	2012
23.	Electrochemical Impedance Spectroscopy of Hybrid Epoxy Resin Emulsion Coatings Rakesh N. Patil, Brihbihari V. Sharma, Prakash A. Mahanwar	Journal of Minerals and Materials Characterization and Engineering	Vol-11	pp-1012-1019	2012

24.	Extraction of colorant from leaves of Terminalia catappa using Non conventional technique Shweta Umale, P.A Mahanwar	International Journal of Basic & Applied Sciences	Vol-12	Issue-01 pp-79-88	2012
25.	Performance of nanosilica in acrylic polyol 2K polyurethane coatings Kabra, A.P., Mahanwar, P., Shertukde, V., Bambole, V.	Pigment and Resin Technology	Vol-41	Issue-4 pp-230-239	2012
26.	Synthesis of urethane acrylate from PENTA based polyol and EB curing with varying ratio of TMTPA Deshmukh, P.P., Mahanwar, P.A., Sabharwal, S.S.	Pigment and Resin Technology	Vol-41	Issue-5 pp-284-295	2012
27.	Corrosion Performance of Hybrid Epoxy Resin Coatings with Electrochemical impedance Spectroscopy R. N. Patil, B.V. Sharma and P. A. Mahanwar	Pelagia Research Library	Vol-3	Issue-2 pp-458-467	2012
28.	Characterization and application of naturally occurring mineral based pigment in surface coating", Shweta Umale and P. A. Mahanwar	Journal of Mineral and Material Characterization and Engineering	Vol-11	pp-1101-1107	2012
29.	Synthesis of functionalized polymeric adsorbent selective to cobalt, Ghag, K.S., Mahanwar, P.A.	Journal of Applied Polymer Science	Vol-124	Issue-5 pp-4054-4060	2012
30.	Performance of nanosilica in acrylic polyol 2K polyurethane coatings Kabra, A.P., Mahanwar, P., Shertukde, V., Bambole, V.	Pigment and Resin Technology	Vol-41	Issue-4 pp-230-239	2012
31.	Synthesis of one pack hybrid epoxy resin emulsion for coating application R. N. Patil, B.V. Sharma and P. A. Mahanwar	Der Chemica Sinica	Vol-3	Issue-2 pp-378-390	2012

PATENTS

No.	Inventors	Title	Country	Funding Agency
1.	R. N. Jagtap	Functionalized clay filled LLDPE Nanocomposite film with improved Barrier properties of food applications	India	BARC
2.	R. N. Jagtap	Bhupesh Marathe Heat Reflective Coatings	India	
3.	M. R. Sawant, V. Y. Joshi, S. S. Kamath	Novel quaternary ammonium glucoside surfactant process for producing the same and utilization thereof.	India	AICTE
4.	M. R. Sawant	Novel surface active agent of a class of sugar fatty acid esters and method of preparation.	India	AICTE

IN-HOUSE FACULTY RESPONSIBILITIES

(Membership of various In-house Committees)

Professor P. A. Mahanwar

- Arranging visiting faculties and visiting professors
- Maintaining and refurbishment of the research labs
- Smooth conduct of the class and practicals

Professor R. N. Jagtap

- Part of the convocation committee.

Shri A. R. Rao

- Timetable Committee
- Endowment Lecture Committee
- B.Tech Syllabus committee

Dr. V. V. Shertukde

- Chairman Instrumentation committee
- CAS Co-ordinator DRS Co-ordinator
- Inplant Training supervisor

Dr. S. T. Mhaske

- Instrumentation committee
- TEQIP Coordinator
- Placement incharge

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA/WORKSHOPS/SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS

- Investigating improvement in performance properties when nano-alumina is incorporated into polyester based urethane acrylate clearcoat,Pallavi Deshmukh, Prakash Mahanwar, Poster, International conference on Nanotechnology,
- Presented a paper titled **"Improvement in Functional Properties of K- Carrageenan /Nano-Cellulose Fibre (NCF) Nanocomposite Films"** in an international conference on **Sustainability in Polymer Materials to be held from May 20-23, 2012 at Netherlands, Europe.**
- Presented a paper titles Studies in **"Effect of Nano-Alumina on the Properties of Poly (vinyl chloride) /Thermoplastic Polyester Elastomer Blend System in international conference"** in a international conference **ANTEC 2012 (SPE)** at Renaissance Mumbai Convention Centre Hotel during 6-7th December 2012.
- Presneted a paper titled **"Effect of Cellulose Nanowhiskers on Performance Properties of Guargum"** in a international conference **ANTEC 2012 (SPE)** at Renaissance Mumbai Convention Centre Hotel during 6-7th December 2012.
- Presented a poster titled **"Role of Polyorthoanisidine-MWNT in corrosion resistance coatings"** in a international conference NACE-CORCON-2012, Goa during 26-29 September 2012.
- Presented a paper titled **"Preparation of Cellulose Nanowhiskers from Cotton fibers and its Application in Biopolymer Composites to enhance their Performance"** in an international conference on **Sustainability in Polymer Materials held from May 20-23, 2012 at Netherlands, Europe.**
- Presented a paper titled **"Simple route to synthesize nanocrystalline CeO2 powder by using egg white"** in a international conference on **Frontiers of NanoScience, NanoTechnology and their Applications,** 15-18 February 2012, Chandigargh.

- Presented a paper titled **"Synthesis and Characterization of Zinc oxide- Fly ash nanocomposite"** in a international conference on **Frontiers of NanoScience, NanoTechnology and their Applications,** 15-18 February 2012, Chandigargh.
- Presented a paper titled **"Synthesis and Characterization of Zinc oxide- Fly ash nanocomposite"** in a international conference on **Frontiers of NanoScience, NanoTechnology and their Applications,** 15-18 February 2012, Chandigargh.

EVENTS ORGANIZED

Rangotsav : A National Level Symposium, 17th – 18th January, 2014
Colour Society International Seminar

INDUSTRIAL CONSULTANCY

- Trans-Pek Industries India Limited
- Jotun India Pvt. Ltd.
- Witmans Industries
- Hindusthan Construction Company
- Kipol Coatings
- Suzlon Pvt. Ltd
- Jayant Rollers Pvt. Ltd.
- Noel Engineers
- K.G. Marketing Pvt. Ltd
- Jain Irrigation
- Silvo lacquer
- Head, Manzar Committee, a cultural event of ICT.

DETAILS OF POST-GRADUATE/Ph.D. STUDENTS WHO PASSED OUT

M. TECH.

No.	Name	Degree	Title of Project	Supervisor
1	Kute Ravindra	LIT, Nagpur	Synthesis and characterization of new modified anti-corrosive polyesteramide resin from jatropha seed oil and its applications.	Dr. S. T. Mhaske
2	Paturkar Monica	ICT, Mumbai		Dr. S. T. Mhaske
3	Mishra Vaishali	MIT, Pune	Utilisation of paint sludge collected from automobile industry	Dr. S. T. Mhaske
4	Ghosh Sushmita		Synthesis of nanoparticles by ultrasonication and micro-emulsion techniques and their applications	Dr. S. T. Mhaske
5	Bhogale Amay	ICT, Mumbai	Synthesis of nanoparticles and their applications in coatings	Dr. S. T. Mhaske
6	More Arti	ICT, Mumbai	Studies in recycling of polyester and its application in coatings	Dr. S. T. Mhaske
7	Kolekar Supriya	Shivaji University	Cellulose based bionanocomposites	Dr. S. T. Mhaske
8	Bangar Kunal Anand	ICT, Mumbai	Studies in conducting polymers	Dr. V.V. Shertukde
9	Dinesh Balgude	ICT, Mumbai	Studies in anticorrosion coatings	Dr. Anagha Sabnis
10	AkshayDhake	ICT, Mumbai	Anticorrosive rebar coating	Dr. Anagha Sabnis
11	KiranKonge	Shivaji University	Studies of modification of oil	Dr. Anagha Sabnis
12	Premkumar Deogade	ICT, Mumbai	Water based coating for paper sizing	Dr. Anagha Sabnis

13	Bhakti Mehta	ICT, Mumbai	Study of bio-based plasticizer	Dr. Anagha Sabnis
14	MayurShinkar	ICT, Mumbai	To study the synthesis of L-lactic acid	Dr. Anagha Sabnis
15	Ashok Fad	Shivaji University	Studies in Depolymerization of waste PET for Coating applications	Dr. Anagha Sabnis
16	Chandan Fuke	M.Tech	Study of Electron beam and chemical crosslinked polymer blends for submersible cable coating	Professor P. A. Mahanwar
17	Rupali Nehete	M.Tech	Microencapsulation of chloropyrifos for controlled release applications	Professor P. A. Mahanwar
18	Kashif Patel	M.Tech	Study of Electron beam and chemical crosslinked Nano composite heat shrinkable sheets for Electronic	Professor P. A. Mahanwar
19	Roop Kumar Nath	M.Tech	Study of Electron beam and chemical crosslinked Nano composite heat shrinkable sheets for Electronic	Professor P. A. Mahanwar
20	Rajesh Thakare	M.Tech	Studies in Sustainable and Biodegradable Geopolymer composite for construction Application	Professor P. A. Mahanwar
21	Sayani Khamrai	M.Tech	Study of Electron beam crosslinked polymer blend for green cable application	Professor P. A. Mahanwar

Ph.D.

No.	Name	Degree	Title of project	Year	Supervisor
1.	Tushar Sontakke	Ph.D. Tech.	Studies in RAFT Polymerization		Professor R.N. Jagtap
2.	Nishant Tale	Ph.D. Sci.	Synthesis of Difunctional monomers for coatings applications		Professor R.N. Jagtap
3.	Anand Krishnan	Ph.D. Tech.	Recycling of E-Waste		Professor R.N. Jagtap
4	Rakesh Patil	ICT, Mumbai	Synthesis of Hybrid Epoxy Resin emulsion for Industrial Coating Applications.	2012-13	Professor P. A. Mahanwar
5	Sahai Rai Sujit	ICT, Mumbai	Engineering polymer blends and composites	2012-13	Professor P. A. Mahanwar
6.	Gaval Vivek Ramdas	ICT, Mumbai	Perticulate and nano-composites of polymers and blends. Professor P.A. Mahanwar	2012-13	Professor P. A. Mahanwar
7	Deshmukh Pallavi	ICT, Mumbai	Electron beam curable nanocoating Professor P.A. Mahanwar	2012-13	Professor P. A. Mahanwar
8	Umale Shweta Shaligram	ICT, Mumbai	Extraction , characterization and application of naturally occurring mineral base and vegetable based pigment Professor P.A. Mahanwar	2012-13	Professor P. A. Mahanwar
9	Karande Vilas S	Institute of Chemical Technology	Polymer composites based on Cellulosic	2012-13	Dr. S.T. Mhaske
10	Wasekar Parag	Institute Of Chemical Technology	Polymer coating and composite based on modified silicate	2012 - 2013	Dr. S.T. Mhaske
11	Savdekar Niranjan R.	Institute of Chemical Technology	Studies in Performance Behaviour of Polymer composites containing Nanoparticles	2012 - 2013	Dr. S.T. Mhaske

SHORT ABSTRACT ON SALIENT FEATURES OF RESEARCH WORK

Guide: **Professor R. N. Jagtap**
Name of the student: **Ingale Raghunath Pralhad**
Degree: **Ph. D. (Science)**
Thesis title: **Synthesis of Novel Monomers for surface Coating Application**

Abstract: The interest in the novel monomer is increases because of their unique properties. Inrecent years, there are hundreds of organic reactions are reported in the literature. Trying to exploit some of the reaction like Baylis-Hillman reaction, Heck Reactions,Sonogashira Coupling, Suzuki Coupling etc. for synthesizing some monomers.In this project we envisage a possibility of substituting existing costly & carcinogenicmonomers with the novel monomers which exhibit almost same properties like hightemperature resistant, ant graffiti coating, antibacterial coating etc. These novel monomerswhich may contain functional groups.

In order to meet the requirement of the final coating applications copolymers are employed. In this different endeavor different Novel monomers and their corresponding copolymerized by polymerization technique. These binderswould be employed as part of coating materials may be for High Temperature Resistance Coating, Antibacterial coating and HygienicCoating etc.

Name of the student: **Prerna P. Dhawade**
Degree: **Ph. D. (Science)**
Thesis title: **Biosafe Antifouling Coatings**

Abstract: Marine biofouling is the undesirable deposition and growth of aquatic flora and fauna on submerged structures. The fouling on the surface initiates with the formation of biofilm which is the boosting point for the further growth and survival of the microorganisms in the water. Fouling on the submerged structure occurs in the following stages. Biofouling commences with formation of conditioned film which follows subsequent adherence of microorganisms and eventually by macro organisms. The antifouling paints have to be formulated by keeping in mind the characteristics of sea-water such as pH, salinity, temperature, dissolved salts and oxygen concentration. Current environmental norms have banned the use of TBT (tri butyl tin) as an anti-foulant which was discontinued due its detrimental effects on aquatic flora and fauna, The need for environmentally benign solutions have been sought since. To prepare an antifouling paint the binder has to be as ecofriendly as possible. To ensure this, chitosan a marine biopolymer has been narrowed down. This polymer is best suited due to its film forming property, inherent antimicrobial activity and the presence of two available functional groups. Current research is directed towards chitosan silane sol gel hybrids for the binder system. Also work has been initiated on chitosan – acrylates emulsions due to low cost and versatility. These paints consisting of biopolymers would be ecofriendly and with further probing could make the binder cidal enough to eliminate the usage of biocides. Due to environmental norms and legislations, eventually biosafe coatings could be the answer for antifouling paints in the times to come.

Name of the student: **Sachin U. Chambhare**
Degree: **Ph. D. (Science)**
Thesis title: **Studies in RAFT Co-polymerization for coating applications.**

Abstract: Free radical polymerization with reversible addition–fragmentation chain transfer[RAFT] polymerization, receiving more attention among the other controlled polymerization techniques. Like nitrogen mediated polymerization [NMP] and Atom transfer radical polymerization [ATRP]RAFT polymerization technique can used wide range of monomers having different functionalities, variety of solvents and initiators for polymerization. RAFT mediated controlled radical

polymerization is based on equilibrium between active and dormant species, achieved by a degenerative chain transfer process, by using various chain transfer agents like dithioester, dithioxanthate and dithiocarbamate.-RAFT polymerization is widely used for the synthesis of block Co-polymers having definiteMolecular weight, narrow polydispersity and with complex architecture like star, block,microgeland hyperbranched with high purity. Thus by selecting the appropriate RAFT agent, we are able to synthesize the block co-polymers of definite molecular weight and narrow polydispersivity which can be used for solvent and water borne coatings.

Name of the student: **Dipak Sudhakarrao Tathe**
Degree: **Ph. D. (Science)**
Thesis title:**Modified Biosources Material for Coating Application.**

Abstract: The use of renewable sources in the preparation of various industrial materials has been revitalized because of the environmental concerns. These Natural materials possess the properties comparable to those of widely used petroleum-based polymers and offer a significant cost reduction. Among the available natural resources, triglyceride vegetable oils are widely used as renewable raw materials for the preparation and modification of different polymers. Vegetable oil chemically modify with suitable functional groups it gives valuable product for polymeric industries such as polyurethanes, polyamides, surfactants, alkyd and also dispersing agent for surface coating application.

Name of the student:
Lokhande Gunawant Pandharinath
Degree: **Ph. D. (Science)**
Thesis title: Synthesis of Copolymer for the Coating applications using control

Abstract: The development of control–living polymerization methods has been a long standing goal in polymer chemistry. All these methods are based on establishing a rapid dynamic equilibrium between a minute amount of growing free radicals and large majority of dormant species the dormant species may be alkyl halides in ATRP thioester as in reversible addition fragmentation chain transfer process (RAFT) alkoxy amine as in nitroxide mediated polymerization (NMP) or stable free radical polymerizations (SFRP) a control radical polymerization include activation and deactivation step and generated free radicals propagates and terminates as in conventional free radical polymerization. By using this method average molecular weight of polymer made bywell control while maintaining relatively narrow molecular weight distribution. The main aim use and synthesize of different type of initiator for polymerization process and their rates on the polymerization process for synthesis block Copolymers.

Name of the student: **Poonam B. Saindane**
Degree: **Ph. D. (Science)**
Thesis title: **Study on Controlled Radical Polymerization.**

Abstract: Controlled radical polymerization is also termed as living polymerization. Living polymerization is a popular method for synthesizing block copolymers since the polymer can be synthesized in stages, each stage containing a different monomer. Additional advantages are predetermined molar mass and control over end-groups. Several new methods were discovered which allowed the development of living polymerization using free radical chemistry. These techniques involved catalytic chain transfer polymerization, iniferter mediated polymerization, and stable free radical mediated polymerization (SFRP), atom transfer radical polymerization (ATRP), reversible addition-fragmentation chain transfer. RAFT (Reversible Addition–Fragmentation chain Transfer) is a form of controlled free radical polymerization (CRP) which helps in achieving controlled molecular weight distribution

and low polydispersity index.

RAFT is a user- and, environmentally-friendly process that does not require expensive and contaminating additives unlike other controlled free radical polymerization processes This technique helps in synthesizing macromolecules with complex architectures including block, graft, comb, and star structures with predetermined molecular weight by using suitable raft agent. This techniques help to synthesis additives which act as efficient wetting and dispersing agent, rheology modifier, thickener, decorative and architectural paint and many more.

Name of the student:
Prashant Gupta
Degree:**Ph. D. (Tech.)**
Thesis title:**Environmentally Degradable Polyolefins.**

Abstract: Plastics are indeed an integral part of human civilization. It has been one of the most durable and ubiquitous material known to mankind. One of the significant applications of polymer is packaging which has shown a rapid growth over the last decades. Polyolefins account for about 66% of the total plastics consumption, followed by PVC and polystyrene (PS). The increased usage has aggravated the problem, particularly of its disposal and impact on the environment. They have become an eye sour in the public opinion and there is hue and cry for its usage in packaging applications. The management of solid waste disposal is a tedious problem worldwide and is progressively becoming worse with economic growth and development. The development of technologies for reducing polymeric waste which are cost effective and acceptable from the environmental standpoint has proven to be a difficult challenge due to whole range complexities inherent in the reuse of polymers. Oxodegradable plastics are a perfect solution to this ever growing menace. The "oxo-biodegradable" additives are typically incorporated in conventional plastics such as Polyethylene (PE), Polypropylene (PP), Polystyrene (PS), while processing tothe final products. These additives catalyze the degradation process by means of thermal or photo initiation, thereby degrading the polymer in the stipulated time. Furthermore, they can be recycled with the pristine material thereby making them oxo-degradable.

Name of the student: **Yogesh S. Ahire**
Degree: **Ph. D. (Tech.)**
Thesis title: **Studies in Controlled Radical Polymerization**

Abstract: It was the desire of polymer chemist to have control over the molecular architecture of polymers and the dream come true through controlled or living radical polymerization. With this tool one can prepare a polymer with required molecular weight, molecular weight distribution, polydispersity, branching and functional groups attached. In the present endeavor various block copolymers, hyperbranched polymers of 2-hydroxyethyl methacrylate (HEMA), Butyl Methacrylate (BMA), Trimethylolpropane Triacylate (TMPTA) were prepared by Atom transfer radical polymerization (ATRP) & Reverse ATRP; which is one of the most versatile methods of controlled radical polymerization. In these experiments the composition of monomers along with ligand, catalyst and initiator were varied. Block copolymers with molecular weight 3000, 5000, 10000, 15000, 25000, 35000 were prepared and characterized by 13C-NMR, 1H NMR, FTIR, DSC, XRD and GPC. These block copolymers, hyperbranched polymers were incorporated as a wetting & dispersing additives in water, solvent based paints and evaluated for various properties.

Guide:**Dr. S.T. Mhaske**
Research Student: **Kunal Yeole**

Abstract: Recently, waterborne coatings have gained

increasing importance due to strict environmental regulations on the emission of volatile organic compounds from solventborne coatings. With the environmental criteria becoming stricter waterborne coating has been gaining importance in the modern coating industry. The use of waterborne coatings has made it possible to control pollution, to reduce risks of fire and to improve aspects of occupational health and safety. To maintain constant product quality and to develop new products, structural characterization and measurement of barrier properties of these new coatings become crucial. Waterborne coatings usually contain different additives and an appropriate choice among various alternatives of these additives brings a challenge to both manufacturers and researchers.

Epoxy resin is one of the most important materials in coating industry. The manufacture of its waterborne emulsion has received considerable attention in industrial field. There are two ways to produce waterborne epoxy emulsion. One is dependent on the external emulsifier to make the resin dispersed in water. The other is by way of chemical modification to introduce polar groups which confer water dispersibility to the resin. The former technology is simpler and cheaper, while the latter one can achieve very fine and well distributed emulsion (nm particles).

A novel waterborne modified epoxy coating was prepared by using different types of silanes like 3-glycidoxy propyl tri methoxy silane (GPTMS), MPTMS, etc., a termination agent of adduct, and liquid epoxy resin. The structure of the curing agent was characterized. The synthetic process and the effects of the amount of silanes on the properties of curing agent and performances of cured film were studied.

Research Student: **Pravin G. Kadam**

Abstract: Poly (vinyl chloride) (PVC) /Thermoplastic polyester elastomer (Hytrel) blend system prepared in 50:50 composition was found to have a highest possible elongation at maximum load owing to molecular compatibility but had lower strength and modulus. In order to improve the strength and modulus nano-alumina was added as a reinforcing agent in concentrations as 1, 3, 5 and 7 phr. The prepared nanocomposites were characterized for mechanical, thermal, rheological, morphological and electrical properties. The 5 phr nano-alumina loaded PVC/Hytrel blend had optimal improvement in its strength values, but above that concentration nano-alumina started forming aggregates which is evident from scanning electron micrographs. Tensile strength and tensile modulus were found to have increased by about 20% and 97% respectively; whereas elongation at maximum load decreased by 50%, indicating the effect of nano-alumina as reinforcing agent in the PVC/Hytrel system. The onset degradation temperature, viscosity, surface resistivity and volume resistivity increased whereas degradation weight loss (%) decreased with increase in nano-alumina concentration in PVC/Hytrel blend system.

Student: **Sneha Satavalekar**

Abstract: Plasticizers like di-ethyyl hexyl phthalate (DEHP), di octyl phthalate (DOP) are important additives in application of PVC. Some hazardous properties of them restrict their use in medical devices and children toys etc. Replacement of these plasticizers with heterocyclic diesters can act as alternative for these materials. Also diesters of longchain diols of oils can be treated as alternative diester system for plasticizer of PVC. Their final implementation has to be checked by mechanical and rheological studies.

Research Student:
Nidhi H. Shah

Abstract: Polymer nanocomposites represent a new alternative to

conventionally filled polymers. Because of their nanometer sizes and filler dispersion, nanocomposites exhibit fascinating properties when compared to the controlled polymers or their traditional composites. The study deals with synthesis of different nanoparticles, compatabilizers & their characterization. The synthesized nanoparticles will be used in different polymer matrix & compatabilizers will be used for uncompatabilized blends. Thus, the understanding of the links between the nanostructure, the flow properties of the melt and the solid-state properties is critical to the successful development of polymer nanocomposite products. The overall objective of this work is to try to quantify the structure-processing-property linkages in polymer nanocomposites

Research Student: **Manoj Mali**

Abstract: Nanotechnology has been dominating in automotive industry from last many years due to their enhanced properties against conventional materials. Nanocomposites are versatile in nature they are used in automotive Industry (Thermoplastic Vulcanizate CASE). Thermoplastics vulcanizates are made by dynamic vulcanization of Polypropylene and Ethylene propylene diene monomer (EPDM). The use of nanocomposites in vehicle parts and system is expected to reduce weight and promote recycling. The weight and energy savings are the enhanced physical properties that nanocomposites offer, such as stiffness, strength and dimensional stability, that set them apart from conventional fiber reinforced or mineral-filled materials. Property enhancement in nanocomposites occurs at very low nanoparticles loadings up to 5%.

Research Student: **Avinash Munde**

Abstract: Reverse osmosis has become the standard approach for desalinating water. Reverse osmosis is a separation process that uses pressure to push salt water through a membrane that holds the salt on one side and allows the pure water to pass to the other side. This is the reverse of the normal osmosis process, which is the natural movement of water from an area of low salt concentration to water containing high amounts of salt until all water has the same salt concentration.

The membranes used for reverse osmosis have a dense barrier layer at the surface where the separation of salt and water takes place. The membrane is designed to allow only water to pass through this dense layer while preventing the passage of salt ions and other impurities. The process of desalinating water through reverse osmosis has historically been both capital and energy intensive. Polymer-based membrane control key membrane properties. Aim of this project is a synthesis & modification of different types of membranes (Ultrafilteration, Nanofilteration & Reverse osmosis membrane) using various polymers & characterization by different techniques (SEM, TEM etc.).

Research Student : **Amar Ashok Arakh**

Abstract: Rubber toughening mechanism for both thermoplastics & thermoset materials has been preferred since mid of 19th century. Amount of generated waste rubber increasing day by day which is an important issue of waste management. Epoxies are considered as an important class of thermosetting material used in various applications due to their outstanding properties. In cured state epoxies are brittle material that have fracture energies some two orders of magnitude lower than modern thermoplastics & other high performance material. In order to remain competitive as material of choice for many application such as adhesives & composites matrices, epoxies should be modified to improve their fracture toughness. On other hand LLDPE has good overall properties than LDPE due to its linear structure but also it

causes lower toughness criteria. In this research work approach toward increasing toughness of both mentioned material with varying rubber loading percent (from 5-40 phr), using different catalyst & coupling agent & with different processing technique has been made.

Research Student: **Kalyani Vivek Joshi**

Abstract: Silanes have many excellent properties and hence makes worth for its utilization in fields like coating, adhesives, sealants etc. working as dispersing agent, adhesion promoter, hydrphobing and crosslinking agent, moisture scavenger etc. Silanes so far is prominently used in coatings as a coupling agent. But silanes on the contrary makes to give high cost which limits its use on large scale. Hence work on modification of silanes by other materials which will not hamper its properties but will make it economical to use is done. To a quiet good extent acrylics has a good compatibility with silanes which can lower down its cost and will improve its workability economically. Acrylics with somewhat similar properties is the good material to modify silanes. Thus, modification of silanes may give the improved properties with economy when modified with acrylics.

Research Student: **Avinash N. Khandagale**

Abstract: The TPV is a thermoplastic elastomer with a chemically cross-linked rubbery phase within a thermoplastic polymer phase, produced by dynamic vulcanization. TPVs provides unique characteristics that allows it to be used in broad range of applications, including major applications in automobile sector. The performance advantage of TPVs when used in vehicle parts and systems is expected to reduce weight and promote recycling. The weight and energy savings are the enhanced physical properties that thermoplastic vulcanizates (TPVs) offer, such as stiffness, strength and dimensional stability, that set them apart from conventional polymer blends or fiber reinforced materials. The rubber particle size and extent of cross-linking decides the properties of TPVs.

Research Student : **Rishabh Choudhary**

Abstract: TiO2 is a widely used additive in polymer industry, it is the largest used white pigment and UV stabilizer. Alternatively TiO2 nanoparticles are also widely used in waste management for photo catalytic or UV degradation, as TiO2 is a strong oxidizing agent in presence in UV wavelength. And via modification of energy band gap the catalytic activity of modified TiO2 nanoparticles can be shifted to visible wavelength thus resulting in better photo-catalytic activity. The overall objective of this work is to carry out modification of TiO_2 nanoparticles for their photo-catalytic application and their possible application in polymer.

Research Student : **Ganesh Anil Phalak**

Abstract: Shellac is natural resin obtained from insects has been used over many centuries for wide range of applications. Earlier in nineteenth century was used in furniture application. Afterwards this resin used in electrical, food, medical, printing ink etc. Now a day because of its biodegradable property it is used in Coating application. In this research work, colour of shellac improved by bleaching process, because it is very difficult to used dark brown colour shellac in paint. This shellac resin modified with different types of resins.

Research Student : **Anand Iyer**

Abstract: Dyed PVC has since long been used as radiation indicator labels in the field of dosimetry. One of the major issues with using PVC as a material for any application is the emission of VOCs that are harmful to the environment and human health. The current work is aimed at forming PVC plastisols of non-phthalate plasticizers using irradiation or/and other techniques and use them as the base

material for forming radiation indicator labels. To improve the mechanical properties, the PVC will first be grafted with select (meth) acrylates and then the corresponding plastisols be formed and compared between for various properties. The non-usage of plasticizers as a minor compounding ingredient is expected to result in a VOC-free PVC radiation indicator label. Grafted-PVC plastisols thus formed will thus be a greener, eco-friendlier alternative to the conventional PVC labels.

Guide: **Professor Dr. A.S. Sabnis**

Name of the student:
Nileshkumar J. Shinde

Course:**M. Tech (Surface Coating Technology)**

Project Title: **Studies in Polymerization of Isopropenyl Acetate for Coating Application**

Abstract: By far vinyl acetate is the most widely used monomer from acetate family used for emulsion copolymer in adhesive, exterior & interior paints and numerous other applications. Vinyl acetate is a polar and very reactive monomer and requires special treatment to copolymerize with less polar and reactive monomer. In addition, some effective initiator systems are required to homopolymerize or copolymerize highly water soluble vinyl acetate monomer. The films made of vinyl acetate polymer also posses less hydrolytic stability.

One of the monomers from this family is Isopropenyl acetate which has an unsaturation with a methyl group attached to the ethylenic carbon. The unsaturation present in the monomer could be utilized for the free radical polymerization. Current work includes the study of polymerization of this monomer and to find its application for coating industry.

Project Scheme:

Solution polymerization of Isopropenyl acetate with acrylonitrile was carried out using DMF as solvent and AIBN as an initiator. The ratio of both the co monomers was varied from 100:0 to 50:50 w/w of acrylonitrile to IPA. This polymer is being evaluated for suitable applications in fibre industry. Synthesized polymers are under characterization.

Emulsion polymer of Isopropenyl acetate with Butyl Acrylate & Methyl methacrylate was synthesized. i.e. by replacing Vinyl acetate with Isopropenyl acetate emulsions are synthesized. The performance of these emulsions in paint is being evaluated.

Name of the student:**Mukesh Kathalewar**

Course: **M. Tech (Surface Coating Technology)**

Project Title: **Studies in NonIsocyanate Polyurethanes**

Abstract: Polyurethanes are the most versatile polymeric resins which are widely used in plastic and coating industries because of their excellent properties. The synthesis and applications of these polymers involves toxic and environmentally hazardous materials such as isocyanates and various solvents. Growing global awareness of the need to protect our environment and continually strive to ensure the health and well being of those in the Industry and consumers, create the demand for environmentally friendly products.

Recent discovery of Non-isocyanate Polyurethanes (NIPU) provide an excellent alternative to conventional polyurethanes. Relatively new class of compound "cyclocarbonates" are used for synthesis of these "green", porous free, and moisture insensitive polyurethanes. These cyclocarbonate compounds are mostly oligomers having cyclic carbonate groups based on vegetable oils and other synthetic polymers.

In the same line of work, we are currently working on development of NIPU coatings for various applications as listed below.

Scheme 1: Sol-gel based coatings for corrosion protection.

Cyclocarbonation of 3-Glycidoxypropyl trimethoxy-silane (GPTMS) was carried out under high pressure in autoclave reactor under CO2 atmosphere. The product was confirmed with FTIR analysis.

A urethane precursor was synthesized using C-GPTMS and amino silane. The structure was confirmed with FTIR analysis.

The precursor was then used in sol-gel coating formulation in variable concentration and applied on aluminum alloy substrate.

These coatings were further studied for mechanical, chemical and corrosion resistance properties.

Scheme 2: NIPU coatings from vegetable oil sources.

Fatty acid diester and triester were synthesized from dehydrated castor oil fatty acid (DCOFA) via esterification process with diol and triol respectively. The products were characterized using Acid, SAP and Hydroxyl value.

Further work includes epoxidation of these products followed by modification into cyclocarbonated product. These modified products will later be used for preparing NIPU coatings followed by coating characterization for various properties.

Guide: **Professor P.A. Mahanwar**

Name of the student:**Samarth Nikesh Bhashkarrao**

Degree: **M.Tech**

Thesis title: **Synthesis of phthalate free plasticizer using Soyabean oil & Linseed oil via green chemistry and its application for PVC particulate composites**

Abstract: PVC plasticized with Di-Octyl Phthalate (DOP) is widely used polymer in industry. Phthalate based plasticizers are hazardous for human health, hence their used has been banned. Research is going on to find out alternative plasticizers for this application. The project deals with synthesis of green plasticizer via Epoxidation of soyabean oil and Linseed oil and their modified derivatives. This modified oil (SBO/LO) is used for plasticization of PVC and fly ash composite with varying amount of DOP. The Plasticized PVC will be characterized for Fourier transform infrared spectroscopy (FTIR), Optical microscopy (OM), X-ray diffraction (XRD), thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC).

Name of the student: **Pache Ruchika Dhanraj**

Degree: **M.Tech**

Thesis title: **"Synthesis of phthalate free plasticizer using Karanja oil & Rice bran oil via green chemistry and its application for PVC particulate composites"**

Abstract: Plasticized PVC is widely used polymer in industry for flexible applications. Di-Octyl Phthalate (DOP) is commonly used as plasticizer for PVC. Due to migration and toxicity of phthalate plasticizers, their used has been banned. Hence extensive research is going on to find alternative plasticizers which are able to replace conventional plasticizers. Vegetable oils are best alternative as they are biodegradable, inexpensive and abundantly available. The project deals with synthesis of green plasticizer by Epoxidation of Karanja and Rice bran oil and their modified derivatives. The modified oil (RBO/KO) is used for plasticization of PVC and fly ash composite with varying amount of DOP. The Plasticized PVC will be characterized for Fourier transform infrared spectroscopy (FTIR), Optical microscopy (OM), X-ray diffraction (XRD), thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC).

Name of the student: **Kelkar Sunder Tukaram**

Degree: **P.hD (Sci.)**

Thesis title: **Synthesis of Poly lactic acid (PLA) from renewable resources**

Abstract: Poly(L-Lactic acid), (PLA) is a biodegradable, biocompatible and compostable polyester, which has a bright future as an environmentally friendly thermoplastic.PLA finds promising applications in packaging, consumer goods, fibres and in biomedicine because of its excellent mechanical properties, compatibility, transparency and biodegradability. This polymer can replace the conventional polymer used for packaging of food material like disposable containers, cups ,plates which are mostly prepared from polystyrene foam, polyethylene

bags etc. as these polymers degrades very slowly they produce large amount of the solid waste, which is the growing threat for world. The limitation in use of the PLA as alternative for conventional polymer is its cost. In order to make these polymers cheaper and to minimize its dependency for lactic acid monomer on fossil resources, lactic acid should be prepared from renewable resources. LA can currently be produced either by chemical synthesis or by fermentation from biomass, and the latter one is prevailing.

In present work we are trying to get lactic acid from renewable biomass like mango kernels and tamarind seeds, which can be used for producing poly lactic acid. It will reduce the cost of the raw material and also provide new and cheap agro waste as raw material for lactic acid production.

Modification of PLA to get better properties by co polymerization with PU, blending of other polymers and natural fibres in commercial PLA is also studied.

Name of the student: **Gaikwad Pravin Ramesh**
Degree: **P.hD (Tech.)**
Thesis title:**Studies in Thermoplastic Micro and Nano fibril composites.**

Abstract: Fiber reinforced polymer (FRP) composites are becoming very popular due to their ease of fabrication, economy and superior mechanical properties. Particularly fiber reinforcement as Micro and Nano scale in thermoplastic polymer matrix offer advantages in numerous engineering applications. Natural fibers (NF) have recently give more attraction to researchers, engineers and scientists as an alternative reinforcement as FRP composites. Nowadays, these NF fibers are exploited as a replacement for the conventional fiber such as glass, aramid and carbon due to their low cost, fairly good mechanical properties, high strength to weight ratio, non-abrasive, ecofriendly and biodegradability characteristics. Electrospinning has been recognized as an efficient technique for the fabrication of polymer nanofibers. Our main aim of this research work is to study the effect of Natural and Synthetic fibers on the properties of High Density Polyethylene (HDPE) and Polypropylene (PP) reinforced composites. These chopped Polyethylene Terephthalate (PET) and Henequen (NF) microfibers without treatment and with surface treatment using coupling agent as VinylTrimethaOxisilane (VTMO) as well as Glycidoxy functional methoxy silane (GPTS) are being used as reinforcement in polymer matrix and to be characterized for overall properties of FRP composites. PET electrospun nanofibers are also to be added in HDPE/PP polymer matrix and to be characterized accordingly.

Name of the student: **Parag Kulkarni**
Degree: **M.Tech**
Thesis title: **Studies in Depolymerization of Polyolefin Copolymer.**

Abstract: Polyolefin are most widely used thermoplastics in commodity applications. Polymerization of these polyolefin is carried out by using Ziegler-Natta or Metallocene catalysts result in high molecular weights. However, high molecular weights are not required for several applications. Control of molecular weight of polyolefin in conventional reactors is difficult and uneconomical. To overcome this problem reduction in molecular weight of polyolefin in presence of free radicals generators in extrusion by chain scission is proposed. Polyolefin are semicrystalline polymer & chain scission is restricted to the crystalline region of semicrystalline phase. In low loading of Polyolefin Elastomer, the ability of the chains to slip through crystals gives great toughness at lower temperatures or higher strain rates. The effect of this molecular weight reduction on mechanical, rheological, thermal & crystalline properties of the polymer studied by Universal Testing Machine, Rheometer, Differcial scanning calorimetry, X-ray diffraction respectively. With proper amount of initiator and elastomers, it is possible to obtain low molecular weight branched polyolefin

with improved mechanical, rheological and thermal properties.

Name of the student: **Tania Mallik**
Degree: **M.Tech**
Thesis title: **Study of the effects of nanofibers and nanoparticles on the properties of coatings.**

Abstract: It is well-known that materials in nanometer scale exhibit multifold improvement in properties from those in bulk state. Among the available nanostructures, nanoparticles and nanofibers, offer immense prospects for the development of novel products with excellent performance. In the field of surface coatings, nanoparticles have been widely used to achieve improvement in mechanical, optical, anticorrosion, gas barrier and antimicrobial properties. However, limited work has been reported on the use of polymeric nanofibers in coating systems. Most of their applications have been in biomedical field, filtration membranes, conductive composites etc. Incorporation of nanofibers in coating system can create new opportunities for imparting additional properties like crack resistance, damage tolerance, toughening etc. In this work, silica nanoparticles and TPU nanofibers (synthesized by solution electrospinning) will be incorporated in coating system and the improvement in resulting properties will be studied and compared.

MAJOR ACCOMPLISHMENTS :

- Department Selected for getting DST-FIST Development Grant
- Pioneered Technology of interfolic compatibilization in polymers.
- Published 23 International peer-reviewed research papers in the journal of international repute and attended three international conferences at abroad.

PHOTO GALLERY

PROFESSOR MAHANWAR P. A. RESEARCH GROUP

(L-R) : First Row: Mr. Mr.Gaval Vivek, , Mr. Sahai R. S. N., Professor Mahanwar P. A., Mr. Manoj Praharaj Bhatnagar, Mr. Samarth Nikesh,
(L-R) : Second Row: Miss. Pache Ruchika, Miss. Panditkar Trupti, Mr. Kulkarni Parag, Mr. Darji Swapnil, Mr.Gaikwad Praveen
(L-R) : Third Row: Mr. Patel Kashif, Mr. Nath Roop kumar, Mr. Thakare Rajesh, Mr. Kelkar Sunder, Mr. Chandan Fuke, Miss. Rupali Nehate, Miss. Mallik Tania.

DR. S. T. MHASKE RESEARCH GROUP

(L-R) : First Row: Sumit Tated, Ajit Patil, Vijay Jamnik, Manoj Mali, Kunal Yeole, Pooja Sainkar, Bhavya Goyal
(L-R) : Second Row: Sachin Bhanarkar, Parth Kapoor, Susmit Rithe, Roshan Gandodhar , Pradnya Rane, Pooja Gaval, Trupti Mane
(L-R) : Third Row: Amol Naikwadi, Deepak Patil, Ganesh A. Phalak , Dr. S.T.Mhaske, Aarti More, Aditi Marathe

PREFACE

PROFESSOR BHALCHANDRA M. BHANAGE
M.Sc., Ph.D.
Professor of Industrial and Engineering Chemistry & Head, Department of Chemistry

I am delighted to present the Annual Report (2013-2014) of the Department of Chemistry, Institute of Chemical Technology.

The most significant event of the year is that the M.Sc.(Chemistry) programme of the Department is accredited by the Royal Society of Chemistry, UK; after thoroughly reviewing the same. After our proposal a team of highly qualified assessors visited the Department, saw all the facilities, interacted with the faculty and the student, and inspected all the relevant documents. Our [programme is only the second in the country to be accredited by the RSC, the first being of IISER, Pune.

The Department conducted several activities this year. The year has witnessed a high number of applications for Ph.D. (Chemistry) programme. The Department admitted 10 new Ph.D. students. Currently the Department has 69 Ph.D. students and 40 M.Sc. students. During the year the faculty published 61 Research publications. Also contributions for 6 book chapers were made by the faculty and one patent was filed. 8 students were awarded the Ph.D. degree.

The support of UGC under the Special Assistance Programme (SAP) - Departmental Research Support, Phase-I, continued in terms of infrastructure development and recurring grant. 2013-14 was the last year of the programme and the Department is applying for the support from the UGC under DRS-Phase II of the programme. The Department was also awarded the DST FIST grant for infrastructural development.

The concept test in Chemistry (CONTECH 2014) was conducted, to test the basic understanding of Chemistry of undergraduate and postgraduate students, by the Department in collaboration with the Association of Chemistry (ACT) on 18th January 2014. This test is conducted every year by the Department of Chemistry for last 6 years with very good response from students.

The Department conducted a workshop for the M.Sc. and Ph.D. students of the Department on 25th and 26th Feb 2014, to orient them for the NET/SET examinations. The students from the Department who have cleared NET examinations gave

DEPARTMENT OF CHEMISTRY

The Department conducted a safety workshop for the Ph.D. research scholars of ICT on 18th and 19th March 2014. Research scholars of the institute were benefited from this workshop. This activity was supported through TEQIP programme of the institute.

a series of lectures on important topics. It was a great success.

This year the fun-filled chemistry related event of the M.Sc.(Chemistry) students, "Rasayanam", was held on 3rd March 2014. The students from many colleges affiliated to the University of Mumbai participated in the various events arranged. Along with this event, another event "CATSCHOL-2014", Catalysis Research Scholars Meet, a research conference for research students working in Catalysis was also organized by the department on 4th March 2014. In this event, posters and oral presentations were made by the students of the department. Prizes were given to 2 best posters and to the best oral presentation.

The Department conducted a safety workshop for the Ph.D. research scholars of ICT on 18th and 19th March 2014. Research scholars of the institute were benefited from this workshop. This activity was supported through TEQIP programme of the institute. The Department organized a two-day Teaching-Learning Workshop for the faculty of the Institute, with support from TEQIP, on 28th and 29th March 2014. In this lectures from experts were arranged on topics related to teaching and learning process.

The departmental annual day function and a farewell function for M.Sc. (Chemistry) 2011-13 batch was arranged on 28th April 2014.

The Department has procured a new GC-MS instrument. With this addition the Department is now well equipped for characterization of various compounds.

Dr. Shraeddha S. Tiwari, DST-INSPIRE Faculty; Dr. Dipanwita Das, DST-INSPIRE Faculty; and Dr. Kaustubh Joshi, DST-Ramanujan Faculty recently joined the Department in 2013. I wish them a bright career.

I am thankful to all faculty members, support staff, and all our Ph.D. students wholeheartedly for initiating and executing various programmes undertaken by the Department in this year. I am particularly thankful to the visiting faculty, who supported us in our academic activity.

BHALCHANDRA M. BHANAGE

M.Sc., Ph.D.
Professor of Industrial and Engineering Chemistry &
Head, Department of Chemistry
Email: bm.bhanage@gmail.com

COURSES TAUGHT :

Undergraduate:

Class: B.Chem. Engg., B. Tech
Sem: I
Course: Inorganic Chemistry
Class: B.Chem. Engg., B. Tech
Sem: II
Course: Organic Chemistry

Post-Graduate

Class: M.Sc.
Sem: III
Class: Organometallic Chemistry
Class: M. Tech. (Green tech)
Sem: I
Course: Catalytic Science and Technology & Green Chemistry

RESEARCH INTERESTS:

- Homogeneous catalysis, Reaction kinetics and mechanism
- Preparation and Characterization of organometallic complexes
- Catalyst-product separation techniques in homogeneous catalysis such as biphasic catalysis, Supported liquid phase catalysis
- Ultrasound assisted organic reactions and catalysis
- C-C, C-N coupling reaction for organic synthesis.
- Microwave assisted organic reactions and catalysis
- Preparation and application of ionic liquids for organic synthesis
- Catalysis and reactions in supercritical carbon dioxide
- Carbon dioxide fixation into valuable chemicals
- Carbon mono-oxide fixation into valuable chemicals
- Hydroformylation for the synthesis of fine chemicals
- Polycarbonate synthesis via organometallic complexes
- Heterogeneous catalysis
- Biocatalysis - study of the behavior of hydrolases in organic solvents and neoteric solvents like ionic liquids, supercritical carbon dioxide.
- Synthesis of nanomaterials, exploration of nano-materials as catalysts for organic synthesis.
- Green chemistry - Development of environmentally benign synthetic procedures for organic synthesis.
- Hydrogenation reactions for organic synthesis.
- Asymmetric catalysis for organic synthesis.

RESEARCH CONTRIBUTION:

Research Students -

M.Tech.: Completed - 04
Ongoing - 01

M.Sc. (Chemistry) :
Completed - 10
Ongoing - 02
Ph.D.: Completed - 19
Ongoing - 27
Research Publications - 32
Book Chapters - 04
Sponsored Projects – 08 (Industrial-04, Govt-04)

PROFESSIONAL ACTIVITIES:

- Hon. Secretary, Catalysis Society of India (Mumbai Chapter)
- Fellow of The Royal Society of Chemistry (FRSC), UK
- Member, Scientific Advisory Board, Indian Patent Office
- Member: American Chemical Society
- Member: American Nano Society
- Resource Person, Maharashtra Public Service Commission
- Fellow, Maharashtra Academy of Sciences
- Life Member :
  - UDCT Alumini Association
  - Chemistry Teachers Association
  - Marathi Vidnyan Parishad
  - Catalysis Society of India
  - Chemical Research Society of India
  - Society of Materials Chemistry

- ❖ Biography covered in Marquis Who's Who in the World, 75th Edition, 2008, also in 2012
- ❖ Member, Editorial Advisory Board
- The Open Acoustics Journal since 2007
- The Open Catalysis Journal, since 2008
- Catalysis Science and Technology, RSC Journal IF 3.75
- ❖ Member : Bureau of Indian Standards Precious Metals Sectional Committee
- ❖ Chairman: Bureau of Indian Standards, Organic Chemicals, Alcohols and Allied Products
- ❖ Member : Board of Studies in Chemistry, B.A.M. University, Aurangabad
- ❖ UGC Nominee, UGC-SAP-DRS-I, Department of Chemistry, Veer Narmad South Gujarat University, Surat
- ❖ Member: Syllabus Commiette of University of Pune and University of Mumbai for B.Sc./M.Sc. (Chemistry)
- ❖ M/s Chem Cleanzio Pvt. Ltd, (Adv. Board Member), Mumbai.
- ❖ M/s Nanocoat, Hydrabad, (Adv. Board Member).

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED:

Green Chemistry in Dyestuff industry, at Seminar on Application of Green Chemistry in the Colorants Industry held on 20th September 2013 at Hotel Sea Princess, Juhu, Mumbai and organized by Dyestuff Manufacturer Association of India.

LECTURES GIVEN/EVENTS ORGANIZED - 9

AWARDS/RECOGNITION/ ACHIEVEMENTS

- ❖ Fellow, The Royal Society of Chemistry
- ❖ Selected on Advisory Board on the RSC Journal "Catalysis Science and Technology

IN-HOUSE RESPONSIBILITIES:

- ❖ Head, Department of Chemistry
- ❖ Coordinator - UGC- SAP (DRS-I) programme, Dept of Chemistry
- ❖ Chairman - Research Committee for Chemistry
- ❖ Member- Academic calendar committee, Stores and purchase committee.
- ❖ Member – Post-Graduate programme committee
- ❖ Member – Academic council

SHRINIWAS D. SAMANT

M.Sc. Ph.D.
Professor of Organic Chemistry
Email: samantsd@yahoo.com;
sd.samant@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:

Class: F.Y. B.Chem. Engg.
F. Y. B. Tech
Sem: I
Course: Organic Chemistry
Class: F.Y. B.Chem. Engg.
F. Y. B. Tech
Sem: II
Course: Organic Chemistry

Post-Graduate

Class: M.Sc. (Part 1)
Sem: I
Class: 1. Organic Reaction Mechanism
2. Heterocyclic Chemistry
Class: M.Sc. (Part 2)
Sem: III
Course: Stereochemistry

RESEARCH INTERESTS:

- ❖ Mechanistic Organic Chemistry
- ❖ Synthesis of biologically interesting compounds
- ❖ New methods of Organic synthesis
- ❖ Chemistry of surfactants
- ❖ Sonochemistry
- ❖ Catalysis

RESEARCH CONTRIBUTION:

Research Students -

M.Sc. (By research):
Completed - 03

M.Sc. (Chemistry) :
Completed - 10
Ongoing - 03

Ph.D.: Completed - 48
Ongoing - 09

Research Publications - 12

Book Chapters -

Ethnopharmacology and Ethnomedicine of Metals, Jayant Lokhande, Shriniwas Samant, Ganesh Shinde, and Yeashwant Pathak, in Handbook of Metallonutraceuticals, CRC Press, Book Chapter; eds. Yashwant Vishnupant Pathak, Jayant N. Lokhande, April 28, 2014.

PROFESSIONAL ACTIVITIES :

- Life Member, Indian Chemical Society (1982)
- Life Member, Indian Society for Surface Science and Technology (ISSST) (1992)
- Life Member,Catalysis Society of India, (1998)
- Life Member,Indian Association of Chemistry Teachers (2001)
- Life Member,Society for Materials Chemistry (2009)
- Member, Research Committee, Institute of Chemical Technology, Mumbai
- Member, Internal Quality Assurance Cell, Ruia College, Mumbai.
- Member, Advisory Committee, P. S. Ramanathan Advanced Instrumentation Centre, Ruia College
- Member, Governing Council Atomic Energy Education Society 2013
- Member, M.Sc. Organic Chemistry syllabus committee, Mumbai University
- Organizing Committee Member - National Workshop on Materials Chemistry, 22-23rd Nov 2013
- Examiner, National Entrance Screening Test

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED:

- Attended National Workshop on Materials Chemistry at BARC, Mumbai, 22 & 23 Nov 2013.
- Ca-Alg gel entrapped base catalyst for continuous flow synthesis of coumarin derivative'. Nilesh Korgaonkar and Shriniwas D. Samant, 50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 4-7th Dec 2013.
- Microwave assisted 4-dimethylaminopyridine (DMAP) mediated, one pot, three component region and distereoselective synthesis of trans-2,3 dihydro furo [3,2-C] coumarin. Nanabhau B. Karanjule and Shriniwas D. Samant, 50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 4-7th Dec 2013.
- Study of ring opening reactions of epoxide for developing new pathways for structurally and functionally important molecules'. Balaso G. Jadhav and Shriniwas D. Samant. 26th Research Scholar Meet (RSM), KT College, Panvel, Mumbai. 21-22nd Feb 2014.
- Studies in the Synthesis of heterocyclic polycyclic compound containing pyran ring'. Adil I. Khatri and Shriniwas D. Samant.26th Research Scholar Meet (RSM), KT College, Panvel, Mumbai. 21-22nd Feb 2014.
- Microwave assisted 4-dimethylaminopyridine (DMAP) mediated, one pot, three component region and distereoselective synthesis of trans-2,3 dihydro furo [3,2-C] coumarin'. Nanabhau B. Karanjule and Shriniwas D. Samant. Catalysis Scholars Meet (CATSCHOL 2014) organized by Catalysis Society of India (Mumbai Chapter) and Institute of Chemical Technology, Mumbai on 4th March 2014.
- Selective isomerization of p-diethylbenzene to m-diethylbenzene using modified zeolite Hβ. Mahesh S. Edake and Shriniwas D. Samant. Catalysis Scholars Meet (CATSCHOL 2014) organized by Catalysis Society of India (Mumbai Chapter) and Institute of Chemical Technology, Mumbai on 4th March 2014.

- Attended National Convention of Chemistry Teachers at Annamalai University, Chidambaram, Tamilnadu.
- Attendedd Safety Workshop by Royal Society of Chemistry, 7th April 2014, ICT.

EVENTS ORGANIZED

- Convener pedagogical workshop on teaching-learning at Institute of Chemical Technology, Mumbai on 28-29th Mar 2014.
- Organised ACT Concept Test in Chemistry (CONTECH) on 18th January 2014.

LECTURES GIVEN OUTSIDE - 14

AWARDS/RECOGNITION/ ACHIEVEMENTS

- M.Sc. Chemistry, Best Teacher Award under CMP Endowment
- Elected as President of Association of Chemistry Teachers, India

IN-HOUSE RESPONSIBILITIES:

- Member, Research Committee, ICT, Mumbai
- Chairman, Committee to frame Rules of PhD degree

RADHA V. JAYARAM

M.Sc., Ph.D.

Email: rv.jayaram@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:

Class: B. Chem. Engg.
Sem: III
Course: Anal. Chem. Lab.
Class: F.Y.B. Pharm
Sem: I
Course: Org. Chem. Lab
Class: S.Y.B. Chem. Engg.
Sem: III
Course: Physical Chemistry
Class: S.Y.B. Chem. Engg.
Sem: III
Course: Physical Chemistry Lab
Class: S.Y.B. Tech.
Sem: III
Course: Physical Chemistry
Class: S.Y.B. Tech.
Sem: III
Course: Physical Chemistry Lab
Class: S.Y.B.Pharm
Sem: III
Course: Physical Chemistry Lab

Post-Graduate

Class: M.Sc. (Chem.)
Sem: I
Class: Material Chemistry
Class: M.Sc. (Chem.)
Sem: I, III
Course: Physical Chem. Lab
Class: M.Tech. (Green Tech.)
Sem: I
Class: Fundamentals of Catalytic Sci. &Engg.

RESEARCH INTERESTS:

- Heterogeneous catalysis
- Green Chemistry
- Multicomponent reactions
- Structurally ordered materials
- Amorphous alloys
- Functional polymers
- Adsorption techniques for removal of water pollutants

RESEARCH CONTRIBUTION:

Research Students -

M.Tech.:
Completed - 05
Ongoing - 03

M.Sc. (By Research) :
Completed - 09

M.Sc. (Chemistry):
Completed - 09 Ongoing - 02

Ph.D.: Completed - 20
Ongoing - 10

Research Publications - 06

Sponsored projects - 01

PROFESSIONAL ACTIVITIES:

- Member – Catalysis Society of India

- Member – Precious Metals Committee – Indian Bureau of Standards
- Exam Board Member – Indian National Chemistry Olympiads
- Faculty member – NIUS Programme, HBCSE, Mumbai

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED:

- National Convention of Chemistry Teachers, Annamalai University, Chidambaram, 7-9 November 2013.
- Teaching-Learning workshop, ICT, Mumbai, 28, 29 March 2014.

AWARDS/RECOGNITION/ ACHIEVEMENTS:

- CMP Endowment Best Teacher Award – 2014
- Basic Science Research (B.S.R) one time grant of Rs. 7,00,00 by the UGC

IN-HOUSE RESPONSIBILITIES:

- Coordinator- Green Technology programmes, ICT
- Deputy Coordinator – UGC –SAP (DRS-II), Department of Chemistry
- Chairperson, Research Committee, Green Technology
- Warden- Hostel No. 2
- Member secretary. Faculty Common Room

JAYASHREE M. NAGARKAR

M.Sc., Ph.D.
Associate Professor of Physical Chemistry
Department of Chemistry
Email: jm.nagarkar@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:

Class: F.Y.B. Chem. Engg.
Sem: II
Course: Analytical Chemistry
Class: F.Y.B. Tech.
Sem: II
Course: Analytical Chemistry
Class: S.Y.B. Chem. Engg.
Sem: I
Course: Physical Chemistry
Class: S.Y.B. Tech.
Sem: I
Course: Physical Chemistry

Post-Graduate

Class: M.Sc. (Chem.)
Sem: IV
Class: Physical Chemistry

RESEARCH INTERESTS:

- Homogeneous catalysis
- Reaction kinetics & mechanism
- Preparation & characterization of organometallic complexes
- Ultrasound assisted organic reactions & catalysis
- C-C, C-N coupling reaction for organic synthesis
- Preparation & Application of DES for organic synthesis
- Heterogeneous Catalysis
- Synthesis of Nanomaterials
- Exploration of Nanomaterials synthesized as catalysts for organic synthesis
- Greenchemistrydevelopment of environmentally begin synthetic procedures for organic synthesis
- Degradation of organic pollutants
- Emulsifications of Vegetable oils

RESEARCH CONTRIBUTION:

Research Students -

M.Sc. (By Research):
Completed - 09

M.Sc. (Chemistry) :
Completed - 08
Ongoing - 02

Ph.D.:
Completed - 02
Ongoing - 09

Research Publications - 05

Patents - 01

PROFESSIONAL ACTIVITIES :

- Life member, Indian Society

of surface Science & Technology
- Life member, Indian Women Scientist Association
- Life Member, Catalyst Society of India
- Life Member, Society of Advancement of Electrochemical Science & Technology

LECTURES GIVEN/EVENTS ORGANIZED: 2
- Convenor, Workshop on Laboratory Safety on 18th and 19th March, 2014 for the Ph. D. Students, ICT, Mumbai

IN-HOUSE RESPONSIBILITIES:
- Member, Pay fixation committee
- Member, Academic Council
- Member, Media Relations
- Member, Special Assistance Programme (SAP), Department of Chemistry
- Chairperson, Visiting Faculty Committee of the Institute
- Co-ordinator, Safety Workshop programme of the Institute.

ANANT R. KAPDI

M.Sc., Ph.D.
UGC-FRP Assistant Professor
Email: ar.kapdi@ictmumbai.edu.in

COURSES TAUGHT :
Undergraduate:
Class: F.Y.B. Chem. Engg.
Sem: I & II
Course: Organic Chemistry Lab.
Class: F.Y.B. Tech.
Sem: I & II
Course: Organic Chemistry Lab.

RESEARCH INTERESTS:
- Homogeneous catalysis using palladium and nickel based complexes.
- Heterogenization of the complexes on solid support\
- C-H bond functionalization
- Green Technology approaches for synthesis
- Microwave assisted organic synthesis
- Natural Product synthesis

RESEARCH CONTRIBUTION:
Research Students -
M.Sc. (Chemistry):
Completed - 04
Ongoing - 03

Ph.D.: Ongoing - 07

Research Publications - 05

Book chapters - 02

Sponsored projects – 02
(Govt.-01, Private-01)

PROFESSIONAL ACTIVITIES :
- Member, Royal Society of Chemistry (MRSC)
- Life member, Chemical Research Society of India
- Life Member, Catalysis Society of India
- Member, Indian Society of Chemists and Biologists
- Life Member, Maharashtra Academy of Sciences (Young Associate)

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED:
Event : Teaching and Learning workshop
Organising Institution: ICT, Mumbai
Date & Duration: 28th & 29th March 2014
Event : One day workshop on "Health and Safety"
Organising Institution: Department of Chemistry ICT, in association with Chemical Research Society of India and Royal Society of Chemistry, UK
Date & Duration: 7th April 2014

LECTURES GIVEN/EVENTS ORGANIZED - 2
- Convenor, Rasayanam event and ICT-RSC poster competition held in Institute of Chemical Technology, Mumbai on the 3rd of March 2014.

- Convenor, CATSCHOL 2014,event held in Institute of Chemical Technology, Mumbai on the 4th of March 2014.

AWARDS/RECOGNITION/ ACHIEVEMENTS:

- Biography selected in Marquis Who's Who in the World, 2014
- DAAD Fellowship for Scientists (2nd June 2014 to 15th July 2014) - with Professor Moniek Tromp in Catalysis Research Centre, Technische Universitat Munchen, Germany.
- Alexander von Humboldt Equipment Grant 2013 (Euros 16000)

VIJAY KUMAR AKKILAGUNTA

M.Sc., Ph.D.
DST INSPIRE Faculty
Department of Chemistry
Email: v.kumar@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:

Class: F.Y.B. Chem. Engg.
Sem: I & II
Course: Organic Chemistry
Class: F. Y. B. Chem. Engg.
Sem: I & II
Course: Organic Chemistry Lab.
Class: F. Y. B. Tech.
Sem: I & II
Course: Organic Chemistry
Class: F. Y. B. Tech
Sem: I & II
Course: Organic Chemistry Lab.

Post-Graduate

Class: M.Sc. (Part 1)
Sem: II
Class: Organic Synthesis

RESEARCH INTERESTS:

- Ullmann Coupling reactions
- Aerobic oxidation
- Sustainable/Green Reagents for Organic Synthesis
- Polyoxometalates mediated Catalysis
- Carbon /Carbon supported catalysts for Organic Transformations

RESEARCH CONTRIBUTION:

Research Students -

M.Sc. (Chemistry):
Completed - 04
Ongoing - 02

Ph.D.: Ongoing - 03

Research Publications - 01

Book chapters - 01

Sponsored projects – 01 (Govt.-01)

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED

Event : Teaching and Learning workshop
Organising Institution: Department of Chemistry, ICT
Date & Duration: 28th & 29th March 2014
Event : One day workshop on "Health and Safety"
Organising Institution: Department of Chemistry ICT, in association with Chemical Research Society of India and Royal Society of Chemistry, UK
Date & Duration: 7th April 2014

LECTURES GIVEN/EVENTS ORGANIZED - 2

- Co-Convenor for Rasayanam event held in Institute of Chemical Technology, Mumbai on the 3rd of March 2014.
- Co-Convenor for CATSCHOL 2014 event held in Institute of Chemical Technology, Mumbai on the 4th of March 2014.

AWARDS/RECOGNITION/ ACHIEVEMENTS:

- Biography selected in Marquis Who's Who in the World, 2015

IN-HOUSE RESPONSIBILITIES:

- Instrumentation facility In-charge

DIPANWITA DAS

M.Sc., Ph.D.
DST-INSPIRE Faculty
Email: dr.das@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:

Class: F. Y. B. Chem. Engg.
Sem: I
Course: Inorganic Chemistry (Theory)
Class: F.Y.B. Tech.
Sem: I
Course: Inorganic Chemistry (Theory)
Class: F.Y.B. Tech.
Sem: I
Course: Inorganic Chemistry Laboratory
Class: F. Y. B. Tech
Sem: II
Course: Analytical Chemistry Laboratory

Post-Graduate

Class: M.Sc.
Sem: II
Class: Chemistry of transition metals, Theory

RESEARCH INTERESTS:

- Homogeneous and Heterogeneous catalytic oxygen reduction reaction
- Mixed-valent Complexes
- Ruthenium complexes: inorganic photo physics and bio-sensing
- Carbon dioxide reduction

RESEARCH CONTRIBUTION:

Research Students -

M.Sc. (Chemistry): Ongoing - 02
Ph.D.: Ongoing - 01

Sponsored projects:

01 (Govt.-01)

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED

Event : CATSCHOL 2014
Organising Institution: ICT, Mumbai
Date & Duration: 4th March, 2014

LECTURES GIVEN/EVENTS ORGANIZED

- Co-Convenor, NET/ SET Workshop for M.Sc. and Ph.D. students", ICT Mumbai, 25th and 26th February 2014

IN-HOUSE RESPONSIBILITIES:

- Coordinator, one day Industrial Workshop "Overview of Ammonia Process with Practical Visit to Ammonia, ETP and STP" for Chemistry students from ICT Mumbai to RASHTRIYA CHEMICALS AND FERTILIZERS LTD. (RCF) CHEMBUR, MUMBAI-74 on 22nd January 2014.

SHRAEDDHA TIWARI

M.Sc., Ph.D.
DST INSPIRE Faculty
Email: ss.tiwari@ictmumbai.edu.in, shraeddha@gmail.com

COURSES TAUGHT :

Undergraduate:

Class: B. Pharm..
Sem: III
Course: Physical Pharmacy (Theory and Practicals)
Class: B. Tech.
Sem: III
Course: Physical Chemistry (Practicals)
Class: B. Chem. Engg.
Sem: III

Course: Physical Chemistry (Practicals)
Class: B. Tech
Sem: II
Course: Analytical Chemistry (Theory and Practicals)
Class: B. Chem. Engg.
Sem: II
Course: Analytical Chemistry (Theory and Practicals)

Post-Graduate
Class: M.Sc. (Part 2)
Sem: IV
Class: Surface and Interfacial Chemistry

RESEARCH INTERESTS:

- Mechanistic investigation of organic reactions
- Effect of reaction media on the selectivity and reactivity
- "on water" chemistry
- Space and time-resolved study of reactions in confined media
- Vibrational spectroscopy and microspectroscopy
- Mechanistic studies of asymmetric amplification
- Interfacial reactions

RESEARCH CONTRIBUTION:

Research Students -
M.Sc. (Chemistry): Ongoing - 02
Ph.D.: Ongoing - 02

Sponsored projects – 01 (Govt.-01)

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED

Event : Inside Raman (workshop)
Organising Institution: Renishaw / Institute of Chemical Technology
Date & Duration: 8th – 9th October 2014
Event : Resource Generation Camp for Olympiad activities
Organising Institution: Homi Bhabha Centre for Science Education
Date & Duration: 21st – 24th October 2014
Event : Teaching Learning Workshop
Organising Institution: Institute of Chemical Technology
Date & Duration: 28th – 29th March, 2014

LECTURES GIVEN/EVENTS ORGANIZED

- Co-Convenor, Workshop on Laboratory Safety on 18th and 19th March, 2014 for the Ph. D. Students, ICT. Mumbai

AWARDS/RECOGNITION/ ACHIEVEMENTS:

- "Best Teacher Appreciation Award" from Department of Chemistry, Institute of Chemical Technology (April 2014)

KAUSTUBH JOSHI

M.Sc., Ph.D.
DST- RAMANUJAN Faculty
Email: ka.joshi@ictmumbai.edu.in

COURSES TAUGHT :

Undergraduate:
Class: S.Y. B. Pharm
Sem: III
Course: Physical Pharmacy (Theory)
Class: F. Y. B. Chem. Engg.
Sem: I
Course: Analytical Chemistry Laboratory
Class: S. Y. B. Chem. Engg.
Sem: III
Course: Physical Chemistry Laboratory
Class: S. Y. B. Tech
Sem: III
Course: Physical Chemistry Laboratory

Post-Graduate
Class: M.Sc. Chemistry
Sem: II
Class: Physical Chemistry laboratory
Class: M.Sc. Chemistry
Sem: II
Class: Chemical Engineering Laboratory
Class: M.Sc. Chemistry
Sem: III

Class: Computational Chemistry Laboratory
Class: M.Sc. Chemistry
Sem: IV
Class: Computational Chemistry (Theory)

RESEARCH INTERESTS:

- Density Functional Calculations, Quantum Chemical studies for small size molecules, Organic reaction mechanisms using static QM calculations. QM/MM molecular dynamics study to understand solvent effect in organic and enzymatic reactions, CADD, Molecular Docking studies for protein-ligand interactions. Understanding Bone Health at molecular level by QM and QM/MM methods.

RESEARCH CONTRIBUTION:

Research Students -
M.Sc. (Chemistry):
Ongoing - 02

Ph.D.: Ongoing - 01

Sponsored projects – 02

PROFESSIONAL ACTIVITIES

- Convenor, "Workshop on Laboratory Safety", ICT Mumbai, 18th -19th March, 2014.

CONFERENCES/SEMINARS/ WORKSHOPS ATTENDED

Event : Resource Generation Camp for Olympiad activities
Organising Institution: Homi Bhabha Centre for Science Education
Date & Duration:
21st – 24th October, 2014
Event:
Teaching Learning Workshop
Organising Institution:
Institute of Chemical Technology
Date & Duration:
28th – 29th March 2014

LECTURES GIVEN/EVENTS ORGANIZED

- Convenor, NET-SET workshop for M.Sc. and Ph.D. students, ICT, Mumbai, 25th and 26th February 2014.

IN-HOUSE RESPONSIBILITIES:

- Coordinator

MS. MANJIRI MULYE

M.Sc. (Physical Chemistry)
Tutor

SUPPORT STAFF

P. S. Gaikwad
Laboratory Assistant

V. R. Haval
Laboratory Assistant

R. M. Mhatre
Laboratory Assistant

A. P. Patil
Laboratory Assistant

A. H. Awale
Laboratory Attendent

D. P. Chavan
Laboratory Attendent

S. P. Chavan
Laboratory Attendent

S. B. Khapne
Laboratory Attendent

B. V. Tilve
Laboratory Attendent

SPONSORED PROJECTS

PROFESSOR B. M. BHANAGE

GOVERNMENT FUNDED PROJECTS – ONGOING

Personal / Departmental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Title	Duration	Amount sanctioned, in Rs.
Personal	Principle Investigator	Govt	Science and Engineering Research Board (SERB).	Studies in asymmetric catalysis for synthesis of enantiomerically pure amines and alcohols.	Dec. 2012 to Dec. 2015	37 lac
Personal	Principle Investigator	Govt	Department of Biotechnology (DBT)	Enzyme immobilization and its application in supercritical carbon dioxide for synthesis of valuable compounds	Aug. 20012 to Aug. 2015	Rs. 24 lac
Personal	Principle Investigator	Govt	Department of Science and Technology (DST-Nano Mission)	Study of catalytic activity of nanosize metals and metal oxides prepared by novel or conventional routes	2012-2015	Rs 166 lac
Personal	Principle Investigator	Govt	Dept. of Atomic energy (DAE)-ICT Centre	Development of metalloorganic precursors for CVD applications	2009-2013	Rs 25 lac
Personal	Principle Investigator	Govt	Department of Science and Technology (DST-JSPS)	Development of CO and H2 insertion reactions using metal ion containing immobilized ionic liquid catalysts	2013-2015	Rs. 4.38 lac

INDUSTRY SPONSORED PROJECTS

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Title	Duration	Amount sanctioned, in Rs.
Personal	Principle Investigator	Private	NOCIL India Ltd	Process development	June-July 2013	0.75 lac
Personal	Principle Investigator	Private	NOCIL India Ltd	Development of metal catalyst for reduction	June- Sept 2013	1.5 lac

PROFESSOR R. V. JAYARAM

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
Depart-mental	Principle Investigator	Govt.	TEQIP	Feb 2014	Microwave assisted Bifunctional catalysis for Tandem Reactions	Feb 2014 to Dec 2014	17,00,000

DR. ANANT KAPDI

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
Personal	Principle Investigator	Govt	DST (Inspire Faculty programme)	November 2012	Application of Palladacyclic Complexes in Synthesis.	November 2012 to October 2017	83,00,000

DR. K. VIJAY

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
DST-INSPIRE	Dr. Vijay Kumar A.	Govt	DST	27th Nov, 2012	Organic Synthesis using Recyclable Metal and Carbon Catalysts.	Nov, 2012 to Nov, 2017	35 Lakhs

DR. DIPANWITA DAS

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
Personal	Principle Investigator	Govt. sponsor	Department of Science and Technology	18th October, 2013	Transition metal mediated catalytic two and four electron reduction of O_2 : synthesis, structure-reactivity correlation and mechanistic insights by trapping intermediates	October 2013 to October 2018	Rs. 7.00 lakh per annum

DR. SHRAEDDHA TIWARI

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
Personal	Principle Investigator	Govt.	Department of Science and Technology (INSPIRE faculty scheme)	18th October 2013	Investigating Reactivity and Selectivity of Organic Reactions in Liposomes as Model Protocells	2013 to 2018	35,00,000
Personal	Principle Investigator	Govt.	Department of Science and Technology (Fast Track Scheme)	30th June 2014	Investigating Reactivity and Selectivity of Organic Reactions in Liposomes as Model Protocells	2014 to 2017	16,98,000

DR. KAUSTUBH JOSHI

Personal / Depart-mental	Principle Investigator / Co-Investigator	Sponsor – Govt./ Private	Name of Sponsor	Date of Sanction	Title	Duration	Amount sanctioned, in Rs.
Personal	Principal Investigator	Govt	DST, New Delhi	August 2013	Efficient QM/ MM approach for Protein/ Ligand Binding Free Energies: finding inhibitors for novel cathepsin K, an Osteoporosis target	August 2013 - July 2018	5 lakh per annum

CONSULTANCY

PROFESSOR B. M. BHANAGE

Consultancy

- M/s Reliance Industries, Mumbai, 2013-14
- NOCIL Ltd, Mumbai
- MILI Laboratories
- Godrej Agrovet

PROFESSOR S. D. SAMANT

Consultancy

- NOCIL
- Pratap Organics

DR. A. R. KAPDI

Consultancy

- Rasayan Inc. California, U.S.A

RESEARCH PUBLICATIONS, PATENTS & BOOK CHAPTERS

PROFESSOR B. M. BHANAGE

Sr. No.	Title of paper	Authors	Journal
1	Pd(OAc)2/DABCO as an efficient and phosphine-free catalytic system for the synthesis of single and double Weinreb amides by the aminocarbonylation of aryl iodides	Gadge, S.T., Bhanage, B.M.*	Organic and Biomolecular Chemistry, 12, 5727-5732, 2014
2	Palladium(II) chalcogenolate complexes as catalysts for CC cross-coupling and carbonylative Suzuki coupling reactions	Paluru, D.K., Dey, S., Chaudhari, K.R., Khedkar, M.V., Bhanage, B.M.#, Jain, V.K.*	Tetrahedron Letters, 55, 2953-2956, 2014
3	ase-mediated synthesis of imines and amines from N-phenylureas and alcohols	Yadav,D.K.T., Bhanage, B.M.*	Synlett, 25, 1611-1615, 2014

4	Synthesis of geranyl acetate in non-aqueous media using immobilized Pseudomonas cepacia lipase on biodegradable polymer film: Kinetic modelling and chain length effect study	Badgujar,K.C., Bhanage, B.M.*	Process Biochemistry,49, 1304-1313, 2014
2	Novel and green approach for the nanocrystalline magnesium oxide synthesis and its catalytic performance in Claisen-Schmidt condensation	Patil, A.B., Bhanage, B.M.	Cat. Comm., 36, 79-83, 2013
3	Copper-catalyzed synthesis of nitriles by aerobic oxidative reaction of alcohols and ammonium formate	Yadav, D.K.T., Bhanage, B.M	European J. Org. Chem., 23,5106-5110, 2013
4	Pd/C-catalyzed synthesis of oxamates by oxidative cross double carbonylation of amines and alcohols under Co-catalyst, base, dehydrating agent, and ligand-free conditions	Gadge, S.T., Bhanage, B.M.	J. Org. Chem., 78 (13), 6793-6797, 2013
5	Amberlyst-15©: An efficient heterogeneous reusable catalyst for selective anti-Markovnikov addition of thiols to alkenes/ alkynes and for thiolysis of epoxides	Lanke, S.R., Bhanage, B.M.	Cat. Comm., 41, 29-33, 2013
6	Solar energy assisted synthesis of palladium nanoplates and its application in 2-phenoxy-1,1′-biphenyls and N,N-dimethyl-[1,1′-biphenyl] derivatives synthesis	Patil, A.B., Bhanage, B.M.	J. Mol. Cat. A: Chemical, 379, 30-37, 2013
7	Immobilization of Candida cylindracea lipase on poly lactic acid, polyvinyl alcohol and chitosan based ternary blend film: Characterization, activity, stability and its application for N-acylation reaction	Badgujar, K.C., Dhake, K.P., Bhanage, B.M.	Process Biochem., 1335-1347, 2013
8	Asymmetric ring opening of meso-epoxides with aromatic amines using (R)-(+)-BINOL-Sc(OTf)3-NMM complex as an efficient catalyst	More, G.V., Bhanage, B.M	European J. Org. Chem., 6900-6906, 2013
9	Selective hydroformylation-acetalization of various olefins using simple and efficient Rh-phosphinite complex catalyst	Khan, S.R., Bhanage, B.M.	Tetrahedron Lett., 5998-6001, 2013
10	Nickel-catalyzed three-component coupling reaction of terminal alkynes, dihalomethane and amines to propargylamines	Lanke, S.R., Bhanage, B.M.	App.Organometal. Chem., 729-733, 2013

11	Amine functionalized MCM-41: An efficient heterogeneous recyclable catalyst for the synthesis of quinazoline-2,4(1H,3H)-diones from carbon dioxide and 2-aminobenzonitriles in water	Nale, D.B., Rana, S., Parida, K., Bhanage, B.M.	Cat. Sc.Tech., 1608-1614, 2014
12	Ruthenium catalyzed regioselective coupling of terminal alkynes, amine and carbon dioxide leading to anti-Markovnikov adducts	Watile, R.A., Bhanage, B.M.	RSC Advances, 23022-23026, 2014
13	Pd(OAc)2/DPPF-catalysed microwave-assisted cyanide-free synthesis of aryl nitriles	Sawant, D.N., Bhanage, B.M.	J. Chem. Sc., 319-324, 2014
14	Greener approach for the synthesis of substituted alkenes by direct coupling of alcohols with styrenes using recyclable Bronsted acidic [NMP] +HSO4 - ionic liquid	Wagh, K.V., Bhanage, B.M.	RSC Advances, 22763-22767, 2014
15	Copper catalyzed nitrile synthesis from aryl halides using formamide as a nitrile source	Khemnar, A.B., Bhanage, B.M.	RSC Advances, 13405-13408, 2014
16	A facile one-step approach for the synthesis of uniform spherical Cu/Cu2O nano- and microparticles with high catalytic activity in the Buchwald-Hartwig amination reaction	Bhosale, M.A., Bhanage, B.M	RSC Advances, 15122-15130, 2014
17	Amine functionalized MCM-41 as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones, from CO2 and aziridines	Nale, D.B., Rana, S., Parida, K., Bhanage, B.M.	App. Cat.s A: General, 340-349, 2014
18	Amidation of aryl halides with isocyanides using a polymer-supported palladium-n-heterocyclic carbene complex as an efficient, phosphine-free and heterogeneous recyclable catalyst	Khairnar, B.J., Bhanage, B.M.	Synthesis, 1236-1242, 2014
19	A phosphine-free approach to primary amides by palladium-catalyzed aminocarbonylation of aryl and heteroaryl iodides using methoxylamine hydrochloride as an ammonia equivalent	Gadge, S.T., Bhanage, B.M.	Synlett, 85-88, 2014
20	Direct C-2 acylation of thiazoles with aldehydes via metal- and solvent-free c-h activation in the presence of tert-butyl hydroperoxide	Khemnar, A.B., Bhanage, B.M.	Synlett, 110-114, 2014
21	Dimethylaminoalkyl chalcogenolate palladium(II) complexes as an efficient copper-and phosphine-free catalyst for Sonogashira reaction	Khairnar, B.J., Dey, S., Jain, V.K., Bhanage, B.M.	Tetrahedron Lett., 716-719, 2 014

22	N-arylation of indoles with aryl halides using copper/glycerol as a mild and highly efficient recyclable catalytic system	Yadav, D.K.T., Rajak, S.S., Bhanage, B.M.	Tetrahedron Lett., 931-935, 2014
23	Copper bis(2,2,6,6-tetramethyl-3,5-heptanedionate)-catalyzed coupling of sodium azide with aryl iodides/boronic acids to aryl azides or aryl amines	Lanke, S.R., Bhanage, B.M.	Syn. Comm., 399-407, 2014
24	Pd/C: An efficient and heterogeneous protocol for oxidative carbonylation of diols to cyclic carbonate	Chavan, S.P., Bhanage, B.M.	Tetrahedron Lett., 1199-1202, 2014
25	Regioselective hydroformylation of vinyl esters catalyzed by Rh(acac)(CO)2 with simple and efficient diphosphinite ligands	Khan, S.R., Bhanage, B.M.	Cat. Comm., 109-112, 2014
26	Iron catalyzed efficient synthesis of 2-arylbenzothiazoles from benzothiazole and olefins using environmentally benign molecular oxygen as oxidant	Khemnar, A.B., Bhanage, B.M.	RSC Advances, 8939-8942, 2014
27	Shape selectivity using ionic liquids for the preparation of silver and silver sulphide nanomaterials	Patil, A.B., Bhanage, B.M.	Physical Chem. Chem. Physics, 3027-3035, 2014
28	Recent developments in palladium catalysed carbonylation reactions	Gadge, S.T., Bhanage, B.M.	RSC Advances, 10367-10389, 2014
29	Immobilized palladium metal containing ionic liquid catalyzed one step synthesis of isoindole-1,3-diones by carbonylative cyclization reaction	Khedkar, M.V., Shinde, A.R., Sasaki, T., Bhanage, B.M	J. Mol. Cat. A: Chemical, 91-97,2014
30	Ag@AgCl nanomaterial synthesis using sugar cane juice and its application in degradation of azo dyes	Kulkarni, A.A., Bhanage, B.M.	ACS Sustainable Chem. Eng., 1007-1013,2014
31	Application of lipase immobilized on the biocompatible ternary blend polymer matrix for synthesis of citronellyl acetate in non-aqueous media: Kinetic modelling study	Badgujar, K.C., Bhanage, B.M.	Enzyme and Microbial Tech.,16-25,2014

PROFESSOR S. D. SAMANT

No	Title of paper	Authors	Journal
1	Investigation of Diels Alder reaction of 4-styrylcoumarins with symmetrical dienophiles leading to 3-4 annulated coumarins	Sanap K. K., Samant S. D.	Journal of Heterocyclic Chemistry, 50, 713-719, 2013
2	Rac-4a,10b-cis,10b,5c-trans-5-(7-Methyl-2-oxo - 2H-chromen - 4 - yl)- 3, 4, 4a, 5, 6, 10b-hexahydro-2H-pyrano[3,2-c]quinoline, 10b-hexahydro-2H-pyrano[3,2-c]quinoline	Kayalvizhi, M., Vasuki, G., Samant, S. D., Sanap, K. K.	Acta Crystallographica, Section E: Structure Reports Online, 69, 280, 2013

3	New insights into the bifunctionality of vanadium phosphorous oxides: A chemical switch between oxidative scission and pinacol rearrangement of vicinal diols	Upadhyaya, D. J., Samant, S. D.	Catalysis Today, 208, 60-65, 2013
4	Morita-Baylis-Hillman reaction of benzaldehyde with methyl vinyl ketone at ambient temperature using cross-linked poly-4-vinylpyridine as a solid heterogeneous base catalysis in the presence of hydrogen peroxide (invited article in the special issue to commemorate Professor Sunil Talpatra's 80th Birthday)	Patil N. R., Kshirsagar S. W., Samant S. D.	J. Indian Chemical Society, 90, 1-10, 2013
5	Effect of different phases of Mg-Al Hydrotalcites, formed by calcination, on the Knoevenagel Reaction of benzaldehydes and malononitrile	Rohit Gupta, Kshirsagar S. W., Ladage Savita, Samant S. D.	SMC Bulletin,4, 29-33, 2013
6	1H NMR and X-ray crystallographic structure determination of 4aR*, 5R*, 10bR*-5-(7-methyl coumarin-4-yl)-3, 4, 4a, 5, 6, 10b- hexahydro-2H-pyrano [3,2-c] quinoline	Kayalvizhi M., Vasuki G., Samant, S. D., Sanap, K.K.	Physical Review and Research International, 4, 1-8, 2014
7	Application of Bayer-Villiger Reaction to the synthesis of Dibenzo-18-crown-6, Dibenzo-21-crown-7 and Dihydroxydibenzo-18-crown-6	Druman R. Utekar, S. D. Samant	J. Korean Chem. Soc., 58, 193-197, 2014
8	Facile intramolecular Diels-Alder reaction of 4-(O-propargyloxy) Styrylcoumarins leading to highly fluorescent coumarin containing polycylic compounds.	Adil I. Khatri and Shriniwas D. Samant	Tetrahedron Letters, 55, 2362-2365, 2014
9	Selective isomerization of p-diisopropylbenzene to m-diisopropylbenzene over metal modified Hβ-zeolites.	Mahesh Edake and Shriniwas D. Samant	Recent Patents in catalysis, 2013, 2, 130-141.
10	Unusual Tandem Oxidative C.C. Bond cleavage and Acetalization of Chalcone epoxides in the presence of Iodine in Methanol,	B.G. Jadhav, S.D. Samant	synlett, 2014, 1591-1595,
11	11. 3-Methylbenzo {1,2-c:5,4-c'} dichromen-6(8H)-one	M. Kayalvizhi, G. Vasuki, A.I. Khatri & S.D. Samant.	Acta cryst (2014), E70, o838

PROFESSOR R. V. JAYARAM

No	Title	Authors	Journal
1	Magnetically retrievable MFe2O4 spinel (M: Mn,Co, Cu, Ni, Zn) catalysts for oxidation of benzylicalcohols to carbonyls	Anand S. Burange, Sandip R. Kale, Radek Zboril, Manoj B. Gawande and Radha V. Jayaram	RSC Advances, 4, 6597-6601, 2014
2	A mild route for one pot synthesis of 5,6-unsubstituted 1,4-dihydropyridines catalyzed by sulphated mixed metal oxides	Sandeep S. Kahandal, Sandip R. Kale, Manoj B. Gawande, and Radha V. Jayaram	Catal Sci. Technol, 3, 672-680, 2014
3	A synthesis of copper based metal-organic framework for O-acetylation of alcohols	Savita J. Singh, Sandip R. Kale, Manoj B. Gawande, and Radha V. Jayaram	Cat. Comm., 44, 24-28, 2014
4	Oxidation of benzylic alcohols to carbonyls using tert-butyl hydroperoxide over pure phase nanocrystalline CeCrO3	Anand S. Burange, Radha V. Jayaram, Rakesh Shukla, Avesh K. Tyagi	Cat. Comm., 40, 27-31, 2013
5	Photocatalytic degradation of paracetamol	Dewoolkar, K. D. and Jayaram, R. V.	International J Biotec. Chem. Environmental Engg., 2(1), 2013
6	Photocatalytic degradation, of diclofenac	Dewoolkar, K. D. and Jayaram, R. V.	International J. Biotech. Chem. Environmental Engg., 3(3), 2013

DR. J. M. NAGARKAR

No	Title	Authors	Journal
1	One-pot synthesis of nitriles from aldehydes catalyzed by deep eutectic solvent	Patil, U.B., Shendage, S.S., Nagarkar, J.M	Synthesis, 45 (23), 3295-3299, 2013
2	Palladium supported on zinc ferrite: An efficient catalyst for ligand free C-C and C-O cross coupling reactions	Singh, A.S., Shendage, S.S., Nagarkar, J.M.	Tetrahedron Lett.,54(47), 6319-6323, 2013
3	Nano ceria catalyzed synthesis of substituted benzimidazole, benzothiazole, and benzoxazole in aqueous media	Shelkar, R., Sarode, S., Nagarkar, J.	Tetrahedron Lett., 54 (51), 6986-6990, 2013
4	Choline chloride based eutectic solvent: An efficient and reusable solvent system for the synthesis of primary amides from aldehydes and from nitriles	Patil, U.B., Singh, A.S., Nagarkar, J.M.	RSC Advances. 4(3), 1102-06, 2014

5	Facile approach to the electrochemical synthesis of palladium-reduced graphene oxide and its application for Suzuki coupling reaction	Shendage, S.S., Singh, A.S., Nagarkar, J.M.	Tetrahedron Lett., 55(4), 857-860, 2014

DR. ANANT KAPDI

No.	Title	Authors	Journal
1	A Bio-degradable and Recyclable Phase Transfer Catalyst for Microwave Assisted Synthesis of Highly Substituted Dicoumarols.	A. R. Kapdi, C. Jain, T. Padte, U. Shevde, S. Pednekar, C. Fischer and C. Schulzke	Int. J. Green Chem. Bioprocess, 3, 17-23, 2013
2	Efficient synthesis of coumarin-based tetra and pentacyclic rings using phospha-palladacycles	A. R. Kapdi, A. Karbelkar, M. Naik, S. Pednekar, C. Fischer, C. Schulzkec and M. Tromp	RSC Advances, 3, 20905-20912, 2013
3	Organometallic aspects of transition-metal catalysed regioselective C–H bond functionalisation of arenes and heteroarenes	Kapdi, A. R.	Dalton Trans., 43, 3021-3034, 2014
4	New water soluble Pd-imidate complexes as highly efficient catalysts for the synthesis of C5-arylated pyrimidine nucleosides	Kapdi, A. R., Gayakhe, V., Sanghvi, Y. S., García, J., Lozano, P., da Silva, I., Pérez, J. and Luis Serrano, J	RSC Advances, 4,17567-17572, 2014
5	Anti-cancer palladium complexes: a focus on PdX 2 L 2, palladacycles and related complexes	Kapdi A. R., Fairlamb, I. J. S.	Chem. Soc. Rev., 43, 4751-4777, 2014

PATENTS

PROFESSOR B. M. BHANGE

An improved method for benzimidazole synthesis from 2-haloaniline, dihalomethane and sodium azide in presence of copper complex catalyst.

S.R. Lanke, B.M. Bhanage Indian Patent Appl., 2450/MUM/2013, 2013.

DR. J.M. NAGARKAR

An improved method for the synthesis of azobenzene from nitrobenzene and sodium hydroxide. Sitaram H. Gund, Jayashree M. Nagarkar, Indian Patent Appl.,1421/MUM/2014, 2014.

BOOK CHAPTERS

PROFESSOR B.M. BHANAGE

Book edited:

Transformation and Utilization of Carbon Dioxide
Editors: Bhalchandra M. Bhanage & Masahiko Arai
Series: Green Chemistry and Sustainable Technology Hardcover: 461 pages Publisher: Springer; 2014 edition (January 31, 2014)
ISBN-10: 3642449875; ISBN-13: 978-3642449871

Book chapters:

1. Multiphase catalytic reactions in/under dense-phase carbon dioxide: Utilzation of carbon dioxide as a reaction promoter, H. Yoshida, S. Fujita, M. Arai*, B.M. Bhanage, Chapter No. 14, in B.M. Bhanage, M. Arai (Eds), Transformation and Utilization of carbon dioxide, Green Chemistry and sustainable technology, DOI 10.1007/978-3-642-44988-8_14, Springer-Verlag, Berlin Heidelberg 2014.
2. Indirect utilization of carbon dioxide to value added products over heterogeneous catalysis, R.A, Watile, B.M. Bhanage*, S. Fujita, M. Arai, Chapter No. 3, in B.M. Bhanage, M. Arai (Eds), Transformation and Utilization of carbon dioxide, Green Chemistry and sustainable technology, DOI 10.1007/978-3-642-44988-8_3, Springer-Verlag, Berlin Heidelberg 2014.
3. Direct transformation of carbon dioxide to value added products over heterogeneous catalysis, S. Fujita*, M. Arai and B.M. Bhanage, Chapter No. 2, in B.M. Bhanage, M. Arai (Eds), Transformation and Utilization of carbon dioxide, Green Chemistry and sustainable technology, DOI 10.1007/978-3-642-44988-8_2, Springer-Verlag, Berlin Heidelberg 2014.
4. Applications of zinc oxide, K.D. Bhatte, B.M. Bhanage* Chapter No. 4, in Nanoparticles for Catalysis, Energy and Drug Delivery, R.S. Chaughule, A.R. Kapdi (Eds). ISBN: 1-58883-183-3, American Scientific Publishers, 2014.

PROFESSOR S. D. SAMANT

1. Ethnopharmacology and Ethnomedicine of Metals, Jayant Lokhande, Shriniwas Samant, Ganesh Shinde, and Yeashwant Pathak, in Handbook of Metallonutraceuticals, CRC Press, Book Chapter; eds. Yashwant Vishnupant Pathak, Jayant N. Lokhande, April 28, 2014.

DR. ANANT KAPDI

1. Kapdi, A. R., Chaughule, R. S., Nanotechnology: Bridging Aspects of Catalysis, Energy and Drug Delivery Contents and Scope: Nanoparticles for Catalysis, Energy and Drug Delivery (Eds.: R. G. Chaughule and A. R. Kapdi) American Scientific Publishers, 2014.
2. Kapdi, A. R. In Metal Nanoparticles: Green Catalysis in Water- Nanoparticles for Catalysis, Energy and Drug Delivery (Eds.: R. G. Chaughule and A. R. Kapdi) American Scientific Publishers, 2014.

DR. K. VIJAY

1. Ruthenium Nanoparticles: Synthesis and Applications, Vijay Kumar A., in the Book Entitled: Nanoparticles for Catalysis, Energy and Drug Delivery, Hardcover ISBN: 1-58883-183-3, March 2014.

LECTURES DELIVERED OUTSIDE ICT

PROFESSOR B. M. BHANAGE

1. Green Technology and catalysis in Dyestuff industries, an invited talk at seminar on "Applications of green chemistry in the colorant industry" held on 20th September 2013 at Hotel Sea Princess, Juhu, India, organized by The Dyestuff Manufacturers Association of India.
2. Homogeneous Catalysis, an invited talk as a resource person in Refresher course in Chemistry, sponsored by UGC-Academic Staff College, University of Pune, on 28th November, 2013.
3. Catalytic application of carbon dioxide in organic synthesis for valuable chemicals, an invited talk at UGC sponsored national seminar on "Green Chemistry: A route to sustainable development" at M.D. College, Parel, 3rd December 2013.
4. Enzymatic Catalysis: Immobilization and chemical transformation,an invited talk at Indo-Canadian Session at CHEMCON-2013 at Institute of Chemical Technology, Matunga, Mumbai, 28th December 2013.
5. Catalytic Applications of carbon dioxide in organic synthesis for valuable chemicals, an invited talk at 16th National Workshop on Catalysis for Sustainable development, February 4-5, 2014 at CSIR-National Environmental Engineering Research Institute (NEERI), Nagpur.
6. "Introduction to Green Chemistry" an invited talk as resource person for the refresher course in Environmental Studies:Sustainable Management of Ecosystem" under the aegis of UGC Academic Staff College, University of Mumbai at B.N. Bandodkar College of Science, Thane on 13th Feb 2014.
7. Green Organic Processes, an invited talk at Two-day awareness seminar on 'GREEN CHEMISTRY & ENGINEERING" on 22-23rd April 2014 at BATU, Lonere, organized by Indian Chemical Council and Green Chem Tree Foundation.
8. Chemical Transformations using carbon monoxide and carbon dioxide, an invited talk at The Department of Chemistry, University of Tokyo, Japan, 8th May 2014.
9. Chemical Transformations using carbon monoxide and carbon dioxide, an invited talk at The Department of Chemical Engineering, Hokkaido University Japan, 13th May 2014.

Invited talk on "Nanomatierials, ionic liquids and its catalytic applications" at two day workshop on Ionic conduction: Electron conduction; mircofluidics sponsored by TEQIP at PSG College of Technology, Coimbatore -614004.

PROFESSOR S.D. SAMANT

1. Lecture delievered at Safety Workshop in ICT, Mumbai. (18th -19th March 2014).
2. Lecture delievered to T.Y.B.Sc. students on Spectroscopy at Ruia College, Matunga, Mumbai. (7th February 2014)
3. Delivered Lecture on 'Solid acid and bases' in UGC sponsored refresher course for college teachers, Depratment of Chemistry, University of Mumbai, (26th November 2013)
4. Delievered lecture on 'Clays in organic synthesis' in National Workshop on Materials Chemistry at BARC, Mumbai. 23.11.2014 (22nd-23rd November 2013)
5. Delivered an Invited Lecture in National Convention of Chemistry Teachers 2014 at Annamalai University, Chidambaram, on solid acids and bases. (10th Nov 2013)

6. Delivered lectures on Reaction Mechanism at Vaze College to B.Sc. students, 24th October 2013
7. Delivered lecture on Teaching, learning at Central University of Rajasthan, 4.10.2013
8. Delivered two lectures at KTHM College, Nashik, 1. Higher Education 2. Kinetic and Thermodynamic Controls, 9th Aug 2013.
9. Delivered lectures on Sustainabilty, Selectivity, in UGC sponsored Refresher Course for College Teachers at Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. (20th July 2013)
10. Delivered Lectures at training Camp for Indian team participating in International Chemistry Olympiad. 29th June 2013
11. Delivered Lecture at Khalsa College on Chemical bonding to B.Sc. students. May 2013
12. Delivered lecture in Orientation cum selection camp at HBCSE. May 2013.
13. Delivered a lecture in Teaching-Leraning workshop, ICT, 29th March 2014.
14. Delivered a series of lectures in Fermenich, Dahej, Bharuch, on Reaction mechanism, 25-26 April 2014.

DR. J. M. NAGARKAR

1. Biopestisides Formulatios, 4th International Conference on Ecotoxicology & Environmental Science, ICEES-2011 held at the Programme Centre, New Delhi, 17-19 February 2014
2. Waste management, Safety Workshop, Institute of Chemical Technology, 18-19 March 2014.

DR. ANANT R. KAPDI

1. Palladacycles in synthesis, DST Fast Track workshop on group monitoring, NIIST Trivandrum, 28th January 2014.
2. Handling Dangerous Chemicals, Laboratory safety workshop for doctoral students, ICT, 19th March 2014

DR. KAUSTUBH A. JOSHI

1. Computational Chemistry - Making Chemistry easy, National Conference on Drug Designing and Discovery, Research laboratory in heterocyclic chemistry, Department of Chemistry, Devchand College, Arjunnagar, Kolhapur, 6-7 September 2013.
2. An Introduction to Computational Chemistry, Acharya Marathe College of Science and Commerce, Chembur, January 24, 2014.

ENDOWMENTS

1. One of the alumni of our Institute Mr. Kaushik Laijawala has established an endowment "CMP Endowment" for the Department of Chemistry, in 2011. Various activities were arranged in the Department under this endowment.
2. The Department has the other endowments to support various activities:
   - Dai-Ichi Karkaria Visiting Fellowship Endowment
   - Daramasi Moraraji Chemical Co. Visiting Fellowship endowment
   - Spinco-Biotech Ramanathan Endowment
   - G.D. Gokhale Endowment

M.SC. PROJECTS

No	Research Scholar		Thesis Title
1	Ashish Mishra	B.M. Bhanage	Magnesium oxide as heterogeneous and Recyclable base for N-methylation of indole and O-methylation of phenol using Dimethyl carbonate as green methylating agent
2	Pranjali Naik	B.M. Bhanage	Copper iodide catalysed amination of iodobenzene to aniline
3	Harshal Jawale	B.M. Bhanage	Studies of poly vinyl alcohol and Chitosan based immobilised lipase for synthesis of anisyl propionate characterisation,activity,optimization and application studies
4	Vrushali Raut	S.D. Samant	Studies in the Synthesis of Quinolines by the reaction of aniline with carbonyl compounds
5	Nidhi Gaur	S.D. Samant	Synthesis and UV spectrum studies of 3-styryl coumarins
6	Vishnu Koli	S.D. Samant	Study on Alkylation and Allylation of Phenols and Bis-phenols
7	Sanhita Chandorkar	Radha V. Jayaram	Synthesis and catalytic application of Cu-Fe bimetallic nanoparticle
8	Disha Lakhani	Radha V. Jayaram	Recovery of Phosphomolybdate
9	Dipali Kedar	Radha V. Jayaram	Application of supported metal catalysts
10	Shilpa Nath	J.M. Nagarkar	Study of Various Electrocatalysts for the Electrochemical oxidation of ethanol and methanol
11	Prathamesh Asinkar	J.M. Nagarkar	Emulisification of vegetable oil by using bio based surfactant
12	Prayag Sawant	J.M. Nagarkar	An efficient magnetic Cu-Fe2O4 nanoparticle for synthesis of N-aryl amide ligand free condition
13	Ujjwal Bhojane	Anant Kapdi	Synthesis of Di aryl methanols by arylation of aldehydes
14	Sudheer Kurup	Anant Kapdi	Synthesis of coumarin based Fluorescent molecules via palladium catalysed Suzuki-Miyaura cross Coupling reactions
15	Kajal Jaiswal	Anant Kapdi	Greener Approach towards regioselective Arylation via Suzuki-Miyaura Cross coupling reaction
16	Amol Chavan	Anant Kapdi	Novel pyridine based N-Heterocycle carbene ligands for efficient Suzuki –Miyaura Cross coupling
17	Ashish Nag	Vijay Kumar A.	Modified Carbon catalysts for organic Transformations
18	Karishma Singh	Vijay Kumar A.	Iron based catalytic systems for α-amino nitriles of tertiary amines
19	Priyanka Gajbhiye	Vijay Kumar A.	Copper catalysed synthesis of 4(3H)-Quinazolinone derivatives using the ullmann type coupling
20	Jyoti Dutta	Vijay Kumar A.	Recyclable copper catalysed synthesis of isocoumarins

M.TECH. (GREEN TECHNOLOGY) PROJECTS (2013-14)

No.	Research scholar	Guide	Research topic
1	Rakesh Jain	B.M. Bhanage	Magnetic solid phase extraction techniques for the separation of trivalent metal ions from nuclear waste
2	Neha Gharat	B.M. Bhanage	Studies in Enzymatic Catalysis
3	Shivkumar Chourasiya	B.M. Bhanage	Studies on the feasibility of using completely incinerable reagents for the single cycle separation of americium (III) from simulated high level liquid waste
4	Salavi Harshada	Radha V. Jayaram	Reactive extraction of acrylic acid using different extractants
5	Uppin Swati	Radha V. Jayaram	Liquid phase selective transfer hydrogenation by heterogeneous catalysis
6	Pawar Prathamesh	Radha V. Jayaram	Treatment of oil spill by surface modified fly ash

DOCTORAL RESEARCH PROJECTS

No.	Research Scholar	Research Guide	Research Topic
1	Rahul A. Watile	B. M. Bhanage	Utilisation of Carbon dioxide for synthesis of valuable chemicals
2	Shoeb R. Khan	B. M. Bhanage	Hydroformylation reactions for synthesis of fine chemicals
3	Aniruddha B. Patil	B. M. Bhanage	Synthesis of nanoparticles for application in organic synthesis with kinetics of reaction
4	Satish R. Lanke	B. M. Bhanage	Coupling ractions in organic synthesis
5	Dattatraya B. Bagal	B. M. Bhanage	Research in hydrogenation reaction for organic synthesis
6	Ganesh V. More	B. M. Bhanage	Research in Asymmetric catalysis
7	Kirtiikumar C. Badgujar	B. M. Bhanage	Research in Biocatalysis (Hydrolases) for organic synthesis
8	Ashok B. Khemnar	B. M. Bhanage	C-H activation strategies for organic synthesis of valuable chemicals
9	Sandip T. Gadge	B. M. Bhanage	Studies in carbonylation reactions in organic synthesis
10	Dilipkumar Yadav	B. M. Bhanage	Studies in amination reaction in organic synthesis
11	Manohar A. Bhosale	B. M. Bhanage	Synthesis and Application of nanomaterials for organic transformations
12	Kishor V. Wagh	B. M. Bhanage	Synthesis of ionic liquids and its applications for organic reactions
13	Deepak B. Nale	B. M. Bhanage	Research in Carbon dioxide fixation for synthesis of valuable chemicals
14	Sujit P. Chavan	B. M. Bhanage	Research in transition metal catalyzed carbonylation reaction for organic synthesis
15	Nilesh M. Patil	B. M. Bhanage	Studies in hydrogenation reactions in organic synthesis
16	Anand A. Kulkarni	B. M. Bhanage	Preparation of nanoparticles & their applications in organic transformations
17	Amol B. Patil	B. M. Bhanage	Electrodeposition of metals using ionic liquids.

18	Subhash L. Yedage	B. M. Bhanage	Studies in amination reactions using transition metals as catalysts
19	Rajendra S. Mane	B. M. Bhanage	Studies in Carbon monoxide fixation reactions for synthesis of fine chemicals
20	Aravind L. Gajengi	B. M. Bhanage	Studies in Nanoparticles Synthesis
21	Sachin Bhagade	B. M. Bhanage	Studies in hydroformylation reactions for the synthesis of fine chemicals
22	Prashant Gautam	B. M. Bhanage	Studies in carbonylation reactions in organic synthesis
23	Vitthal Saptal	B. M. Bhanage	Carbon dioxide fixation for the synthesis of valuable chemicals
24	Samadhan Jagtap	B. M. Bhanage	Studies in hydroformylation reactions for the synthesis of fine chemicals
25	Abhishek Tiwari	B. M. Bhanage	Studies in Amination reactions
26	Anil Satpathy	B. M. Bhanage	Transition Metal catalysed polymerization & depolymerization reactions
27	Vijyesh Vyas	B. M. Bhanage	Studies in asymmetric catalysis
28	Leena Patil	S. D. Samant	Studies in the Synthesis of Nucleoside Analogues
29	Druman Utekar	S. D. Samant	Synthesis of Crown Ether Derivatives
30	Mahesh Edake	S. D. Samant	Development of Heterogeneous acid catalysts and their applications in Aromatic Electrophilic Reactions
31	Nanabhau Karanjule	S. D. Samant	Development of new strategies for the heterocycle synthesis by using solid base catalysts
32	Balasaheb Jadhav	S. D. Samant	Study of ring opening reactions of epoxides for developing new pathways for structurally and functionally important compounds
33	Adil Khatri	S. D. Samant	Studies in the synthesis of polycyclic heterocyclic compound containing pyran moiety.
34	Nilesh Korgaonkar	S. D. Samant	Development of polymeric and matrix entrapped solid bases for base catalyzed organic reactions.
35	K. Vijay	S. D. Samant	Synthetic modifications and applications of industrial heterocyclic intermediates containing nitrogen and sulphur for diversity oriented synthesis.
36	Prateek Jain	S. D. Samant	Preparation and application of modified metal oxide catalysts for organic synthesis.
37	Kurhe Deepak	R. V. Jayaram	Synthesis, characterization and application of functional polymer
38	Kadam Ravishankar	R. V. Jayaram	Application of metal supported catalyst in organic synthesis
39	Deore Tushar	R. V. Jayaram	Functional surfactants in organic synthesis
40	Tayade Meenakshi	R. V. Jayaram	-------
41	Fernandes Thomson	R. V. Jayaram	Recovery of metals from spent catalysts
42	Katkar Suyog	R. V. Jayaram	Catalysis by Bimetallic nano particles
43	Suresh S. Shendage	J. M. Nagarkar	Study of Transition, inner transition metals & complexes in catalysis

44	Umakant B. Patil	J. M. Nagarkar	Application of deep eutectic solvent in organic transformation
45	Radheshyam S. Shelkar	J. M. Nagarkar	Study in C-C and C-N bond formation reaction in organic transformation
46	Abhilash S. Singh	J. M. Nagarkar	Study in C-C and C-O bond formation reaction in organic transformation
47	Sachin S. Sarode	J. M. Nagarkar	Synthesis and applications of Nanomaterials as Catalyst in Organic Transformations
48	Vilas G. Jadhav	J. M. Nagarkar	Study of supported metals and metals oxides and their applications in organic transformations
49	Jeevan M. Bhojane	J. M. Nagarkar	Studies of transition metals and metal complexes in the C-C, C-N and C-S bond formation in the organic synthesis
50	Sitaram H. Gund	J. M. Nagarkar	-
51	Kishor E. Balsane	J. M. Nagarkar	-
52	Mr. Ajaykumar V. Ardhapure	A. R. Kapdi	Development of novel route for the synthesis of substituted Nucleosides by using transition metal-catalysed reactions
53	Mr. Dharmendra S. Prajapati	A. R. Kapdi	Synthesis and Application of novel metallacycles in organic synthesis.
54	Mr. Gopal L. Dhangar	A. R. Kapdi	Metal mediated coupling reactions under mild conditions.
55	Mr. Mahendra R. Patil	A. R. Kapdi	Supramolecular polyoxometalate structures synthesis and application for various catalytic organic transformation.
56	Mr. Vaibhav B. Sable	A. R. Kapdi	Metal-mediated Synthesis and Application of (Hetero)aromatic Aldehydes.
57	Mrs. Vidya Zende	A. R. Kapdi	Synthesis of novel ligands and applications in various organic reactions
58	Mr. Vijay Gayakhe	A. R. Kapdi	Greener approaches towards metal-mediated synthesis of important heterocycles
59	Abhishek V. Dubey	Vijay Kumar A.	Surrogate Reagents for Organic Synthesis
60	Prashant Mandal	Vijay Kumar A.	Coumarin based derivatives Synthesis
61	Rani Patil	Vijay Kumar A.	New Methods of Synthesis for Bioactive Organic Moieties.
62	Sagar Patil	Dipanwita Das	DNA Binding and Photocleavage Studies of Functionalized Ruthenium Polypyridyl Complexes
63	Mangesh Potangale	Shraeddha Tiwari	Application of vibrational spectroscopic techniques to understand intermolecular interactions in ionic liquids
64	Arun Valvi	Shraeddha Tiwari	Reactivity studies on nucleophilic aromatic substitution reactions
65	Snehal Ingle	Kaustubh Joshi	Exploring Quantum Chemical and molecular mechanics approach to find novel inhibitors for Osteoporosis target

M.SC. (CHEMISTRY) PROGRAMME

Royal Society of Chemistry Accreditation

The post B.Sc. four-semester M.Sc. (Chemistry) degree programme of the Department has recently been accredited by the Royal Society of Chemistry (RSC), UK (June 2014). This is the second master's programme accredited by the RSC in India; the first being of IISER, Pune. The RSC gives recognition to some degree programmes internationally based on the quality of the programmes. It is an international recognition of the quality of the programme; and is particularly important on the background that no parallel accreditation system exists in our country. This is doubly delighting as the said programme has been instituted by the ICT only four years back in 2010.

The accreditation is granted after a thorough quality checking by the RSC. The steps are discussion of the RSC qualified staff with the faculty, submission of detailed self assessment report with supporting material, responding the queries, and campus visit of assessors from RSC. The assessors visited the Department on 31st March 2014. They saw te facililties, interacted with the faculty and the students, and inspected all records. The criteria and key requirements are sound admission process, depth of knowledge of the students, particularly their ability to solve problems; practical skills developed, research training through substantial project, outcome of which should be publishable; appropriate and rigorous assessment of students, especially to solve problems and apply knowledge; and quality assurance mechanism.

The recognition leads to enhancement of standards of chemistry education. This is important on the background of declining interest of our students in pure science. It proclaims the quality of the programme and in turn would attract quality students and gives them an assurance in this competitive market. It is recognition of high standards, global practices, effective training, and an indicator of a global comparison among high performing institutions. This may help the students to participate in exchange programmes, better interaction with industry partners, and increased access to chemical information.

The summary of the results of the M.Sc. (Chemistry) students

Fourth Semester result

Total candidates appeared-19
Total candidates passed-19
Candidates passed with distinction-7
Candidates passed with a first class-9
Candidates passed with a second class-2
Candidates passed with a pass class-1

Second Semester result

Total candidates appeared-20
Total candidates passed-20
Candidates passed with distinction-4
Candidates passed with a first class-11
Candidates passed with a second class-5
Candidates passed with a pass class-0

VISITING FACULTY

During the year the following visiting faculty assisted us in teaching

Name	Affiliation	Course	Class/Sem
Dr. S. S.Mangaonkar	Department of Chemistry, Mithibai College, Vileparle, Mumbai	Chemistry of Main Group Elements	M.Sc., Sem-I
Dr. Hemant Khanolkar	Department of Chemistry, Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai.	Chemical Thermodynamics & Phase Equilibrium	M.Sc., Sem-I
Dr. Indraneel Chatterjee		Material and Energy Balance	M.Sc., Sem-I
		Fundamentals of Fluid Flow & Heat Transfer	M.Sc., Sem-II
Dr. Bipin Mehta		Material Chemistry	M.Sc., Sem-I
Mrs. Gomathi Shridhar	Department of Chemistry, V.K. Menon School & College, Bhandup, Mumbai	Advanced Spectroscopy	M.Sc., Sem-III
Mrs. Elizabeth Joseph	Department of Chemical Engineering, Thadomal Sahani College of Engineering, Bandra, Mumbai.	Separation Chemistry	M.Sc., Sem-III
Dr. Lakshmy Ravishankar	Department of Chemistry, V.G.Vaze College, Mulund, Mumbai.	Radical, Photochemistry & Pericyclic Reactions	M.Sc., Sem-III
Dr. Veena Khilnani	Department of Chemistry, K. J. Somaya College, Vidyavihar, Mumbai.	Inorganic Chemisttry	F.Y.B.Pharm Sem-I
Dr. Tanuja Parulekar	Department of Chemistry, SIWS College, Wadala, Mumbai.	Organic Chemistry	F.Y.B.Pharm Sem-I
Mr.Abhimanyu Yadav	Department of Chemistry, G. N. Khalsa College, Matunga, Mumbai.	Inorganic Chemisttry	F.Y.B.Chem. Eng & B.Tech. Sem-I
Mrs.Mahalaxmi Nadar	Department of Chemistry, SIES College,Sion, Mumbai.	Physical Chemistry Laboratory	M.Sc., Sem-I
Dr.P.P.Tekale	Department of Chemistry, G. N. Khalsa College, Matunga, Mumbai.	Instrumental Methods of Analysis	M.Sc., Sem-II
Dr.Chitra Kamath	Department of Chemistry, K. J. Somaya College, Vidyavihar, Mumbai.	Bioorganic Chemistry	M.Sc., Sem-IV
Professor V. V.Mahajani		Chemical Project Economics	M.Sc., Sem-IV

ENDOWMENT AND OTHER LECTURES ARRANGED

Endowment/ Programme	Speaker	Affiliation of speaker	Date	Topic
G. D. Gokhale Endowment Lectureship	Dr. Anil Sinha	Principal Scientist. Catalytic Conversion & Process Indian Institute of Petroleum, Dehradun	22nd Nov. 2013	Carbon-Carbon Bond Forming Reactions for Biomass Utilization Processes
UGC-SAP-DRS-I Programme	Dr. Edmond Gravel	Researcher, CEA, France	22nd Nov. 2013	Carbon Nanotube-Gold Nanohybrids: Design Synthesis and Evaluation as Heterogeneous Catalysts
UGC-SAP-DRS-I Programme	Dr. Mahesh Laxman	Professor, Dept. Of Chemistry, The City College & The City Univ. of New York	26th Nov. 2013	Chemistry for Modifications of Nucleosides & Methodologies for Organic Syntheses
	Dr. Ashwin P. Patwardhan	Dept of Chem. Engg, ICT	14th August 2013	Chemical Engineering for Chemists
Golden Jubilee Endowment	Dr. Atsushi Fukuoka	Professor & Director, Catalysis Research Center, Hokkaido Univ., Japan	30th Nov. 2013	Depolymerization of cellulosic biomass by heterogeneous catalysts
B.D.Tilak Endowment	Dr. Shin-Ichiro Fujita	Division of Chemical Process, Graduate School of Engineering, Hokkaido Univ., Japan	16th Jan. 2014	Impact of CO2 Pressurization on Liquid Phase Hydrogenation Reactions producing Aromatic Amino compounds
Dharamsi Morarji Chemical Co.Visiting Fellowship	Dr. Kannan Srinivasan	Sr. Principal Scientist, Central Salt & Marine Chemicals Research Institute, Bhavnagar, Gujarat	3rd Feb. 2014	Heterogeneous Catalytic Conversion of Biomass to Fuels and Chemicals
Golden Jubilee Visiting Lectureship Endowment	Professor Takehiko Sasaki	Dept. Of complexity Science & Engineering, Graduate School of Frontier Sciences, Univ. Of Tokyo, Japan	18th Feb. 2014	Catalytic Study for Immobilized Palladium ion containing Ionic Liquid & DFT analysis for Phenol synthesis with Pt Catalysts

Golden Jubilee Visiting Lectureship Endowment	Professor S. Chandrasekaran	Professor, Dept of Organic Chemistry & Chairman & Honorary Professor, Division of Chemical Sciences, Indian Institute of Sciences, Bangalore	4th Mar. 2014	Chief Guest for Catalysis Scholars' Meet (CATSCHOL - 2014)
Dai-ichi Karkaria Ltd.Visiting Fellowship	Dr. Kulamani Parida	Chief Scientist & Professor (AcSIR), Colloids & Materials Chemistry Department, CSIR-Institute of Minerals & Materials Technology, Bhubaneshwar, Orissa	13th Mar. 2014	Development of π-conjugated Graphitic Materials for conversion of solar energy to chemical energy
G.D.Gokhale Endowment	Dr. M.S. Balkrishna	Department of Chemistry, IIT, Bombay	8, 9 April 2013	(i) Structure, Bonding & Reactivity of the Transition Metal Complexes to get an insight into the ligand design for catalytic applications (ii) Simple tertiary phoshines to polydentate with hemilabile functionalities: Synthesis,Transition Metal Chemistry & Catalytic Applications
	Dr. Paul Lickiss	Professor, Inorganic Chemistry Division, Imperial College, London, UK	31st Mar. 2014	Metal Organic Framework
	Dr. Paul Stevenson	Professor, Organic Chemistry Department, Queens University, Belfast, Northern Ireland	31st Mar. 2014	Chemoenzymatic Synthesis of Natural Products

Spinco-Biotech Ramanathan Endowment	Dr. M. L. Kubal	Industrial Consultant, Ahmedabad	29th April 2014	Development of Chromatography
			30th April 2014	HPLC-Useful tool for Impurity Profiling
			30th April 2014	ICP-Emission Spectroscopy

REPORTS OF SEMINARS/ WORKSHOPS/ SYMPOSIA ARRANGED BY THE DEPARTMENT

CONTECH 2014

The concept test in Chemistry (CONTECH 2014) was conducted by the Department in collaboration with the Association of Chemistry (ACT) on 18th January 2014, to test the basic understanding of Chemistry of undergraduate and postgraduate students. This test is conducted every year by the Department for last 6 years with very good response from the students; mainly UG students. Professor S.D. Samant coordinated this sctivity. About 100 students took the examination. Mr. Harshawardhan Shrivastava, Mr. Soham Shah & Mr.Omkar Bhatavdekar secured first, second & third rank respectively. They were felicitated with prizes in the form of books and certificate at the Institute's Annual Day Function. Remaining participants who passed this test were also given a participation certificates.

NET/SET ORIENTATION WORKSHOP

An orientation course for the CSIR/UGC – NET/SET exam was organized by the department on 25th and 26th February 2014 . The workshop was funded by the TEQIP II. Dr. Kaustubh Joshi conducted this acxtivity. It was open to the M.Sc. and Ph.D. students of the department of chemistry as well as other interested students from other departments. As many as 60 students registered, while few more last minute entries were accepted on the day of the workshop.

The basic theme behind the workshop was to create an opportunity for the CSIR-UGC aspiring students to interact with the Ph.D. students of the department who recently successfully cleared this exam. These students shared different tricks and trades of the exam which could prove useful to all the students while preparing for the upcoming competitive exam.

A series of lectures were conducted over two days spanning eight sessions, covering different topics in the area of chemistry known to be very important from the point of view of CSIR-UGC-NET examination. All the lectures were designed to be interactive in nature making the students to interact and get their queries right during the lectures.

Towards the end of the workshop, a one hour test on the lines of CSIR-UGC-NET exam format was conducted based on the topics covered during different sessions.

Mr. Abhishek Dubey, Mr. Samadhan Jagtap, Mr. Kirtikumar Badgujar, Mr. Gopal Dhangar, Mr. Nanabhau Karanjule, Mr. Vilas Jadhav, Mr. Sandeep Gadge, Mr. Nilesh Korgaonkar, Mr. Balaso Jadhav, Mr. Rajendra, Mr. Abhishek Tiwari, Mr. Subahash Yedage, Mr. Mahendra Patil, Mr. Ajay Ardhapure and Mr. Sachin Bhagade delivered lectures on various topics.

RASAYANAM 2014

Rasayanam 2014 was held on 3rd March 2014. 161 individuals from across 19 institutes of Mumbai participated in the event. Dr. A.R. Kapdi was the convenor. Gaikar was the Chielf Guest and inaugurated the event.

In the first session events like 'What The Fun', a refreshing out-of-the-box quiz competition

exclusive to undergraduates and 'The Pundits' exclusively for postgraduates were organized. 32 teams of 2 students each participated in the 'What The Fun'. 16 teams of 2 each had participated in 'the Pundits' event. This was a neck to neck competition and after around 2 hours of buzzers and questions and answers, the winners were declared.

After the Chem-Crossword solving elimination round, 6 teams made it to the the finals. This event left everyone, including the finalists and the eliminated audience, happy, refreshed and with a little enhanced knowledge of Chemistry. This is what we call –'Purpose Served'.

One of the main highlights of Rasayanam 2014 was 'Rasayan Mela'. Stalls were setup for demonstrating rather interesting, colorful and full of knowledge Chemistry Experiments. This was indeed a crowd magnet, everyone from faculties to research scholars to participants to non-participants, wanted a glimpse of experiments being demonstrated.

In the second post-lunch session, a poster competition named, 'Chemdraw v2.0.1.4' was held for the 1st time in Rasayanam, which was a perfect blend of innovative art and chemistry put together. 11 teams of two each had participated in the event. Lastly 'ChemShod – The Treasure Hunt' an all innovative treasure hunt where all the clues were Chemistry based was conducted. The response for the event was so huge that the event had to done twice to accommodate as many participants possible. The uniqueness and the atmosphere generated by ChemShodh ended Rasayanam 2014 on a real high note, for both the organizers and especially the participants.

The whole event was conducted by the students of M.Sc. Chemistry, all 40 put together with the support of the Department of Chemistry.

CATSCHOL 4TH MARCH 2014

Another event "Catschol-2014", a chemistry research conference for research students was also organized by the department of Chemistry on the 4th of March 2014. In this event, posters and oral presentations were presented by the students of the department. Prizes were given to 2 best posters and to the best oral presentation. Mr. Kirtikumar Badgujar and Mr. Mahesh Edake were awarded first and second prizes respectively, for their research presentations.

LABORATORY SAFETY WORKSHOPS FOR PH.D. STUDENTS

The Department conducted a two-day Workshop on Laboratory Safety for the PhD students on 18th and 19th of March 2014, with the aim of creating a general awareness about common laboratory safety issues. The workshop focused on sensitizing the students towards potential hazards in a chemical / biochemical laboratory and providing them with the technical know-how to prevent and manage potentially dangerous situations. The workshop included lectures and interactive sessions by various experts from the academia and industry in addition to first aid and fire fighting demonstrations.

The workshop was organized under the auspices of Technical Education Quality Improvement Program – Phase II (TEQIP – II) and was also supported by the UDCT Alumni Association (UAA). Dr. J.M. Nagarkar was the convenor and Dr. Shaeddha Tiwari was the co-convenor of the workshop. As many as 124 students registered. The participants were provided with a manual on Laboratory Safety as a part of the registration kit, which was sponsored by UAA.

The inaugural session of the workshop was chaired by Professor B. M. Bhanage (Head, Department of Chemistry, ICT) and the workshop was inaugurated by Professor S. D. Samant (Department of Chemistry, ICT). Professor Samant gave an overview of the safety and related issues during his inaugural address and emphasized the importance of the various topics scheduled

for discussion in the next two days.

The workshop began with a lecture on "Personal Protective Equipments" by Professor R. V. Jayaram (Department of Chemistry, ICT). This was followed by a lecture on "Laboratory Waste Management" by Dr. J. M. Nagarkar (Department of Chemistry, ICT). The two lectures were followed by an interactive session moderated by Dr. Anant Kapdi, wherein the participants shared their perspectives and experiences on laboratory safety issues. Dr. Prerna Goswami (General Engineering Department, ICT) discussed the importance of "Electrical Safety". Shri. Vijay Bhujle (Intertek Industries and Visiting Faculty member, ICT) then delivered a talk on "Development of Safe Manufacturing Processes". This was followed by a video demonstration "Safe Practices in R & D laboratory to achieve them" and the students actively participated in the interaction session after the demonstration. The participants were given hands-on training in the important skills of fire fighting through a demonstration on the Futsal ground of ICT. The fire-fighting demonstrations were conducted by Shri Dattaji Kamble (ICT).

The second day of the workshop commenced with a demonstration session on "First-aid in Lab Accidents" by Dr. Manjeet Singh (CPR trainer, Medical Consultant – Fortis Hospital). The participants were introduced to critical life-saving techniques in case of emergencies. The topic of handling hazardous chemicals was discussed by Dr. Anant Kapdi (Department of Chemistry, ICT) in the lecture titled "Handling Dangerous Chemicals" which also included a number of video clips. Professor Vandana Patravale (Head, Department of Pharmaceutical Sciences and Technology, ICT) focused on the physiological effects of chemical exposure in the lecture titled "Toxicity". A lecture on the fire hazards and fire-fighting aspects was given by Shri Santosh Hule (Manager, HES, NOCIL). In the afternoon session, Professor V. V. Mahajani talked about safety scenarios in research laboratories and the industries in his lecture "Gambling Life in Laboratory". The next lecture on "Handling High Pressures" by Professor B. M. Bhanage was focused on the management of gas cylinders and laboratory systems using high pressure conditions.

The participants' feedback was taken during the concluding session. The feedback from the participants was very positive and encouraging. The participants also came up with proactive suggestions for improving the laboratory safety issues in the institute. Thus, the workshop was successful in not only creating a general awareness about safety issues, but also brought forth many suggestions from the student community.

A written examination was conducted based on the contents discussed during the workshop. The participants were awarded a certificate of participation upon successful completion of the workshop (based on their attendance and performance in the written examination).

TEACHING LEARNING WORKSHOP

A workshop on Teaching-Learning was organized on 28th and 29th March 2014 under the auspices of the TEQIP. The main objective of this workshop was to sensitize the participants with respect to the factors which affect the quality of science teaching-learning process. Professor S.D. Samant was the convenor. The workshop was mainly for the ICT faculty and some teachers from colleges in Mumbai were also allowed to participate. 36 teachers participated. On 28th March the workshop was inaugurated by Professor G.D. Yadav, V.C., ICT. Professor V.G. Gaikar, TEQIP Co-ordinator, and Professor P.R. Vavia, Dean, Acad. Prog. addressed the participants. Professor Samant explained the idea of the workshop.

Professor Arvind Kumar (Formal Director, HBCSE), Professor H.C. Pradhan (Formal Director, HBCSE), Professor Vijay Singh

(HBCSE), Dr. Chitra Natarajan (Dean, HBCSE), Professor Savita Ladage (HBCSE), Dr. Hemangi Bhagwat (K J Somaiya College of Science and Commerce), Dr. Vivek N. Patkar (Consultant), Mrs. Rita Doctor (ICT) and Mrs. Rekha Ramesh (Shah & Anchor College) gave lectures. The topics covered were History and philosophy of science -Implication for teaching, Research writing and publication process, Making science communication more effective, Measurement and evaluation in teaching, Socio-scientific issues: Role in teaching-learning, Relevance of science education to practicing teachers, Assessment: Design and Denouement, Learning in the laboratory, Communication beyond words, Teaching/ Learning in digital era, Research writing and publication process Relation between teacher and taught-Psychological perspective, Aligning assessment to curriculum. At the end of workshop, a discussion was held regarding specific shortcomings in teaching and the ways to overcome them.

ANNUAL DAY & FAREWELL FUNCTION FOR M.SC. (CHEMISTRY) BATCH 2014

The departmental annual day function and a farewell function for M.Sc. (Chemistry) 2011-13 batch was arranged on 28th April 2014. Dr. Venkatesh was the Chief Guest. He was the first Ph.D. student of the Depratment. Professor B. M. welcomied the gathering and the chief guest. He briefed the audience about the departmental annual activities and significant achievements.

Dr.Kapdi introduced and welcomed newly joined facultiy members and students.. Outgoing M.Sc. students were presented with a small token of compliment. All the faculty members expressed their viuews and feelings and wished the students a success in their future career. On behalf of outgoing batch of students, Mr. Ashish Nag shared his experience in past two years.

Dr.Kapdi announced the yearly Best Teacher and Student awards along with special appreciation award, which was introduced for the first time. The 'Best Teacher Award' was shared between Professor S.D. Samant and Professor R.V. Jayaram. 'Best Teacher Appreciation Award' was given to Dr.Shraeddha Tiwari. Ms. Pranjali Naik was awarded with the 'Best Student Award' from batch 2012-14. The top three rankers of the last batch of M.Sc. (Chemistry) Ms. Amruta Karbelkar, Mr. Abhishek Tiwari and Ms. Pritam Kambli were also felicitated with cash prizes and certificates. For the first time 'Best Laboratory Support' award was given to the Physical laboratory staff of the department. Ph.D. and M.Sc. students who passed NET/ SET/GATE examinations and also excelled in extracurricular activities were felicitated.

Dr. Venkatesh graced the function by sharing his experiences as a student of the institution and gave guidance to the students for leading a successful career and fulfilled life.

DEGREES AWARDED

Name: **Kishor Dhake**
Guide: **Professor B.M. Bhanage**
Thesis title: **Studies on lipases for organic reactions**
Brief Abstract: Biocatalysis has undergone a rapid development in past decade and has gained a special industrial importance. The fact that enzymes are highly specific in nature offering an extraordinary chemo-, regio-, and stereo-selectivity is now well understood. At present, very few enzymes are well studied, among which lipase has found great application in pharmaceuticals, fine chemicals, cosmetics, food, flavor and fragrance industries. In context, the application of lipases for synthesis of valuable compounds (esters, amides) using organic solvents and some of the neoteric solvents like ionic liquids and supercritical fluids (such as SC-CO2) was studied. Several aspects of immobilization technique

were applied to improve the catalytic activity and stability of lipase (Pseudomonas cepacia lipase, Rhizopus oryzae lipase, Pancreatic lipase) in both aqueous and non-aqueous reaction medium. Moreover the promiscuity of Candida Antarctica lipase B was utilised for synthesis of β-lactum antibiotics intermediates i.e β-lactum esters. An introductory application of immobilized pancreatic lipase for biodiesel production was also studied. Efforts were always made to achieve the higher yields of desired products.

Name: **Mayur V. Khedkar**
Guide: **Professor B.M. Bhanage**
Thesis title: **Transition Metal Catalyzed Carbonylation Reactions**

Brief abstract: Carbonylation refers to reactions that introduce carbon monoxide into organic and inorganic substrates. It is evident from the literature review; palladium catalyzed carbonylation reaction of aryl halide is one of the significant reactions for the direct one step synthesis of carbonyl compounds, including aldehyde, ketone, amides, esters, and cyclic carbonyl compounds like phthalimides, lactones and lactams. However in spite of the potential utility of these carbonylation reactions, the catalysts employed so far were homogeneous palladium-phosphine based complexes. The main drawback of these homogeneous palladium complexes are difficulties in catalyst and product separation, loss of expensive metal and non-recyclability of metal. Moreover, the used phosphine ligands are expensive, toxic and air/moisture sensitive. Replacing these conventional homogeneous phosphine containing transition metal complex catalytic systems having several drawbacks with heterogeneous phosphine free catalysts has significant impact on green chemistry.

In this regard the present work is a fruitful attempt to exemplify our contribution to the area of carbonylation reactions. Initially we developed simple, efficient and heterogeneous catalytic systems for the carbonylative Suzuki coupling reaction and double carbonylation reaction by using inexpensive Pd/C catalyst. In further work we turned attention towards the development of milder and efficient protocol for the carbonylation of bromo aryl derivatives, but it documented in the literature that aryl bromides relatively unreactive substrates and requires very harsh reaction condition for the carbonylation reaction. By considering this, for the first time we developed carbonylative cyclization of o-bromobenzoic acid using relatively milder homogeneous catalytic system. Our high priority for the replacement of phosphine based complexes leads us to use structurally well defined phosphine free N-heterocyclic carbene complexes (NHC) and ionic liquid supported complex. Hence, in further work we synthesized heterogeneous palladium N-heterocyclic carbene complexes (PS-Pd-NHC) and explored for the carbonylative cyclization reactions. Nextly we immobilized palladium metal ion on ionic liquid (ImmPd-IL) and applied for the alkoxycarbonylation, phenoxycarbonylation, aminocarbonylation and carbonylative Suzuki coupling reactions.

Name: **Sunil S. Ekbote**
Guide: **Professor B.M. Bhanage**
Thesis title: **Development of polymer supported catalyst for organic reactions**

Brief abstract: The challenge for synthetic chemists working in the area of applied synthesis is more and more to develop clean practical technologies for already existing or future products. Functional or functionalized polymeric catalysis offers numerous green

chemistry benefits including lower energy requirements, offers recovery and recycle of catalyst, increase in selectivity, in reduction in processing and separation of reagents.

The most important use of functionalized polymer as a reagent or catalyst is the simplification of the product work-up, separation and isolation. Functionalized polymer soluble in solvents or in water have an excellent catalyst in various transformations. The catalysts are stable, recoverable and recyclability is excellent. Similarly, functionalized polymeric catalyst with ligand attached to TPP-Pd complex, finds a wide scope in heterogeneous catalyst.

Several methods have been developed for the synthesis of addition reactions, C-C coupling, C-N coupling reactions using lewis acids, Bronsted acid catalyst and various acid catalysts. These catalysts have disadvantages like hazardeous material handling and more often catalyst is non recyclable. The present work involes synthesis of Polyvinylsulfonic acid (PVSA) a novel functional polymer soluble in selected solvents or water and acts as greener and recyclable catalyst.

Initialy, PVSA was studied as a catalyst in Michael addition reaction, excellent yields were obtained. Encouraged by the results of PVSA as catalyst, various acid catalyzed reaction were proved to be an encouraging in transformations like C-C coupling, C-N coupling condensation reactions. Similarly, heterogeneous recoverable and recyclable polymer supported TPP-Pd complex(PS-TPP-Pd(OAc)2 was studied for reductive amination.

Name: **Shamrao Disale**
Guide: **Professor R. V. Jayaram**
Thesis title: **Studies in synthesis and application of organophosphates and phosphonates**

Brief abstract: Phosphates and phosphonates are important class of organophosphorus compounds. They have wide applications in the areas of medicinal, biological, agricultural, catalysis, organic reactions and extraction of metals. In addition, aryl phosphates are also used as flame retardants and plasticizers.

In this research project several organophosphates and phosphonates such as dialkylalkyl/phenyl phosphonates were synthesized. Their physic chemical properties were determined. The synthesized phosphates and phosphonates were explored as extractants for nitric acid, actinides like U(VI),Th(IV), Am(III) and Pu(IV) and lanthanides.

A comparison with the extraction behavior of TBP was attempted.

Name: **Anand Burange**
Guide: **Professor R. V. Jayaram**
Thesis title: **Studies on catalytic and photocatalytic processes using Metal oxides**

Brief abstract: A proper choice of the catalyst not only enhances the activity but also selectivity in chemical transformations. Most of the industrial catalysts are based on metals and metal oxides.

The present work involves the catalytic as well as photocatalytic activity of several metal oxides for reactions of industrial and environmental relevance . Reactions such as oxidation of alkyl aromatics, selective oxidation of alcohols have been studied using transition metal oxide catalysts. Photocatalytic oxidation of alcohols has also been studied using a mixed oxide system of the spinel structure. The effect of the method of preparation and the physico chemical properties of the catalysts on the activity and selectivity has also been explored.

Name: **Anant Chavan**
Guide: **Professor R. V. Jayaram**
Thesis title: **Catalytic hydrogenation –theoretical and experimental studies**
Brief abstract: Catalytic transfer hydrogenation of aromatic nitro compounds were studied on Nickel Boron amorphous catalysts with hydrazine hydrate as the hydrogen donor. The catalysts were also doped with Fe and La and the effect of doping on catalytic activity was tested. Theoretical and kinetic studies of the hydrogenation reaction on selective systems were also carried out.

Name: **Rupesh H. Gaikwad**
Guide: **Professor R. V. Jayaram**
Thesis title: **Studies on nitrogen and phosphorus based extractants**

Brief abstract: In pursuit of alternative to tri-nbutyl phosphate (TBP), a new class of phosphates ie. unsymmetrical phosphates were developed. The phsico chemical properties of the extractants and their application in the extraction of U(VI) and Th (IV) were studied using radiochemical methods.

Name: **Sandeep M. Agawane**
Guide: **Professor J. M. Nagarkar**
Thesis title: **Heterogeneous catalysis for degradation of pestiside and organic transformations.**

Brief abstract: Heterogeneous catalysis was studied since last century and was applied to achieve milder conditions than the conventional chemical processes. Heterogeneous catalyst in organic transformation can help to render the more attractive synthetic process from environmental and economical point of view. Heterogeneous catalyst can be easily separated from the reaction products by simple filtration and quantitatively recovered in the active form and subsequently recycled. Heterogeneous catalyst can also be used for degradation of organic pollutants such as pesticides and dyes. In particular TiO2 is used as a photo-catalyst for the removal of pesticides. TiO2 is one of the most promising semiconductor photo-catalyst and lot of research has been carried out concerning application towards environmental clean-up. Charge carrier dynamics on the surface of the metal oxide based catalyst play a key role in photo-chemical processes. In this research programme, we have prepared heterogeneous metal oxide, supported metal oxide and mixed metal oxide catalysts. These catalysts were used for organic transformation and degradation of pesticide and dyes.

ACHIEVEMENTS OF STUDENTS

A. Students who have qualified NET/SET/GATE

Sr. No	Name of Student	Exam
1	Mr. Samadhan Jagtap	Passed CSIR-NET-LS of June 2013
2	Mr. Vitthal Saptal	Passed CSIR-NET-LS of June 2013
3	Mr. Vaibhav B. Sable	Passed GATE- 2013
4	Mrs. Vidya Zende	Passed GATE- 2013

B. Achievements & Awards

Mr. Kishor Dhake	Best Thesis Award by ICT in Third Convocation
Mr. Ganesh More	Second prize in poster presentation in association by ICT RSC Research Poster Compitation-2014.
Mr. Sujit Chavan	First prize "National Symposium on Current Trends in Chemical and Nano Sciences"-2014 (CTCNS- 2014) organised by SHIVAJI UNIVERSITY, KOLHAPUR

Mr. Aniruddha B Patil	ICC Young Scientist Award in Organic Chemistry-2013 by INDIAN COUNCIL OF CJHEMIST, BANGLORE
Mr. Sandip Gadge & Mr. Manohar Bhosale	Carrying out and learn high end catalyst characterization techniques on Indo-Japan Collaborative Research Work at University of Tokyo, Japan during 15th March to 30th March 2014
Mr. Kirtiikumar C. Badgujar	First prize in Oral presentation in CATSCHOL-2014 which was conducted in association with the CATALYSIS SOCIETY OF INDIA & the Royal Society of Chemistry at ICT, Mumbai
Mr. Mahesh Edake	Awarded Canadian commonwealth fellowship for postdoctoral research at Montreal, Canada in the year 2014.
Mr. Nilesh Korgaonkar	1st Prize in Poster Competition in 50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 2013

C. Prizes under the CMP Endowment:

1. M.Sc.(Chemistry) Best Teacher Award 2014 –
   ProfessorS.D.Samant- Rs.5000/- Cash prize & Certificate
   ProfessorR.V.Jayaram-Rs. 5000/- Cash prize & Certificate

2. Best Teacher Appreciation Award-Dr.Shraeddha Tiwari-Certificate

3. Best Laboratory Support Staff-Physical Chemistry Laboratory Support Staff-Certificates to
   a. Shri.V.R.Hawal (Laboratory Assistant)
   b. Shri.B.V.Tilawe (Laboratory Attendant)
   c. Shri.S.P.Chavan (Laboratory Attendant)

4. M.Sc.(Chemistry) Best Student Award(Batch 2012-14)
   Ms.Pranjali Naik - Rs. 5000/- Cash Prize & Certificate

5. Prize for First Rank in M.Sc. (Chemistry) from batch of 2011-13
   Ms. Amruta Karbelkar - Rs.5000/-Cash Prize & Certificate

6. Prize for Second Rank in M.Sc. (Chemistry) from batch of 2011-13
   Mr. Abhishek Tiwari - Rs.3000/-Cash Prize & Certificate

7. Prize for Third Rank in M.Sc. (Chemistry) from batch of 2011-13
   Ms. Pritam Kambli - Rs.1000/-Cash Prize & Certificate

D. Oral and Poster Presentations by the Students

Sr. No.	Name of Student	Paper/ Poster	Research Guide	Details of Event	Title of Paper/Poster
1	Datta Bagal	Poster	B. M. Bhanage	GDCh-Wissenschaftsforum 2013" held at Darmstadt, Germany during 1-4 Sept 2013.	[Cu(dap)2Cl] catalyzed trifluoromethyl sulfochlorination of unactivated alkenes by photoredox ATRA addition of triflyl chloride
2	Ganesh Vasant More	Poster	B. M. Bhanage	CATSCOL, Catalysis Society of India and Royal Society of Chemistry, ICT, Mumbai, 2014	Asymmetric Ring Opening of Meso Epoxides with Aromatic Amines using (R)-(+) - BINOL-Sc(OTf)3-NMM Complex as an efficient catalyst

3	Ganesh Vasant More	Poster	B. M. Bhanage	16th CRSI National Symposium in Chemistry, international conference at IIT Bombay, 2014.	Asymmetric Ring Opening of Meso Epoxides with Aromatic Amines using (R)-(+) - BINOL-Sc(OTf)3-NMM Complex as an efficient catalyst
4	Kirtikumar Chandulal Badgujar	Oral	B. M. Bhanage	CATSCHOL-2014; in association with Catalysis society of India and Royal society of Chemistry	Lipase immobilization on biodegradable ternary blend support and its characterization.
5	Deepak Babasaheb Nale	Poster	B. M. Bhanage	16th CRSI National Symposium in Chemistry international conference at IIT Bombay in 2014.	Amine functionalised MCM-41: as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones from CO_2 and aziridines
6	Deepak Babasaheb Nale	Poster	B. M. Bhanage	CATSCHOL-2014; in association with Catalysis society of India and Royal society of Chemistry, ICT, Mumbai, 2014.	Amine functionalised MCM-41: as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones from CO2 and aziridines
7	Sujit Prataprao Chavan	Poster	B. M. Bhanage	CTCNS- 2014 organised by SHIVAJI UNIVERSITY, KOLHAPUR	Pd/C: An efficient and heterogeneous protocol for oxidative carbonylation of diols to cyclic carbonate
8	Vijay Gayakhe	Poster	A. R. Kapdi	ICT-RSC Poster Competition Organized at ICT, Mumbai	New water soluble trans-[Pd(Imidate)2(PTA)2] as highly efficient catalysts for the synthesis of C5-arylated pyrimidine nucleosides via Suzuki-Miyaura cross-coupling.
9	Anand Burange	Poster	R.V. Jayaram	CATSCHOL-2014, ICT Mumbai	Magnetically retrievable MFe2O4 spinel (M: Mn,Co, Cu, Ni, Zn) catalysts for oxidation of benzylicalcohols to carbonyls
10	Deepak Kurhe	Poster	R.V. Jayaram	CATSCHOL-2014, ICT Mumbai	Polymer supported catalytic system for the conversion of aldehydes to corresponding amides
11	Shendage S. Suresh	Poster	J. M. Nagarkar	International Conference on Global Opportunities for Latest Developments in Chemistry and Technology, School of Chemical Science, North Maharashtra University, Jalgaon	Electrochemical synthesis and characterization of palladium nanoparticles on nafion-graphene support and its application for Suzuki coupling reaction

12	Shelkar S. Radheshyam	Poster	J. M. Nagarkar	International Conference on Global Opportunities for Latest Developments in Chemistry and Technology, School of Chemical Science, North Maharashtra University, Jalgaon	Amberlyst-15 catalyzed synthesis of 5-substituted 1-H-tetrazole via [3+2] cycloaddition of nitriles and sodium azides
13	Singh S. Abhilash	Poster	J. M. Nagarkar	International Conference on Global Opportunities for Latest Developments in Chemistry and Technology, School of Chemical Science, North Maharashtra University, Jalgaon	Palladium supported on zinc ferrite: An efficient catalyst for ligand free C-C and C-O cross coupling reactions
14	Singh S. Abhilash	Poster	J. M. Nagarkar	IX J-NOST conference held at Indian Institute of Science Education and Research Bhopal during December 4-6, 2013	Palladium supported on zinc ferrite: "A highly active, magnetically separable catalyst for ligand free Suzuki and Heck coupling
15	Nanabhau B. Karanjule	Poster	S. D. Samant	50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 4-7th Dec 2013	Microwave assisted 4-dimethylaminopyridine (DMAP) mediated, one pot, three component region and distereoselective synthesis of trans-2,3 dihydro furo [3,2-C] coumarin
16	Mr. Nilesh Korgaonkar	Poster	S. D. Samant	50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 4-7th Dec 2013	Ca-Alg gel entrapped base catalyst for continuous flow synthesis of coumarin derivative
17	Nanabhau B. Karanjule	Poster	S. D. Samant	Catalysis Scholars Meet (CATSCHOL 2014) organized by Catalysis Society of India (Mumbai Chapter) and ICT, Mumbai on 4th March 2014	Microwave assisted 4-dimethylaminopyridine (DMAP) mediated, one pot, three component region and distereoselective synthesis of trans-2,3 dihydro furo [3,2-C] coumarin
18	Balaso G. Jadhav	Oral	S. D. Samant	26th Research Scholar Meet (RSM), CKT College, Panvel, Mumbai. 21-22nd Feb 2014	Study of ring opening reactions of epoxide for developing new pathways for structurally and functionally important molecules'
19	Adil I. Khatri	Oral	S. D. Samant	26th Research Scholar Meet (RSM), CKT College, Panvel, Mumbai. 21-22nd Feb 2014	Studies in the Synthesis of heterocyclic polycyclic compound containing pyran ring

20	Mahesh S. Edake	Poster	S. D. Samant	Catalysis Scholars Meet (CATSCHOL 2014) organized by Catalysis Society of India (Mumbai Chapter) and ICT, Mumbai on 4th March 2014	Selective isomerization of p-diethylbenzene to m-diethylbenzene using modified zeolite Hβ

MISCELLANEOUS EVENTS

New Instruments Installed in the Department during 2012-13

GC-MS from Perkin Elmer

PHOTO GALLERY

RESEARCH GROUP

PROFESSOR B. M. BHANAGE RESEARCH GROUP

(L-R) : First Row: Divya, Ashok, Datta, Professor B. M. Bhanage, Ganesh, Sujit, Sandip **Second Row:** Nilesh, Deepak, Samadhan, Kishor, Manohar, Vitthal, Denvert **Last Row:** Subhash, Dilipkumar, Vijayesh, Jayendra, Santosh

S. D. SAMANT RESEARCH GROUP

(L-R) : Prateek Jain, Nanabhau Karanjule, Vijay, Druman Utekar, Kailas Sanap, S.D. Samant, Leena Patil, Mahesh Edake, Balasaheb Jadhav, Adil Khatri, Nilesh Korgaonkar.

PROFESSOR R.V. JAYARAM RESEARCH GROUP

(L-R) : Suyog Katkar, Thomson Fernandes, Ambar Sahani, Disha Lakhani, Sonali Warkari, Swati Uppin, Professor R.V. Jayaram, Nisha Kadam, Harshada Salavi, Ravi Kadam, Deepak Kurhe, Tuushar Deore

DR. J.M. NAGARKAR RESEARCH GROUP

(L-R) : Radheshyam, Kishor, Sachin, Jeevan, Vilas, Dr. J.M. Nagarkar, Umakant, Abhilash, Sitaram, Prayag

DR. ANANT R. KAPDI RESEARCH GROUP

(L-R) : Ajay Ardhapure, Dharmendra Prajapati, Vaibhav Sabale, Vijay Gayakhe, Vidya Zende, Dr. Anant R. Kapdi, Gopal Dhangar, Santosh Revankar, Mahendra Patil

DR. VIJAY KUMAR RESEARCH GROUP

(L-R) : Rani Patil, MahendraPatil, Dr. Vijay Kumar, Prashant Mandal, Abhishek Dubey

DR. SHRAEDDHA TIWARI RESEARCH GROUP

(L-R) : Mr. Arun Valvi, Ms. Jyoti Dutta, Dr. Shraeddha Tiwari, Ms. Shweta Pawar, Mr. Mangesh Potangale

DR. DIPANWITA DAS RESEARCH GROUP

(L-R) : Sagar Patil, Dr. Dipanwita Das, Akshay Gaikwad, Daulat Sampat Phapale

DR. KAUSTUBH JOSHI RESEARCH GROUP

(L-R) : Dr. Kaustubh Joshi, Ms. Priti Singh, Ms. Snehal Ingle

PREFACE

DEPARTMENT OF PHYSICS

Department has an industrial research project from Universal Starch and Allied Chemicals. Also Laxmi Organic Industry has sponsored one position of the Adjunct Professor in the department.

DR. (MRS.) VINEETA DINESH DESHPANDE

M.Sc. M.Phil. Ph. D.

Head of the Department & Associate Professor

Apart from handling teaching effectively, faculty of the Department was effectively engaged in the Research Activity. The faculty undertakes studies of various aspects of polymer-polymer composites and nano-composites- like structure-property relationship, morphology, mechanical & rheological properties, thermal behaviour, barrier properties, effect of surface modification, polymers for bio-medical applications. In addition, research was also undertaken by the department faculty in solar thermal applications and melt extruded drug delivery studies. Faculty is starting research in new areas like Thermodynamics/statistical mechanics of fluid mixtures, Mathamatical modelling of biological pigments.

Faculty does collaborative research with Polymer, Textile and Pharma Departments. Department faculty is guiding 23 research fellows.

Faculty has published 15 papers in refereed journals, given over 17 oral and poster presentations in international/ national seminars, Faculty has received funding from AICTE, DST and UGC; DAE/ BRNS project on paints of solar collector 1.5 crore is sanctioned this year. Out of 3 applied patents; 1 international and two national, one national patent for drug delivery is awarded. Faculty is engaged in collaborative research with national institutions like Bharthiyar University Coimbatore and BTRA. Department has an industrial research project from Universal Starch and Allied Chemicals.

Professor Nanavati, of IIT(B), delivered lectures on Theoretical Simulations of Polymers/blends under the M.S.Patel Trust Visiting Fellowship.

Department is all set to start a new course of M.Sc. in Physics with an emphasis on Material Science.

DR. (MRS.) VINEETA DINESH DESHPANDE

Associate Professor
Ph.D.

RESEARCH INTEREST AND EXPERTISE :

- Polymer nanocomposites-structure-property relationship, Solar thermal applications, Nano-drug delivery

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Life member of The Society for Polymer Science, India.
- Life member of The Indian Physics Association., India.
- Life Member, Marathi Vidnyan Parishad.
- Life Member of Friend of Tree society
- Member, Association of British Council of Scholars

PUBLICATIONS (PEER REVIEWED) SO FAR : 13

PATENTS : 01

CONFERENCE PROCEEDINGS/PAPERS: 35

SEMINARS/LECTURES/ ORATIONS DELIVERED : 03

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 01

MASTERS AWARDED AS SINGLE : 05

CITATIONS : 23

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Sr. No.	Authors (in order)	Journal	Volume	Pages	Impact Factor
1.	V.D. Deshpande and U.M. Singh Correlating Chain Orientation with Miscibility of PVC/ PMMA Blend	Journal of Applied Polymer Science	101, 2006	624-630	1.234
2.	AB.Pandit, V.D.Deshpande S.R.Shukla,B. Balsubramanium,,S.Shamsunder. Characterisation of Sonochemical Reactor for Physicochemical Transformations	Industrial & Engineering Chemistry Research,	48, 2009	9402-9407	2.206
3.	A. K. Kalkar , V.D.Deshpande, M.J.Kulkarni Isothermal Crystallization Kinetics of Poly Phenylene sulphide)/Vectra A 950 Composite	Polymer Engineering and Science	49, 2009	397-417	1.243
4.	V.D.Deshpande, Sandeep Jape Non Isothermal Crystallization Kinetics of Nucleated Poly(ethelene Terephthalate)	Journal of Applied Polymer Science	111, 3, 2009.	1318-1327	1.234
5.	V.D.Deshpande, Sandeep Jape Isothermal crystallization kinetics of anhydrous sodium acetate nucleated poly(ethylene terephthalate)	Journal of Applied Polymer Science	116, 2010	3541-3554	1.234
6.	A. K. Kalkar V.D.Deshpande, M.J.Kulkarni Nonisothermal crystallization kinetics of PPS/ TLCP composites	Journal of Polymer Science: Part B: Polymer Physics,	48, 2010	1070-1100	2.221

7.	C.J. Jahagirdar, V.D. Deshpande and L.B. Tiwari Modification of Kubelka-Munk Equation for Colorant formulation for Prediction of Dry Colour of a Textile Sample from its Wet State	Colourage	XLIX, N9, 2002	51-59	
8.	C.J. Jahagirdar, V.D. Deshpande and L.B. Tiwari Effect of Fat contents in Processed Cow's Milk on the Colour Parameters by CIE system of Colour Measurement	Indian Journal of Dairy Science	56, No. 3, 2003	154 -157	
9.	C J Jahagirdar, L B Tiwari, V D Deshpande, R Srinivasan and G Parthasarathy Weathering impact on the colour of building stones of the Gateway of India' monument	Environmental Geology	48, No. 6, 2005	788-794	
10.	V. D. Deshpande; Rangan, S. K. Effect of Surround on Measured Colour	Colourage	58(12), 2011	36	
11.	V. D. Deshpande, Pravin Pawar, Vinod Gokarna Compatibility in Immiscible poly (vinyl chloride)/ poly (styrene) Blends	International Journal of Material Science	3 no. 4, 2013	152-162	
12.	V. D. Deshpande, A.K. Kalkar, B.S. Vatsraj Poly (butylene terephthalate)/ Montmorillonite Nanocomposites: Effect Of Montmorillonite On The Morphology, Crystalline structure, Isothermal Crystallization Kinetics and Mechanical Properties,	Thermochimica Acta	568	74-94	1.989
13.	Vineeta D. Deshpande and Arvind R. Singh Preparation and Characterization of Solution Cast Films of PET, Reorganized PET and their MWNT Nanocomposites,	American Institute Physics Conference Proceedings	1538 , 2013	190	
14.	V.D. Deshpande and Amrin Sayed Electrical conductivity of Polyvinyl alcohol/multiwall carbonnatubes composites,	American Institute Physics Conference Proceedings	1536, 2013	197-198	
15.	V.D.Deshpande, V. B. Patravale,Vinod Gokarna, Prieshita Desai Pharmaceutical composition for bioenhancement of active agents	Indian	2013		

SUBJECTS TAUGHT:

Applied Physics-I, Colour Physics

SPECIFIC RESEARCH INTERESTS:

Polymer nanocomposites-structure-property relationship, Solar thermal applications, Nano-drug delivery

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D. (Sci.) - 10

RESEARCH PUBLICATIONS:

International - 4,
Peer-reviewed - 4
Conference proceeding - 1

PATENTS : Indian - 1

SPONSORED PROJECTS :

Government- 03

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- To increase the aptitude of basic sciences among the students, invited popular lectures on colour physics and polymer physics were given in degree colleges.
- Member of UGPC/PGPC, Acad. Council
- Member of HOD council.

DR. R. R. DESHMUKH
Associate Professor of Physics
M.Sc., B.Ed., Ph.D

RESEARCH INTEREST AND EXPERTISE :
Plasma Technology, Polymer Physics, Functionalization of nano-particles. Molecular tailoring of surfaces using plasma for biomedical applications, textile physics, Electro-optical properties of Polymer Dispersed Liquid Crystals. Polymer nano composites materials.

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :

- Life member of Electron Microscope Society of India.
- Life member of The Society for Polymer Science, India.
- Life member of The Indian Physics Association., India.
- Life member of Marathi Vidnyan Parishad, India.
- Life member of Plasma Science Society of India

PUBLICATIONS (PEER REVIEWED) SO FAR : 39

PATENTS :
01(Applied for US patent)

CONFERENCE PROCEEDINGS/PAPERS: 05

SEMINARS/LECTURES/ ORATIONS DELIVERED : 47

Ph.D.S AWARDED AS SINGLE/ CO-GUIDE : 01

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 04

H-INDEX :12

CITATIONS :475

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :
BRIEF STATEMENT ON CURRENT RESEARCH ACTIVITIES:

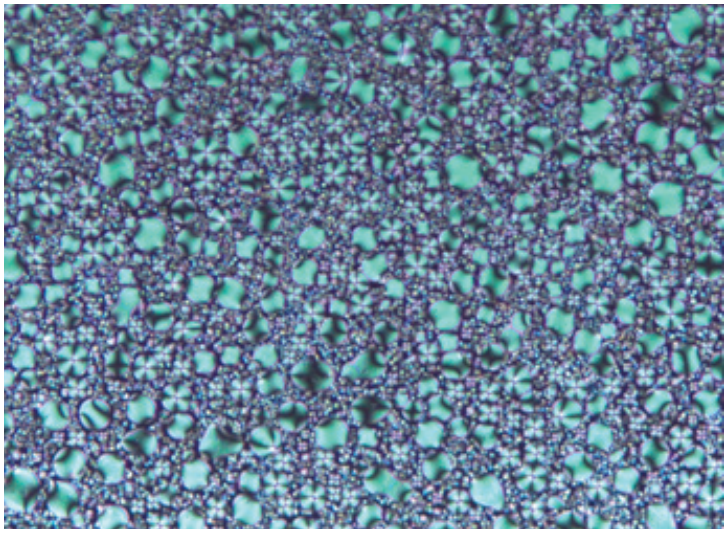
(A) Plasma Processing of Polymeric materials:

Low temperature plasma has attracted attention of Scientist and Researchers to convert inexpensive polymer in to a valuable product. Since the temperature of RF and DC glow discharge plasma is just around room temperature, it is the most suitable technique to modify most of the polymer surfaces, without affecting their bulk properties. Plasma is a one step dry process, it does not require disposal of polluted water like wet chemistry. Therefore it is environment friendly and has many other advantages over other processes of surface modification. One can control plasma chemistry just by controlling plasma process parameters suitably. It is possible to attach certain

functional groups such as Hydroxyl, Carboxyl, carbonyl, amine etc on nano particles or onto the polymer surfaces for further use in biomedical applications. Plasma functionalized nano particles can form covalent bonding in polymer composites, thus enhancing its mechanical and thermal properties. It is also possible to make super hydrophobic surfaces using fluorocarbon plasma. Polymers having low surface energy have poor adhesion properties, can be subjected to plasma treatment to enhance these properties. Our group at Physics Department has successfully shown that gaseous plasma treatment can enhance surface energy of polymers and textile materials. Polymer surface activation have opened window for pervaporation membranes. Plasma processing can also be used for functionalization of nano materials for various applications.

(B) Polymer Dispersed Liquid Crystals.

Liquid crystals are familiar as the basis of the multi-billion dollar flat panel display industry. Over the years, liquid crystal research has transformed into a truly interdisciplinary area. Liquid crystal displays (LCDs) are experienced in most portable electronic equipments, large display systems, photonics devices etc. due to the inherent



optical anisotropy of LCs, it has attracted attention in exploring the unique electro-optical effect of the polymer / LC composite film. At UICT, we are working in the area of polymer dispersed liquid crystal (PDLC) composite films. We have productively studied the electro-optical properties for different compositions of polymers, their co-polymers and different nematic liquid crystals. We showed that the electro-optical properties help us to select the proper composition for their use in displays, light shutters, and in non-display applications also. We have systematically carried out the temperature dependence of these properties and the results help us to apply them in the field of temperature sensors.

Liquid crystal display technology would benefit from reduced switching times and driving voltages. For this purpose, very recently we have demonstrated the potential of dichroic dye-doped PDLC (DPDLC) films. Novel concepts involved in photopolymerization and opto-electronic behavior of DPDLCs have been explored. We have succeeded in optimizing dye content in these devices to obtain promising materials with minimum threshold and high contrast for display applications without the use of polarizers.

Future research may see the advent of exploring Polymer Stabilized liquid crystal devices, phase modulators, optical retarders, twisted LC devices, using ferroelectric, antiferroelectric, bent-core nematics etc. The research would also be focused on developing improved LC alignment for liquid crystal display device applications.

TEN BEST / REPRESENTATIVE PUBLICATIONS:

Authors (in order)	Journal	Volume	Pages	Impact Factor
R.R. Deshmukh and A.K. Jain	Liquid Crystals,	41(7)	960-975 (2014)	1.959
R. H. Upadhyay and R. R. Deshmukh	J. Electrostatics	7	945 – 950 (2013)	1.287
S. H. Yang, E. H. Wang, J. A. Gurak, S. Bhawal, R.R. Deshmukh, A. B. Wijeratne, B. L. Edwards, F W. Foss, R. B. Timmons, and K. A. Schug	Langmuir	29(25)	8046-8053 (2013)	4.187
S.S. Parab, M.K. Malik, R. Dabrowski and R.R. Deshmukh	Journal of Molecular Liquids	183	20–25 (2013)	1.684
R.R. Deshmukh and M.K. Malik	J. Phys. and Chem. of Solids	72(2)	215-224 (2013).	1.527
S.S. Parab, M.K. Malik and R.R. Deshmukh	J Non-crystalline Solids	358	2713-2722 (2012)	1.597
W. Asghar, A. Ilyas, R. R. Deshmukh, S. Sumitsawan, R. B Timmons, and S. M. Iqbal	Nanotechnology	22	285304- 285311 (2011)	3.842
H. Xu, R. R. Deshmukh, R. B. Timmons, K. T. Nguyen.	Tissue Engineering Part A	17	865-876, (2010).	4.065
R.R. Deshmukh, A.R. Shetty	J of Applied Polymer Science	107	3707-3717 (2008).	1.289
NV Bhat, DJ Upadhyay, RR Deshmukh, SK Gupta..	J of Physical Chemistry B	107	4550-4559 (2003).	3.607

SUBJECTS TAUGHT :

Solid State Physics, Laboratory (F. Y. B.Tech and F. Y. Chem Engg)

SPECIFIC RESEARCH INTERESTS:

Plasma Technology, Polymer Physics, Functionalization of nano-particles. Molecular tailoring of surfaces using plasma for biomedical applications, textile physics, Electro-optical properties of Polymer Dispersed Liquid Crystals. Polymer nano composites materials.

RESEARCH STUDENTS CURRENTLY BEING SUPERVISED :

Ph.D(Sci.) - 10

RESEARCH PUBLICATIONS:

National – 1 International - 9

SPONSORED PROJECTS :

Government - 01
Private - 01

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

- Advisory Committee member of International conference on materials and characterization techniques, held during March 10-12, 2014 at VIT, Vellore, India.
- Advisory Committee member of National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.
- General Advisory Committee for Research and Liaison of Bombay Textile Research Association (BTRA), LBS Marg, Ghatkopar (W), Mumbai – 400 086
- Membership of Editorial Boards with name of journal and agency :
  International J of Materials Science and Applications, Science Publishing Group, USA.
  International J of Chemical and Physical Sciences

DR. S. KASTHURIRANGAN
Assistant Professor
M. Sc. (Physics)

GENERAL RESEARCH INTEREST AND EXPERTISE :
Ion-atom collisions, x-ray spectroscopy of highly charged ions (HCI) and plasmas

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES :
Member, Indian Society for Atomic and Molecular Physics (ISAMP)

PUBLICATIONS (PEER REVIEWED) SO FAR : 12

CONFERENCE PROCEEDINGS/PAPERS: 22 international 45 national

SEMINARS/LECTURES/ ORATIONS DELIVERED : 06

H-INDEX : 4

CITATIONS : 52

TEN BEST / REPRESENTATIVE PUBLICATIONS / PATENTS :

Authors (in order)	Journal	Volume	Pages	Impact Factor
S. Kasthurirangan, J. K. Saha, A. N. Agnihotri, S. Bhattacharyya, A. Kumar, D. Misra, P. K. Mukherjee, J. P. Santos, A. M. Costa, P. Indelicato, T. K. Mukherjee and L. C. Tribedi	Physical Review Letters	111	243201	7.943
S. Kasthurirangan, A. Banerjee, A. Kumar, A. N. Agnihotri, D. Misra and L. C.Tribedi	Physica Scripta	T156	014009	1.032
S. Kasthurirangan, A. N. Agnihotri, C. A. Desai and L. C. Tribedi	Review of Scientific Instruments	83	073111	1.602
A. N. Agnihotri, A. H. Kelkar, S. Kasthurirangan, K. V. Thulasiram, C. A. Desai, W. A. Fernandez, L. C. Tribedi	Physica Scripta	T144	014038	1.032
L. C. Tribedi, A. H. Kelkar and S. Kasthurirangan	Nuclear Instruments and Methods B	268	3183	1.266
A. Kumar, A. N. Agnihotri, S. Chatterjee, S. Kasthurirangan, D. Misra, R. K. Choudhury, L. Sarkadi and L. C. Tribedi	Physical Review A	81	062709	3.042
A. N. Agnihotri, S. Kasthurirangan, S. Nandi, A. Kumar, C. Champion, H. Lekadir, J. Hanssen, P. F.Weck, M. E. Galassi, R. D. Rivarola, O. Fojon and L. C. Tribedi	Journal of Physics B	46	185201	2.031
A. N. Agnihotri, S. Nandi, S. Kasthurirangan, A. Kumar, M. E. Galassi, R. D. Rivarola, C. Champion, and L. C. Tribedi	Physical Review A	87	032716	3.042

A. N. Agnihotri, S. Kasthurirangan, S. Nandi, A. Kumar, M. E. Galassi, R. D. Rivarola, O. Fojón, C. Champion, J. Hanssen, H. Lekadir, P. F. Weck, and L. C. Tribedi	Physical Review A	85	032711	3.042
S. Chatterjee, S. Kasthurirangan, A. H. Kelkar, C. R. Stia, O. A. Fojon, R. D. Rivarola and L. C. Tribedi	Journal of Physics B	42	065201	2.031

SUBJECTS TAUGHT:
Applied Physics I, Applied physics Lab
Colour Physics and Colour Harmony
Colour Physics Lab, Applied Physics II

SPECIFIC RESEARCH INTERESTS:
Ion-atom collisions, x-ray spectroscopy of highly charged ions (HCI) and plasmas

RESEARCH PUBLICATIONS:
International – 4
(Peer-reviewed) - 3
International – 5
national 12

SPONSORED PROJECTS :
Government- 01

DR. M. NARAYAN

Associate Professor
Ph. D

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:
Member of ISTE (Indian Society of Technical association)

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART :
Phenomenological Consequences of Neutrino masses and Oscillations. Effect on Solar, Atmospheric and Long Baseline experiments. Connecting neutrino parameters to Gravity via effective Planck operators. Possible signals of CPT violations in neutrino Physics.

PUBLICATIONS (PEER REVIEWED) SO FAR : 22

CONFERENCE PROCEEDINGS/PAPERS: 01

H-INDEX : 09
CITATIONS : 271

SUBJECTS TAUGHT :
(F.Y.BChem Engg + F.Y.BTech) Quantum Mechanics and Physics Lab.
S.Y.C.E : Statistical Mechanics.

RESEARCH INTERESTS:
Statistical Mechanics, Theoretical High, Energy Physics.

RESEARCH STUDENTS CURRENTLY WORKING:
Ph.D.(Sc) - 01

RESEARCH PUBLICATIONS:
International- 20,
National- 01,
Conference proceeding - 01

DR. (MRS.) S. M. PAWDE

M.Sc., B.Ed., Ph.D
Associate Professor

SUBJECTS TAUGHT:
APPLIED PHYSICS 1 TO F.Y.B.CHEM ENGG. / FY.B.TECH:
theory in Semester II and practicals in semester I and II

RESEARCH INTERESTS:
Mechanical, optical, thermal and dielectric properties of pure polymer, blends and composites

RESEARCH STUDENTS CURRENTLY WORKING :
Ph.D.(SC) - 01
RESEARCH PUBLICATIONS:
National -01
Conference Proceeding - 05

PROFESSOR S. V. PANSE

Ph.D
Adjunct professor

SUBJECTS TAUGHT :
applied physics 1 to f. Y. B. Chem. Engg. And f.y. B. Tech.

RESEARCH INTERESTS :
concentrating solar power (csp) technologies

RESEARCH STUDENTS :
PH.D. (SC) – 02

RESEARCH PUBLICATIONS:
International - 02
Conference proceedings : 01

SPONSORED PROJECTS:
Government – 01
Industrial Consultancies - 01

PROFESSOR A. K. KALKAR

Adjunct Professor

SUBJECTS TAUGHT:
Sem I: Physical Methods of Analysis :
M. Tech.

(Polymer, Surface Coatings, Pharma, Oils, Textiles., M. Pharma.

Sem II: Insrumental Methods of analysis:
M.Tech- Green Technology & M.Sc Textile

RESEARCH INTERESTS :

Polymer science and engineering, polymer nanocomposites, structure-property relationship

RESEARCH PUBLICATION:

International – 02

Conference Proceedings: 01

PROFESSIONAL ACTIVITIES:

- Life Member, The Society of Polymer Science, India
- Life Member, Materials Research Society of India
- Life Member, Indian Physical Society
- Life Member, Indian Physics Association
- Life Member, Indian Laser Association

SUPPORT STAFF

A. P. Mhaskar
Instrument Mechanic

P. Y. Nikam
Laboratory Assistant

Y. D. Waghmare
Laboratory Attendent

S.Y. Pawar
Laboratory Attendent

POSTDOCTORAL/Ph. D. STUDENTS' RESEARCH PROJECTS

No.	Research Scholar	Previous Institution	Project	Supervisor
1.	Gokarna Vinod Shridhar	University of Mumbai	Study of Nanoclay-polymer nanocomposites	V. D. Deshpande
2.	Jape Sandip P.	University of Mumbai	Studies of Crystallization kinetics in thermoplastics/thermotropic liquid crystalline polymer blends.	V. D. Deshpande
3.	Vatsaraj Bhakti	University of Mumbai	Structure – Property Relationship of the in situ thermoplastic nanocomposites	V. D. Deshpande
4.	Sayed Amrin	Sardar Patel University, Gujarat	Study of Polymer CNT nanocomposites	V. D. Deshpande
5.	Kale Dhanaji M.	Pune University	Experimental and theoretical heat loss and heat utilization factor for solar thermal power applications	V. D. Deshpande
6.	Singh Arvind	University of Mumbai	Study of Polymer nanocomposites using CNT and surface modified CNT	V. D. Deshpande
7.	Gaonkar Amita	University of Mumbai	Studies Of Unique Morphological And Thermal Behaviour Of Reorganized Poly (Ethylene Terepthalate)	V. D. Deshpande
8.	Murudkar Vrishali	University of Mumbai	Synthesis, Characterization And Study Of Properties Of Nano-Fillers Based Polysiloxane Composites	V. D. Deshpande

9.	Dubey Satish	University of Mumbai	-	V. D. Deshpande
10.	Pravin Nikam	University of Mumbai	Polymer Metal nano-composites	V. D. Deshpande
11	Arolkar Gauree A.	UDCT	Study of Biodegradation Kinetics and Characterization of Plasma Processed Biodegradable Polymers.	R. R. Deshmukh
12	Malik Manoj M.	UDCT	Synthesis and Characterization of Novel Polymer Liquid Crystal Composites	R. R. Deshmukh
13	Parab Sanmesh S.	UDCT	Studies in Dielectric Properties of Polymer/ Liquid Crystal Composites	R. R. Deshmukh
14	Upadhyay Ravindra H.	MU	Synthesis of Barium Titanate (BaTiO3) Nanoparticles and Their Use in Polymer Ceramic Composites.	R. R. Deshmukh
15	Katariya-Jain Anuja	Vikram Univ, Ujjain (MP)	Electro-optic and Dielectric Properties of Dichroic Dyes and Nanomaterials Dispersed Liquid Crystal-Polymer Composites	R. R. Deshmukh
16	Kambli Nishant D.	MU	Extraction of Fibres from Cornhusk (Maize Cob Sheath) and Its Applications in Textiles	R. R. Deshmukh
17	Ambare Manoj G.	MU	Preparation of Natural Fibres Reinforced Composite Particle Boards from Cotton Plant Stalk Using Biodegradable Binders	R. R. Deshmukh
18	Nimbekar Ashish A.	Institute of Science, Nagpur	Synthesis and Characterization of Conducting Polymeric Composites Prepared Using Various Methods and Their Applications.	R. R. Deshmukh
19	Trimukhe Ajinkya M.	UDCT	Functionalization of materials by plasma processing, synthesis and characterization of polymer nano composites for bio-medical applications.	R. R. Deshmukh
20	Ravi Kumar Singh	MU		R. R. Deshmukh
21	Kasthurirangan Siddharth	University of Mumbai	Atomic Collision Processes Involving Highly Charged Ion And Plasma.	M. Narayan
22	Pradnya Ghoderao	University of Pune	Pair correlation function and applications to SAFT.	M. Narayan
23	Ramchandra Patil	University of Mumbai	Study of Theoretical Aspects and Experimental Investigations of Solar Thermal Technologies.	S. V. Panse

PH.D. (TECH)

No.	Research Scholar	Previous Institute	Thesis Title	Supervisor
1	Shital Palaskar	ICT	Studies on effect of plasma treatment on different textile fabrics	SRS & R. R. Deshmukh

DETAILS OF SPONSORED PROJECTS GOVERNMENT AND PRIVATE

GOVERNMENT AGENCIES

Sponsor	Title	Duration	Total Amount	Principal Investigator	Research Fellows	Co-investi-gator
AICTE RPS (c)	Synthesis, Characterization And Study Of Properties of Nano-Fillers Based Polysiloxane Composites	2 years	20 lakhs	Dr. (Mrs.) V. D. Deshpande	Vrishali Murudkar	
UGC Major	Studies of Unique Morphological And Thermal Behavior of Reorganized Poly (Ethylene Terepthalate) And Its Nanocomposites With Organomodified Clay'	3 years	12 lakhs	Dr. (Mrs.) V. D. Deshpande	Amita Gaonkar	
BARC	Development and characterization of selective coating for enhancement of radiation absorption of solar receivers	2 years	1.5 Crores	Dr. (Mrs.) V. D.Deshpande	Satish Dubey	
DST - MoFPI	Studies in Physico-Chemical Properties of Plasma Processed Rice grains	2 yrs (26/12/ 2012 to 26/12/ 2014)	20.18 Lakh	Dr. U S. Annapure		Dr. R.R. Deshmukh
PRIVATE INDUSTRIES :						
Universal Starch-Chem Allied Ltd	Studies in Synthesis of Biodegradable Polymer.	4 yrs (14/07/ 2011 to 14/07/ 2015)	20.18 Lakhs	Dr. A.S. Sabnis	Sinkar Mayur	Dr. R.R. Deshmukh

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

V. D. DESHPANDE

- Prof. V. B. Patravale, Dept. of Pharma, ICT
- Prof. V. A. Pandit, Dept. of Pharmceuticals, Bharati Vidyapeeth, Pune.

R. R. DESHMUKH

- Dr. K. Navneetha Pandiyaraj, Dept of Physics, SSIET, Coimbtore.
- Dr. Varsha Kelkar-Mane, Department of Bio-tech, University of Mumbai.
- Prof. N. V. Bhat, BTRA. Mumbai
- Prof. R. Dabrowski, Institute of Chemistry, Military University of Technology, Warsaw 00-908, Poland
- Prof. R. B. Timmons, University of Texas, Arlington, USA.

S. KASTHURIRANGAN

Tata Institute of Fundamental Research, Mumbai – Prof. L. C. Tribedi – Ion-atom collisions, highly charged ions

M. NARAYAN

- Dr. Vishvanath Dalvi, Dept of Chemical Engg, ICT.
- Dr. Bipin Koranga, Dept of Physics, Kirori Mal College, University of Delhi.

PUBLICATIONS

No.	Title and authors	Journal	Vol. No.	Pages	Year	Impact Factor
1.	Compatibility in Immiscible poly (vinyl chloride)/ poly (styrene) Blends, V. D. Deshpande, Pravin Pawar, Vinod Gokarna	International Journal of Material Science	3	152-162	2013	
2.	Poly (butylene terephthalate)/ Montmorillonite Nanocomposites: Effect Of Montmorillonite On The Morphology, Crystalline structure, Isothermal Crystallization Kinetics and Mechanical Properties, V. D. Deshpande, A.K. Kalkar, B.S. Vatsraj	Thermochimica Acta	568	74-94	2013	1.989
3.	Preparation and Characterization of Solution Cast Films of PET, Reorganized PET and their MWNT Nanocomposites, Vineeta D. Deshpande and Arvind R. Singh	American Institute Physics Conference Proceedings	1538	190	2013	
4.	Electrical conductivity of Polyvinyl alcohol/ multiwall carbonnatubes composites, V.D. Deshpande and Amrin Sayed	American Institute Physics Conference Proceedings	1536	197-198	2013	
5.	Investigation of dielectric properties of poly(methyl methacrylate)-E7 composite films. SS Parab, MK Malik and RR Deshmukh	International Journal of ChemTech Research	6 (3)	1836 - 1839	2014	---
6.	Electro-optics of homogeneously aligned nematic liquid crystals stabilized by a polymer network. MK Malik and RR Deshmukh	International Journal of ChemTech Research	6 (3)	1833 - 1835	2014	---
7.	Influence of a guest dichroic azo dye on a host liquid crystal dispersed in polymer matrix. AK Jain and RR Deshmukh	International Journal of ChemTech Research	6 (3)	1813 - 1816	2014	---
8.	Phenazines and Thiazine: Green Synthesis, Photophysical Properties and Dichroic Behavior in Nematic Host. A. S. Choudhary, M. K. Malik, S. R. Patil, K. H. Prabhu, R. R. Deshmukh and N. Sekar	Canadian Chemical Transactions	2(4)	365-380	2014	---
9.	Influence of non-thermal plasma forming gases on improvement of surface properties of low density polyethylene (LDPE) K.N. Pandiyaraj, R.R.Deshmukh, Inci Ruzybayev, I. Shah, Pi-G Su, Jr.mercy Halleluyah and A. S. B. Halim	Applied Surface Science	307	109-119	2014	2.112

10.	Preparation and Performance Characterization of Soft Polymer Composites as Function of Single and Mixed Nano Entities G. M. Joshi, A. Sharma, R. Tibrawala, S. Arora, K. Deshmukh, S. Kalainathan and R. R. Deshmukh	Polymer-Plastics Technology and Engineering	53	588–595	2014	1.481
11.	Characterization, dielectric and electrical behaviour of BaTiO3 nanoparticles prepared via Titanium (IV) triethanolaminato isopropoxide and hydrated Barium hydroxide R. H. Upadhyay, A. P. Argekar and R. R. Deshmukh	Bulletin of Material Science	37(3)	481-489	2014	0.584
12.	The complete morphological, electro-optical and dielectric study of dichroic dye doped polymer dispersed liquid crystal R.R. Deshmukh and A.K. Jain	Liquid Crystals	41(7)	960-975	2014	1.959
13.	Improvement of Surface and Biocompatible Properties of Flexible Transparent Nano TiO2 Films Using Glow Discharge Plasma K N. Pandiyaraj, R.R Deshmukh, B Shree Ram, and R Mahendiran	J of Nano Science and Nano Technology	2(4)	436-441	2014	1.17
14.	Influence of operating parameters on surface properties of RF glow discharge oxygen plasma treated TiO2/PET film for biomedical application. K. N. Pandiyaraj , R.R. Deshmukh, R. Mahendiran, Pi-G Su, Emre Yassitepe, Ismat Shah, Stefano Perni, Polina Prokopovich, and M. N. Nadagouda	Materials Science and Engineering	36	309–319	2014	2.596
15.	"Absolute total ionization cross sections of uracil (C4H4N2O2) in collisions with MeV energy highly charged carbon, oxygen and fluorine ions" A. N. Agnihotri, S. Kasthurirangan, S. Nandi, A. Kumar, C. Champion, H. Lekadir, J. Hanssen, P. F. Weck, M. E. Galassi, R. D. Rivarola, O. Fojón and L. C. Tribedi	Journal of Physics B: Atomic, Molecular and Optical Physics	46	185201	2013 (5 Sep)	2.031
16.	"High-resolution study of x-rays emitted from highly charged S ions using a bent-crystal spectrometer" S. Kasthurirangan, A. Banerjee, A. Kumar, A. N. Agnihotri, D. Misra and L. C. Tribedi	Physica Scripta	T156	014009	2013 (23 Sep)	1.032
17.	"Observation of 2p3d(1Po)→1s3d(1De) Radiative Transition in He-like Si, S, and Cl Ions" S. Kasthurirangan, J. K. Saha, A. N. Agnihotri, S. Bhattacharyya, D. Misra, A. Kumar, P. K. Mukherjee, J. P. Santos, A. M. Costa, P. Indelicato, T. K. Mukherjee, and L. C. Tribedi	Physical Review Lettters	111	243201	2013 (13 Dec)	7.943
18.	"Quantum Gravity on Neutrino Oscillation Length" by B.S. Koranga and M. Narayan.	Journal of Theoretical Physics.	52	6	2013	

PATENS

No.	Invetors	Title	Country	Patent No.
1.	V. D. Deshpande, Vinod Gokarna, P. Desai, V.B. Patravale	Pharmaceutical compositions for bioenhancement of active agents	Indian Patent	1108/ MUM/2012

SEMINARS/LECTURES/CONFERENCES/ SYMPOSIA/WORKSHOPS/SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS :

DR. V.D. DESHPANDE

- A.K.Kalkar, V.D.Deshpande, M.J.Kulkarni; Isothermal Crystallization Kinetics of Poly(Phenylene Sulphide)/ Thermotropic Liquid Crystalline Polymer Polyblends Melt; Gordon Research conference, June 9th, 2013 to June 14th 2013, Mount Holyoke College in South Hadley MA United States.
- V.D.Deshpande, D.H. Kokate, D. M. Kale, V. S. Korpale, Y. H. Shinde, S. P. Deshmukh, S.V. Panse, A. B. Pandit , Conservation of Energy through Solar Energy Assisted Dryer for Plastic Processing Industry; IV th International Conference on Advances in Energy Research Indian Institute of Technology Bombay, Mumbai.

DR. R. R. DESHMUKH

- Characterization of pulsed plasma polymerized films using XPS
  R.R. Deshmukh
  Invited talk at International conference on materials and characterization techniques, held during March 10-12, 2014 at VIT, Vellore, India.
- Investigation of dielectric properties in poly(methyl methacrylate) – E7 composite films.
  S. S. Parab, M. K. Malik, and R. R. Deshmukh
  International conference on materials and characterization tech-niques, held during March 10-12, 2014 at VIT, Vellore, India.
- Electro-optics of homogeneously aligned nematic liquid crystals stabilized by a polymer network
  M. K. Malik, and R. R. Deshmukh
  International conference on materials and characterization techniques, held during March 10-12, 2014 at VIT, Vellore, India.
- Influence of a guest dichroic azo dye on a host liquid crystal dispersed in polymer matrix
  Anuja Katariya Jain and Rajendra R. Deshmukh
  International conference on materials and characterization techniques, held during March 10-12, 2014 at VIT, Vellore, India.
- Guest-host effects in dichroic dye-doped polymer dispersed liquid crystal films
  M. K. Malik, P. G. Bhatia and R. R. Deshmukh
  National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.
- Dielectric properties of Poly(methyl methacrylate-co-butyl acrytale)/Liquid Crystal-E44 composite films.
  S. S. Parab, M. K. Malik, P. G. Bhatia and R. R. Deshmukh
  National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.
- Enhancing Barrier Properties of bio-degradable films using Nano Thin Film Coatings Deposited by Plasma Polymerization Technique.
  G. A. Arolkar and R. R. Deshmukh
  National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.

- Effect of Doping of Dichroic Azo Dye in Nematic Liquid Crystal and Photo-curable Polymer
  Anuja Katariya Jain, M. K. Malik and R. R. Deshmukh
  National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.
- Nano composite polymeric hydrogels: Smart material for bio-medical / tissue engineering applications
  Ajinkya M. Trimukhe and R.R. Deshmukh
  National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.

TRAINING PROGRAMMES / WORKSHOPS ATTENDED

DR. R. R. DESHMUKH

- TEQIP Sponsored One Week training programme on "Stress and Time Management" during Sept 23-27, 2013 at O0ty
- TEQIP Phase II sponsored One Week Faculty Development Programme on "CFD in Engineering Domain Using Computing Softwares" organized by VJTI during July, 8-12, 2013.

DR. S. KASTHURIRANGAN

- XXVIII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Lanzhou, China, 24-30 Jul, 2013.
- 'ECR plasma diagnostics using bremsstrahlung spectra and X-ray spectroscopy of highly charged ions' at ISAMP-TC-2013, IPR, Gandhinagar, Gujarat, 18th November, 2013.
- 'Fluorescence-active autoionising states in He-like ions: observation of 2p3d(1Po) → 1s3d(1De) radiative transition' at SPARC India Workshop 2014, TIFR, Mumbai, 28th January, 2014.

BOOK CHAPTER

R.R. DESHMUKH

Chapter "Pretreatments of Textiles Prior to Dyeing: Plasma Processing" R.R. Deshmukh and N.V. Bhat, in the Book "Textile Dyeing" ISBN 978-953-307-565-5, Editor Peter J. Hauser, In Tech Publisher, December, 2011.

EVENTS ORGANIZED

R.R. DESHMUKH

Being Vice President of Technological Association (VPTA), I looked after smooth functioning and over all co-ordination of various events such as Manzer, Vortex, Manthan, Sports Saga, cultural programmes etc.

Advisory Committee member of International conference on materials and characterization techniques, held during March 10-12, 2014 at VIT, Vellore, India.

Advisory Committee member of National conference on Research Trends on Smart Materials, held at Guru Nanak College of ASC, Sion, Mumbai, during 03-04 January, 2014.

Convenor of RAMAN Inside, a three days workshop on Raman Spectroscopy arranged under TEQIP from 8-10 October, 2013 at ICT.

DR. S. KASTHURIRANGAN

Organizer for 'TEQIP Innovation Meet', 25th and 26th September, 2013, ICT Mumbai

Workshop on Modern Trends in Polymer Science and Technology

IN-HOUSE FACULTY RESPONSIBILITIES

DR. (MRS.) V. D. DESHPANDE

- Head, Department of Physics and various committees thereof

DR. R. R. DESHMUKH

- UG Admissions
- Handbook
- ICT Statutes
- Library
- Media
- Students Welfare
- Manthan

DR. S. KASTHURIRANGAN

- TEQIP coordinator for Department of Physics
- Member of TEQIP innovation networking committee

DR. M. NARAYAN

- Convener, Institute Classroom Committee.
- In charge of Literary activities of the Technological association ICT.

ANY OTHER RELEVANT ADDITIONAL INFORMATION

REVIEWER FOR THE FOLLOWING INTERNATIONAL JOURNALS

DR. (MRS.) V. D. DESHPANDE

- International journal of Material Science.
- Ultrasonic Sonochemistry, Elsevier Journal

DR. R. R. DESHMUKH

- Journal of Applied Polymer Science.
- Polymer International
- Colloids and Surfaces B: Biointerfaces
- Journal of Electrostatics
- Journal of Chemical & Engineering Data
- Journal of Physics and Chemistry of Solids
- Textile Research Journal
- Trans-Tech Publication
- International Journal of Material Sciences and Applications
- Applied Surface Science.
- International Journal of Chemical and Physical Sciences.
- Plasma Processes and Polymers
- Pramana
- Express polymer letters
- Physica Scripta

INDUSTRIAL CONSULTANCY

Universal Starch-Chem Allied Ltd.	Conversion of Starch to Bio-polymer	4 yrs (14/07/2011 to 14/07/2015)

RESEARCH GROUP

DR. R.R.DESHMUKH RESEARCH GROUP

From Left to Right : (Front Row) Ajinkya Trimukhe, Ravi Singh, Dr.R.R.Deshmukh, Ravindra Upadhyay, Ashish Nimbekar
(Second Row) Anuja Katariya-Jain, Manoj Ambare, Gauree Arolkar

PREFACE

DEPARTMENT OF MATHEMATICS

Programme is supported by the UGC under its innovative schemes and is an interdisciplinary programme, giving emphasis to practical applications of mathematics in several engineering applications.

DR. A. K. SAHU

Ph.D

Associate Professor & Head of the Department

The Department of Mathematics ICT, Mumbai offers Master in Engineering Mathematics and Ph. D. progammes. It also works as a support department for B. Chem. Eng., B.Tech., and B.Pharm. courses. M. Sc. In Engineering Mathematics was started in the academic year 2011-2012 . This course is supported by UGC under its innovative scheme and is gaining popularity. It is an inter disciplinary programme giving practical application of mathematics in several engineering applications. At present, there are nineteen students in this programme. The department of mathematics also has thee Ph. D. students. The M.Sc. students of this department have gone for a industrial visit to Pune. They visited CDAC, few software companies and Bio-informatics institutes.

The Department organized a UGC refresher course under the aegis of academic staff college, University of Mumbai during November – December, 2013.This course was attended by thirty three college teachers from different colleges in the subject of Mathematics, Statistics and computer sciences.. The department also conducted a national conference on " Educational Interfaces Between Mathematics and Industry" in January 2014.The conference was supported by NBHM and TEQIP and was attended by more than eighty people from academia and industry.

Dr. Ajit Kumar has co-authored two books: (i) Real Analysis, CRC Press (ii) Calculus Using SAGE, Moon Publication (South Korea).

DR. A. K. SAHU

Associate Professor

B.Sc.(Hons), M.Sc., Ph.D.

SUBJECTS TAUGHT :

- Fluid Mechanics I (M.Sc. in Eng. Math.)
- Mathematical Biology (M.Sc. in Eng. Math.)
- Fluid Mechanics II. (M.Sc. in Eng. Math.)
- Computational Fluid Dynamics II. (M.Sc. in Eng. Math.)
- Mathematical modelling & Designing (M.Sc. in Eng. Math.)
- Heat and Mass Transfer (M.Sc. in Eng. Math.)

RESEARCH INTERESTS:
Computational Fluid Dynamics and Mathematical Modeling

RESEARCH PUBLICATIONS:
Conference proceeding- 1

PUBLICATIONS:
(peer reviewed) so far : 08

CONFERENCE PROCEEDINGS/ PAPERS: 8

SEMINARS/LECTURES/ ORATIONS DELIVERED: 14

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 1

NUMERICAL STUDIES OF THERMAL STRATIFICATION IN LIQUID METAL FAST BREEDER REACTOR

Energy is one of the most important needs for growth and prosperity of the modern world. The various sources of energy can be non-renewable (coal, natural gases and petroleum) and renewable sources of energy (biomass, solar, wind etc). In the recent years, nuclear energy has emerged as a vital source of energy especially in developing countries like India. Various designs of nuclear reactors (Boiling water reactors (BWR), Pressurized water reactors (PWR), Pressurized heavy water reactors (PHWR), Liquid Metal Fast breeder reactors (LMFBR) etc. are being developed and implemented for the power generation across the world. Researchers have developed their interest in design of LMFBR's. Since, they have capability of high power generation with less amount of fuel as compared to other nuclear reactors.

Thermal stratification is one of the most important problems in Liquid Metal Fast Breeder Reactor (LMFBR). The understanding of thermal stratification is very much essential for design of LMFBR. During, SCRAM condition the cold fluid enters into the hot pool. Due to high density of the cold fluid, it will be collected in the lower part of the reactor vessel. A large part of the coolant in the upper part of reactor vessel remains hot. This phenomenon creates a thermal stratified condition and produces an axial temperature gradient in the reactor pool. Thus, the study of the degree of thermal stratification and its persistence are essential for the thermal design of LMFBR. Several studies [1-2] (both experimental and numerical) have been carried out to study the thermal stratification in fast breeder reactors.

At present CFD studies have been carried out to investigate the parametric sensitivity of standard k-ε model for thermal stratification.

Fig.1 shows the effect of $C\mu$ (0.05,0.07 and 0.09) on rising speed of the stratification interface. It was interesting to note that below intermediate heat exchanger's (IHX)($z^* < 0.4$), the predicted interface height agreed well with the experimental data. But, it under predicts in the upper part of the reactor vessel (Fig. 1). It may be concluded that the parametric sensitivity of k-ε model fails to

predict thermal stratification and it's characteristics in the upper part of the reactor vessel.

Further, experimental studies have been carried out in the lab scale to investigate the effects of Richardson numbers (Ri's) on thermal stratification and it's characteristics. Fig. 2 shows the experimental set-up. It has been observed that, non-dimensional interface height (z*) is inversely proportional to Ri. It means that at high Ri, interface velocity decreases. This may be due to increase in the buoyancy forces near the stratification interface. Further, CFD studies have been carried out to investigate the turbulence models on thermal stratification. CFD validations have been carried out at Ri = 5.85. Fig. 4 shows the effect of turbulence models on thermal stratification. Since, it has been found from the parametric study of k-ε model [3] is not a robust model for the predictions of thermal stratification. So in the present study standard k-ω model and SST k-ω model have been considered for the computation. It was interesting to note that, the prediction of stratification interface from standard k-ω model agreed well with the experimental data. So, it may be concluded that the standard k-ω model is giving better performance as compared to SST k-ω model for thermal stratification studies.

REFERENCES

- Moriya S., Tanaka N., Katano N., Wada A. (1987) Effects of Reynolds number and Richardson number on thermal Stratification in hot plenum, Nuclear Engineering and Design, 99: 441-451
- Muramatsu T. and Ninokata H. (1994) Investigation of turbulence modelling in thermal stratification analysis, Nuclear Engineering and Design, 150 : 81-93.
- Das, Shyam. S; Sahu, A.K; Padmakumar, G; Ganguli, A (2012) CFD Analysis of thermal stratification and sensitivity study of model parameters for k-ε model in cylindrical hot plenum , Nuclear Engineering and Design, Article in Press, May 2012.

DR. AJIT KUMAR

Ph.D.

Assistant Professor

SUBJECTS TAUGHT:

M.Sc.: Advanced Calculus, Optimization Techniques, Software Lab and Computer Applications

U.G.: Applied Math IV

RESEARCH INTERESTS:

- Optimization and Statistical Techniques,
- Differential Geometry & Analysis
- Mathematical Pedagogy,
- Use of Computer Aided Tools and Mathematical Software in Mathematics.

PUBLICATIONS:

(peer reviewed) so far : 1

CONFERENCE PROCEEDINGS/PAPERS: 6

BOOKS PUBLISHED: 02

BOOK (CHAPTERS) PUBLIESHED: 01

SEMINARS/LECTURES/ ORATIONS DELIVERED: 50

POST GRADUATE THESIS SUPERVISION DURING 2012-13: 02

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):

My current area of interest is in the fled of Optimization Techniques, Statistical Techniques, Numerical Methods and Mathematical Pedagogy. Although my

doctoral thesis was in the area of Differential Geometry, I have not been able to work further in this area due to the nature of my current teaching assignments. However, this has provided me opportunity to developed newer interests. I plan to continue to focus these areas and get deeply involved. I also have significant experiences in using mathematical software and programming languages which are very important especially in these area of mathematics.

I wish to explore the water resources management programmes where optimization and statistical techniques such as stochastic optimization, and distribution free modern optimization techniques etc. can play a significance role. I believe not much has been done in India in this area and there is a lot of scope, especially when the county is facing a lot of challenges. Currently two students are pursuing their Ph.D. under my guidance. One student is working in the area of optimization of water distribution system using modern optimization tools such as Ant Colony Optimization, Genetic Algorithms, Neural Network etc. Another student is working on Support Vector Machine (SVM) and Multi-Variate Time Series Analysis.

Mathematical software have potential to facilitate an active approach to learning, to allow students to become involved in discovery and to consolidate their own knowledge, thus developing conceptual and geometrical understanding and a deeper approach to learning. Emergence of such mathematical tools and its ability to deal with most of the undergraduate mathematics cannot be ignored by mathematics educators. While use of computer technologies in many countries in teaching and learning mathematics have made a significant impact at all levels, use of such tools in mathematics teaching at all levels is in its infancy in India. So much so, that many mathematics teachers are not even aware of existence of such tools. My aim is to create awareness about innovative use of Mathematical Software among mathematics teachers across the country. I also wish to create a pool of teachers who can create innovative teaching modules, constantly regular update mathematics teachers knowledge and work as catalyst. We can also create an institution which can take care teachers training programme at all level and use of (Information and communication Technology) ICT will be in its forefront.

I have been involved with the Mathematics Training and Talent Search (MTTS) programme for last several years in the various capacities. I am its national core committee. I believe that this programme has benefited a lot of students including me and has made a significant impact on mathematical science in India.

DR. SMRUTIRANJAN MOHAPATRA

Ph.D.

Assistant Professor

SUBJECTS TAUGHT:

- Applied Math I (F.Y.B.Tech. and F.Y.B.Chem.),
- Applied Math II (F.Y.B.Tech. and F.Y.BChem.),
- Engineering Application to Computers (F.Y.B.Tech.),
- Numerical Analysis (M.Sc. in Engineering Math.)

RESEARCH INTERESTS:

Applied Fluid Dynamics, Integral Equations and Special Functions

PUBLICATIONS:

(peer reviewed) so far: 13

RESEARCH PUBLICATIONS:

International : 2

POST GRADUATE THESIS SUPERVISION DURING 2012-13: 01

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPART:

The study of different kinds of water waves is of importance for various applications. The practical importance of water waves is evident for hydro-acoustics, submerges navigation, hydrobiology, hydro-optics and ocean research. Particularly in Ocean research, it is required for predicting the behaviour of floating structures (immersed totally or partially) such as ships, submarines and tension-leg platforms and for describing flows over bottom topography. Furthermore, the investigation of water wave patterns of ships and other vehicles in forward motion is closely related to the calculation of the wave-making resistance and other hydrodynamics characteristics that are used in the marine design. Problems of scattering of surface water waves in the two-dimensional liberalised theory have created varieties of challenges to applied mathematicians, willing to handle a class of mixed boundary value problems for the two-dimensional Laplace's equation under different types of mixed boundary conditions occurring in the modeling of realistic physical situations applicable to ocean engineering sciences.

DR. SUNIL KUMAR GAUTTAM

Ph.D.
Assistant Professor

SUBJECTS TAUGHT:
U.G: Applied Math II, Applied Math III, Engineering Applications of Computers,
M.Sc: Applied Linear Algebra, Mathematical Finance.

POST GRADUATE THESIS SUPERVISION DURING 2012-13: 01

RESEARCH INTERESTS:
Stochastic Control, Jump Diffusion.

SEMINARS/LECTURES/ ORATIONS DELIVERED: 1

MEMBERSHIP OF IN-HOUSE COMMITTEES

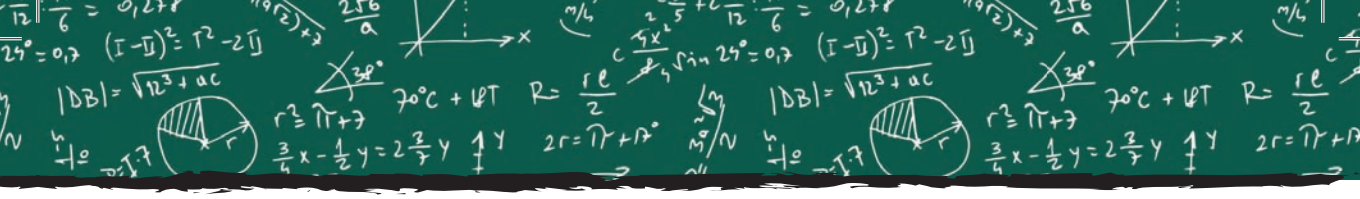
DR. A.K. SAHU
UGPC, PGPC, Academic Council, MIS committee (TEQIP-II), Steering committee of COE (TEQIP-II)

DR. AJIT KUMAR
TEQIP Coordinator for Mathematics Department, Classroom Committee, Unfair Means Committee, Performance Audit Committee of TEQIP-II, Scholarship Committee, Time-Table Committee

SEMINARS / LECTURES / CONFERENCES / SYMPOSIA /WORKSHOPS / SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ ORAL OR POSTER PRESENTATIONS:

DR. AJIT KUMAR

- Invited to deliver an invited talk on "Progressive Discovery as a Teaching Aid using MathDisk" at the Asian Mathematics Conference 2013 held during June 30 to July 4, 2013 at Busan, South Korea.
- Poster presentation on "Teaching Methodology



of the Mathematics Training and Talent Search Programme" at the Asian Mathematics Conference 2013 held during June 30 to July 4, 2013 at Busan, South Korea.

- Participated in an international conference, the 18th Asian Technological Conference in Mathematics (ATCM) held during December 7—10, 2013, Indian Institute of Technology, Mumbai, India and delivers a talk on "MathDisk-An Interactive Learning Environment" and also conducted a workshop on MathDisk.
- Resource person during `mini-MTTS Programme" held at IIT Patna during June 9 -21, 2014. Delivered 12 lectures.
- Attended "MTTS - COMES OF AGE ! ONE DAY CONFERENCE" on May 17, 2014 at RIE Mysore.
- National conference on "Educational Interfaces Between Mathematics and Industry (EIMI)", ICT Mumbai, Jan 23--24, 2014. I was one of the panellists on the subject "Role of ICT in Mathematic".
- Resource person during ``mini-MTTS Programme" held at the Ramnarain Ruia College, Mumbai during April 7 -12, 2014. Delivered 9 lectures.
- Invited to give 3 lectures on `` Introduction to Sage" at the ``One Week Workshop on LaTeX and Sage" at SRTM University, Nanded on February 15, 2014.
- Invited to give a talk on "Applications of Eigenvalues" during a short term training programme on "Applications of Mathematics in Science and Engineering" on December 18, 2013, Saraswati College of Engineering, Navi Mumbai.
- Invited to conducted a workshop on LaTeX for college teachers at the SIWS college Matunga, Mumbai on December 17, 2013.
- Invited to give 6 lectures on "Use of Mathematical Software in Mathematic Teaching" during August 30, 2013 to September 3, 2013 in the UGC refresher course at the University of Hyderabad.
- Given a talk on "Solving Linear Programming Problems using lpSolveAPI" at the Department of Mathematics, University of Hyderabad on September 3, 2013.
- Visited the Department of Mathematic, IIT Kanpur under Faculty Development Scheme (FDP) of TEQIP Phase II during September 22-28, 2013.

EVENTS ORGANIZED AND RESPONSIBILITY (CONVEROR /SECRETARY/ MEMBER):

DR. A. K. SAHU

Organized as a member a national conference on "Educational Interfaces Between Mathematics and Industry" at ICT, Mumbai, during January 23–24, 2014.

DR. AJIT KUMAR

- Conducted as a coordinator a UGC refresher course in Applied Mathematics and Statistics with theme: Role of Applied Mathematics and Statistics in Technological Advancement during November 20, 2013 to December 10, 2013.
- Organized as a convener a national conference on "Educational Interfaces Between Mathematics and Industry" at ICT, Mumbai, during January 23–24, 2014. I was convener of the LOC, member of APC and one of the panellists on "Role of Technology in Mathematics".
- Organized as an academic coordinator,"mini-MTTS Programme' during April 7-12, 2014 at the Ramnarain Ruia College, Mumbai.

PREFACE

DEPARTMENT OF GENERAL ENGINEERING

The students of this department have not only started their own industries but also occupy key positions of research, development, design, production and consultants in major plastic industries.

DR. D. D. SARODE

Ph. D. (IIT Bombay), M. E. (Structures),
B. E. (Civil), P.G. D. Const Mgt, D.C.S.T.

Head of General Engineering Department, Associate Professor (Civil)

Department of general engineering was started in 1952 and right from its inception it is engaged in teaching of general engineering subject related to mechanical engineering, civil engineering, electrical and electronic engineering. The department also carries out the equipment and infrastructure maintenance of the whole Institute. Post graduate course of Master in Plastic Engineering was started by the department from the year 1972 and has been instrumental in graduating students helping the plastic manufacturing industries of the India and abroad. The students of this department have not only started their own industries but also occupy key positions of research, development, design, production and consultants in major plastic industries. Three faculty members have completed their Ph.D. degree this year. Many past students have completed their doctoral degrees and are heading R & D activities in industries successfully.

The department has facilities in engineering workshop, electrical and electronic machinery, Plastic processing and testing, CAD/ CAM & CAE facilities with licensed CAD software, Structural mechanics laboratories etc. catering the needs of undergraduate and post graduate students of the Institute. The department has set up a cement composites laboratory.

The faculty of the general engineering department has maintained good industrial interactions and this has helped in placement of our students. Department has also guided the Doctoral students in the field of Plastic engineering. Presently students are working on the doctoral degrees in the field of mechanical engineering, energy engineering, electrical engineering, plastic engineering, and in civil engineering fields.

Registration for research students have increased many folds.

Both the Engineering Graphics laboratories (Drawing Halls) were renovated through the donations from the alumni of ICT. Drawing halls are fixed with most modern interactive board with LCD projector. The renovated halls are with more air and light.

DR. D. D. SARODE

Ph. D. (IIT Bombay), M. E. (Structures), B. E. (Civil), P.G. D. Const Mgt, D.C.S.T.
Head of General Engineering Department,
Associate Professor (Civil)

SUBJECTS TAUGHT:

- Equipment Design & Drawing I,
- Structural Mechanics and Engineering Mechanics and Strength of Materials

RESEARCH INTERESTS:

- Concrete Technology,
- Construction Chemicals,
- Composite Materials,
- Geotechnical Engineering
- Recycling of wastes
- Sustainable Development
- Solid Mechanics
- Strength of Materials
- Risk Analysis and Mitigation

RESEARCH STUDENTS:

Ph.D. (Tech.) - 02,
Ph.D. (Sc) - 01
M.E. (Plastic) - 02
Undergraduate Summer Fellows (if any) - 3

SPONSORED PROJECTS :

Government - 1

PUBLICATIONS :

Total Publications : 9
International : 4
Peer reviewed : 5
Book Chapters : 3
Conference proceedings/ papers : - 14
Seminars/Lectures/Orations delivered : 13
Masters Awarded as single: 7

AWARDS/HONORS:

- National - 1

RELEVANT ADDITIONAL INFORMATION

Worked as an expert in the Appellate committee, Hearing Committee and Inspection committee of AICTE New Delhi.

PROFESSIONAL ACTIVITY:

- Fellow of Indian Geotechnical Society since Jan 2011, Member since 1993
- Member of Institution of Engineers (I) since June 1992
- Member of Indian Society for technical Education since 1992
- Chartered Engineer of Institution of Engineers (I) since 1994
- Managing Committee member of VJTI Alumni Association
- Member of UDCT Alumni Association
- Member of Appellate Committee of AICTE
- Actively involved in the activities of Institution of Engineers and V J T I Alumni Association

DR. S. P. DESHMUKH

M.E. (Prod. Engg), Ph. D. (Tech)
Associate Professor cum workshop superitendent

SUBJECTS TAUGHT:

- Equipment Design & Drawing,
- Engineering Graphics I,
- CAD/CAM/CAE

RESEARCH INTERESTS

- Plastic composites, Polymeric additives,
- Engineering Materials,
- Energy Engineering,
- Solar Energy,
- Analysis of plastics using CAD/CAE

RESEARCH STUDENTS:

RA - Ph.D. (Tech.) - Ongoing 8
M.E. (Plastic Engg) : 2
Total : 13

RESEARCH PUBLICATIONS
International- 13
National- 7
Conference proceeding- 7
Books-2

SPONSORED PROJECTS
Government-1
h-Index : 2
Citations :14

PROFESSIONAL ACTIVITIES
- Senior member of organizing committee of workshops conducted by Department
- Member of IIIE, UDCT Alumni association and VJTI Alumni Association
- Senior Member of Universal Association of Mechanical and Aeronautical Engineers

SPECIAL AWARDS/ HONOURS / ACCOLADES
- Wipro Earthian Award 2013
- Winning Team member of Wipro Earthian Award on Sustainability for 2014 for second Consecutive year.

REVIEWER FOR :
- Journal of Thermoplastic Composite Materials
- Journal of Polymer Engineering & science
- Construction & Building Materials

DR. V. K. GAVAL
B.E. (PROD), M.E. (Plastics), Ph.D Tech
Assistant Professor

SUBJECTS TAUGHT
- Engg. graphics, Advance strength of materials,
- Processing of plastics,
- Energy Engg, Equipment design and drawing.

RESEARCH INTERESTS
- Polymer blend and Composites.

RESEARCH STUDENTS
M.E.(Plastics engg) -1

RESEARCH PUBLICATIONS:
International-2

CONFERENCE PROCEEDINGS/ PAPERS: 1

MRS. PRERNA GOSWAMI
B.E. (Electrical), M.E. (Instrumentation & Control)
Assistant Professor

SUBJECTS TAUGHT
Odd semester
- Basic Electrical Engineering and Electronics Theory (GET 1105) and practicals GEP 1106 to S.Y.B.TECH.(All branches)

Even semester
- Electrical engineering and Electronics theory(GET 1109) AND Practical (GEP1110) to S.Y.B.Chem Engg.

RESEARCH INTERESTS
Sustainable Energy Power systems MALAB simulations

RESEARCH PUBLICATIONS:
National-1

PROFESSIONAL ACTIVITIES:

- Member Campus development committee
- Member semester time table committee
- Member Examination time table committee
- Incharge of annual report for General Engineering department

SHRI M.A.K. KERAWALLA

B.E.(Electrical),
M.E. (Power Systems)
Associate Professor

SUBJECTS TAUGHT

Electrical Engineering & Electronics

RESEARCH INTERESTS

Power Electronics applications in Power systems analysis

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

A.M.I.E

DR. A. C. RAO

B.E. (Mechanical) M.E. (Plastic with Plastic Engg.), Ph.D Tech)
Associate Professor in Mechanical Engineering

SUBJECTS TAUGHT

- Testing of Plastics,
- Plastic Product Design,
- Design of Molds I,
- Design of Molds –II,
- Design and Fabrication of Molds and Dies.

RESEARCH INTERESTS

- Plastic Mold and Die Design, Plastic Processing.
- Plastic Product Design

RESEARCH STUDENTS

Ph.D. (Tech.):
Completed - Ongoing
M.E. (Plastic Engg): 1

RESEARCH PUBLICATIONS:

International :
Publications (peer reviewed) so far : 6
Ph.D.s Awarded as single Guide : 3
Masters Awarded as single Guide : 28

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

- A.M.I.E.(Mech.)
- Member of Educational Committee of All India Plastics Manufacturers Association.
- Member of Educational Committee of Plast India Foundation.

DR. R.S.N. SAHAI

B.E.(Mechanical), M.E.(Plastics Engg), Ph.D Tech

Assistant Professor

SUBJECTS TAUGHT

- Engg.graphics I,
- Engineering Drawing
- Processing of plastics- I
- Engineering graphics II
- Energy Engg,
- Equipment design & drawing -II
- Principles of plastic machinery design

RESEARCH INTERESTS

- Polymer Composites

RESEARCH STUDENTS

- M.E.(Plastics engg) -3

RESEARCH PUBLICATIONS

International -2

CONFERENCE PROCEEDINGS/ PAPERS: 1

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 6

SUPPORT STAFF

S. D. Shirgaonkar
Draftsman

P. R. Parab
Mechanic

B. S. Bagul
Mechanic

P. R. Gaikwad
Workshop Instructor

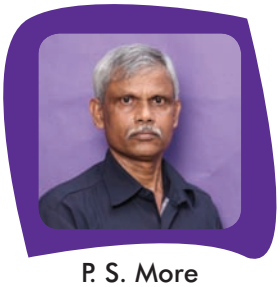
V. B. Gorule
Engineering Assistant

P. S. Wale
Mechanic

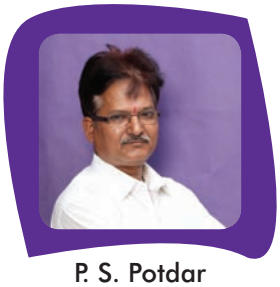
N. J. Rajam
Mechanic

B. R. Budhawale
Mechanic

J. M. Ghag
Boiler Attendant



P. S. More
Electrician



P. S. Potdar
Electrician

P. G. Jadhav
Instrument Mechanic

R. G. Butkar
Plumber

L. D. Nunis
Carpenter

G. L. Bhagat
Carpenter

R. T. Dhudhmal
Mason & Fitter

P. K. Chavan
Lab. Attendant

D. G. Malusare
Lab. Attendant

S. D. Vengurlekar
Lab. Attendant

D. R. Tajane
Lab. Attendant

S. S. Mane
Lab Attendant

S. L. Pawar
Lab Attendent

S. N. Shelar
Lab. Attendant

L. R. Kadam
Lab. Attendant

D. T. Baraskar
Gen. Eng. Lab. Attendant

S.D. Patel
Lab Attendant

DETAILS OF SPONSORED PROJECTS - GOVERNMENT AND PRIVATE

GOVERNMENT AGENCIES

No.	Sponsor	Title	Duration	Total amount	Principle Investigator	Research Fellows
1.	U.G.C.	Cycle time Reduction In Rotomoulding og plastic articles	Three Years	Rs. 9.41 lakhs	Dr. S. P. Deshmukh	Vikramsinha Sarjerao Korpale
2	Rashtriya Chemical and Fertilizers	Development of water resistant Gypsum plaster	1 year	22.2 lakhs	Dr. D D Sarode	Shri Rahul Zambare

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS

VJTI, Mumbai

DETAILS OF PUBLICATIONS, PATENTS, BOOKS, ETC.

PUBLICATIONS

No.	Title and Authors	Journal	Vol. No.	Pages	Year
1	Rahul Zambre, Asha Dahake, Dilip Sarode, Parag Nemade, Nitin Mukadam "Utilisation of Industrial wastes as Building Material"	International Journal of Global Technology Initiatives (ISSN 2277-6591)	Vol 2 Issue 1	F12-F17	March 2013
2	" A Generalized Systems approach to Metal to Plastic Replacement" Prasad B. Iyer and V. R. Gaval	International Journal of applied research in Mechanical Engineering, (Impact Factor 1.2),	VOL 3, ISSUE 1,.	63-70	July 2013
3	'Sustainable Energy for sustainable development' by * Prerna Goswami.(sole author)	Journal of Development Management, Jaipur, (ISSN 2321-0761),	Volume 1	418-428	Oct-Dec 2013
4	V. N. Palaskar, S.P. Deshmukh, "A Critical Review on Enhancement in System performance of Flat Plate Hybrid PV/T Solar Collector System"	Int. Journal of Energy Science, Citation received : 2	Vol 3 Issue 6,	395-402	Dec 2013
5	V. N. Palaskar, S. P. Deshmukh, A. B. Pandit, S. V. Panse, "Performance Analysis of an Oscillatory Flow Design Heat Exchanger Used in Solar Hybrid Water System"	Int. Jour. of Mechanical Engg, & Technology, Citation received : 2	Vol. 4 Issue 6,	91-99	Nov-Dec. 2013
7	V. N. Palaskar, S. p. Deshmukh, "Heat Transfer Analysis and waste Heat Recovery of Specially designed Heat Exchanger used in Hybrid Solar water System	Int. Jour. of Renewable Energy. Resarch.	Vol.4 No. 1,	122-127	2014,
8	V. N. Palaskar, S. P. Deshmukh, "Design and Performance Analysis of Reflectors Attached to Commercial PV Module"	Int. Jour. of Renewable Energy. Research.	Vol.4 No. 1,	240-245	2014

9	Supriya H. Raut , D D Sarode, S.S. Lele "Biocalcification using B. Pasteurii for strengthening brick masonry Civil Engineering Structures"	World Journal of Microbiology and Biotechnology	Vol-30	191-200	Jan 2014
10	D. D. Sarode "Fly Ash based Cement Composits for sustainable Development"	Book Chapter in Fly Ash utilization for sustainable environment management Waste to Resource Material ISBN 13 : 978-81-929052-0-4 Impact factor : Peer Reviewed		169-177	June 14

BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
1	D. D. Sarode	Fly Ash based Cement Composites for Sustainable Development	Seema Mishra and V. Ramachandran	S I E S Indian Institute of Environment Management	Navi Mumbai	2014	169-177

IN-HOUSE FACULTY RESPONSIBILITIES

DR. D. D. SARODE

- Secretary of Building Works Committee
- Chairman of Research Recognition Committee for Civil , Electrical, Mechanical and Plastic Engineering
- Stores Purchase Committee, Chief Examination Conductor
- Unfair means Committee,
- HOD and Deans Council, Academic Council, UGPC, PGPC, TEQIP Coordinator for the General Engineering Department

DR. S. P. DESHMUKH

- Nodal officer,
- Sport Incharge,
- Member Examination Committee,
- Member Research Reg. committee in, Mechanical Engg, Civil Engg., Plastic Engineering, Electrical and Electric Engineering.)

DR. V. K.GAVAL

- Member, of Visiting Faculty Committee,
- Member of Campus development Committee

MRS. PRERNA GOSWAMI

- Member of Semester and Exam Time Table
- Member of Campus development Committee

SHRI M.A.K. KERAWALLA

- In Charge of Scrap Committee
- Member of Student welfare committee

DR. RAI SUJIT NATH SAHAI

- Member of Scrap disposal committee

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA/WORKSHOPS/SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS

DR. D. D. SARODE

1) Attended 2 days workshop on "Structural Rehabilitation and Retrofitting using Construction Chemicals" organized by IIT Bombay, FICCI and Association of Structural Rehabilitation, 24th and 25th Dec 2013.
2) Attended a one week STTP sponsored by TEQIP II from 17th Oct. 13 to 21st Oct 13 on "Emerging Trends in Construction Materials and Techniques" At V J T I, Mumbai 19.
3) Delivered a lecture on Use of Biotechnology for Durable Concrete Structures on 20th Oct 2013 in Dr. D. D. Sarode attended a one week STTP sponsored by TEQIP II from 17th Oct. 13 to 21st Oct 13 on "Emerging Trends in Construction Materials and Techniques" At V J T I, Mumbai 19
4) Delivered a Key note lecture on " Fly Ash based Cement Composites for Sustainable Development" at National Conference on Fly Ash utilization for sustainable Environment Management at S I E S, Nerul, Navi Mumbai.
5) S.S.Pendhari, D D Sarode, I. Alam and M. Deshmukh published a paper on "Value addition to Industrial Wastes – Some Review" at International Conference on Eco-Friendly Technologies for Sustainable Growth 27th and 28th March 2014 (ICEFT – 14) at M H Saboo Siddik College of Engineering, Mumbai India.
6) Attended a Workshop on : "Environment Management Framework (EMF) and Procurement" organised by SPFU, Commissionerate of Technical Education, Gandhinagar, Gujarat and NPIU, MHRD, Govt of India at Knowledge Consortium of Gujarat, Ahmedabad on 27th May 2014.
7) Attended a 2 days National Conference on Construction Chemicals 2014 on 7th and 8th May 2014 at Nehru Centre, Mumbai organised by FICCI and Dept of C and PC, Govt of India.
8) Attended 4th fib International Congress on Concrete in Mumbai from 10th Feb to 14th Feb 2014 organised by American Concrete Institute, Indian Concrete Institute and Institution of Engineers (I).
9) Supriya Raut, D. D. Sarode and S S Lele poster presentation on "Microbiologically induced Calcite Precipitation using B. Pasteurii for strengthening Civil Engineering Structures" at International Conference on Biotechnology and Bioinformatics (ICBB-2014), Pune on 1st and 2nd Feb 2014. This poster got 2nd Prize among the poster presentations.
10) Supriya Raut, D. D. Sarode and S S Lele presented a paper on "Survival of calcium carbonate degrading microbes isolated from degraded Rocks under prolonged starvation conditions" at International Conference on Biotechnology and Human Welfare 2013 (ICBH 13) 6th, 7th and 8th Dec. 2013 organised by Sastra University, Thanjavur, Tamilnadu, India.

DR. S. P. DESHMUKH

1. 4th International Conference on Advances in Energy Research at IIT Bombay Between 10 – 12th Dec.2013 (Proceedings Pub. No ISBN 978-81-928795-05)
2. 2nd Worlds Summit on Accreditation, The Ashok, New Delhi, 8th -12th March 2014
3. 2nd Pacific Rim Energy and Sustainability Conference, The PRESDA Foundation, Hotel KKR, Hiroshima, Aug. 27-29th 2013.

DR. V. R. GAVAL

1. Attended Faculty development programme on management capability building conducted by WE School from 15 October 2013 to 22 October 2013.

MRS. PRERNA GOSWAMI

1. Mrs. Prerna Goswami attended One week Short term course sponsored by TEQIP from 6/1/2014 to 10/1/2014 on state estimation of nonlinear dynamical systems conducted by IIT, Madras at VJTI, Mumbai.
2. Mrs. Prerna Goswami attended One week Workshop sponsored by TEQIP from 13/1/2014 to 17/1/2014 on smart grid cyber security, conducted by ISGF CDAC & NDLS, VJTI, at Mumbai.
3. Mrs. Prerna Goswami attended Short term course from 3/2/2014 to 7/2/2014 on Research Methodology, conducted by TEQIP, VJTI , Mumbai.
4. Delivered lecture on Electrical safety in TEQIP organized Laboratory Safety workshop for Ph.D. students at ICT, Mumbai.

DETAILS OF POST GRADUATE STUDENTS OF M. E. (PLASTIC) SECOND YEAR

Sr.	Name	Title of Project	Supervisor
1	Priyanka Patil	To Study Elastomer based Hot Melt Adhesive	Dr A C Rao
2	Sachin Shinde	Design and Development of Injection Mould	Dr D D Sarode
3	Sumit Kute	Plastic Product Design of Automotive Component	Dr V R Gaval
4	Sharad Patil	Tool Design for Thermoplastic Injection Moulding	Dr S P Deshmukh
5	Vijendra Chaudhari	Injection moulding process – Line development	Dr. R S N Sahai

STUDENTS' SEMINARS/PROJECTS/HOME PAPERS

UNDERGRADUATE

STUDENT SEMINARS

No.	Name of the Student	Topic	Research guide
1	Pandya Varun R and others	Hot, cold die casting, Investment casting process. Its use for process equipments and advantages and disadvantages.	S. P. Deshmukh
2	Attarkar Karishma V and Others	Destructive tests used for testing of materials and its importance in design of equipments	S. P. Deshmukh
3	Devekar Ashutosh G. and others	Hot and Cold working processes on metals their and advantages and disadvantages	S. P. Deshmukh
4	Tilak Pooja A. and others	Eddy current test, magnetic test performed on equipment, its advantages and limitations	S. P. Deshmukh
5	Bhagwat Amal M. and others	Iron carbon diagram of steel and its use for selection of steel.	S. P. Deshmukh
6	Potdar Ishan A. and others	Fatigue test on material and its importance in design of equipments	S. P. Deshmukh
7	Patil Chetan B. and others	Manual Electric arc welding, gas welding, submerged arc welding processes and its use in manufacturing of process equipments	S. P. Deshmukh
8	Ghode Nikita N and others	Creep test on materials and its importance in design of equipments	S. P. Deshmukh
9	Gardare Vrushali N. and others	TIG, MIG, Plasma and resistance welding processes and its use in manufacturing of process equipments.	S. P. Deshmukh
10	Chavan Mayuresh S. and others	Air and hydraulic tests performed on process equipments, its importance and limitations	S. P. Deshmukh

11	Bakhare Neha H. and others	Heat treatment of metals its advantages and applications for fabrication of process equipments.	S. P. Deshmukh
12	Baser Deven S. and others	Freon test, dye penetration test, and its importance in design of equipments.	S. P. Deshmukh
13	Desai Alec A. and others	Machining processes such as 1) lathe, 2) Drilling, 3) Milling, 4) Grinding, 5) EDM, NC-CNC machines used for machining of metals.	S. P. Deshmukh
14	Sampat Chaitanya R. and others	X ray and gamma ray test (radiographic tests) and its importance in design of equipments	S. P. Deshmukh
15	Vora Paras S. V	Corrosion in process equipment and its effect on selection of material used for process equipment used in food processing and pharmaceutical companies	S. P. Deshmukh
16	Shah Utkarsh D. and others	Ultrasonic tests, test setups, results and analysis and its advantages and disadvantages	S. P. Deshmukh

PROJECT UNDER STRUCTURAL MECHANICS LABORATORY OF S. Y C E BY

Batch No	Students Name	Topic	Guide
1	Rayewar-Nishant-Naresh	Corrosion and Anticorrosive Coatings	D. D. Sarode
	Pawaskar-Aniruddha-Sanjeev		D. D. Sarode
	Shah-Yash-Dharmesh		D. D. Sarode
	Atale-Aditya-Kishor		D. D. Sarode
2	Gaikwad-Siddhant-Avinash	Mineral Admixtures and manufacturing of slag cement	D. D. Sarode
	Vora-Ankit-Vinod		D. D. Sarode
	Merchant-Yash-Devang		D. D. Sarode
	Ghanekar-Pushkar-Gajendra		D. D. Sarode
3	Chhichhia-Deep-Sunil	Mechanics of Reinforced polymer composites	D. D. Sarode
	Bansal-Gaurav-Satyawan		D. D. Sarode
	Doshi-Shalin-Jayesh		D. D. Sarode
4	Banerjee-Moutushi-Kalyan	Manufacturing of bricks	D. D. Sarode
	Nijasure-Sanika-Avinash		D. D. Sarode
	Ranadive-Pinaki-Manoj		D. D. Sarode
	-Kale Shalaka Karbhari-		D. D. Sarode
5	Upadhyay-Ronak-Hiren	Non Destructive Testing	D. D. Sarode
	Gaikwad-Siddhant-Avinash		D. D. Sarode
	Patil-Swapnil-Suresh		D. D. Sarode
	Kadam-Sanket-Madhukar		D. D. Sarode
6	Dabadghao-Vibhav-Sanjay	Non Destructive Testing	D. D. Sarode
	Shah-Ujjval-Manish		D. D. Sarode
	Bootwala-Yousuf-Zoher		D. D. Sarode
	Shah-Jay-Rasesh		D. D. Sarode
7	Chheda-Aman-Sanjay	Fibre Reinforced Cement Composites	D. D. Sarode
	Naik-Ankita-Vinod		D. D. Sarode
	Nayak-Sonal-Gajanan		D. D. Sarode
	Mukhtyar-Ankita-Jawahar		D. D. Sarode
8	Avlani-Manav-Tushar	Asphalt composites	D. D. Sarode
	Kelekar-Nitish-Nikhil		D. D. Sarode
	Seemakurthi-Ranga Rohit-Venkata Chalam		D. D. Sarode
	Khanna-Vikram-Naval		D. D. Sarode

9	Dabhade-Prasad-Avinash	Structure of Hydrated Cement Paste	D. D. Sarode
	Kundle-Kshitij-Vivekanand		D. D. Sarode
	Sabale-Kiran-Baburao		D. D. Sarode
	Golani-Siddharth-Kishore		D. D. Sarode
	Bansode Aniket		D. D. Sarode
10	Arora-Sonam-Mohanlal	Natural Fibre (Coir) cement composite	D. D. Sarode
	Karpe-Sanjana-Vijay		D. D. Sarode
	Patil-Rituja-Bhagwant		D. D. Sarode
	Sarang-Kasturi-Tulsidas		D. D. Sarode
11	Shah-Neel-Arvind	Manufacturing and testing of Asphalt and Bitumen	D. D. Sarode
	Gardare-Pratik-Nana		D. D. Sarode
	Kanthe-Ankit-Deepak		D. D. Sarode
12	Khatib-Shaaz-Sahir	Types of Engineering Materials (Elastic, Plastic, brittle, viscoelastic .....)	D. D. Sarode
	Arora-Maahir-Raminder		D. D. Sarode
	Parekh-Atmin-Mahesh		D. D. Sarode
	Thoke-Shubham-Mahendrasing		D. D. Sarode
13	Pole-Prasad-Rajendra	Value addition to Bauxite Residue	D. D. Sarode
	Patil-Chinmay-Sunil		D. D. Sarode
	Deshmukh-Akul-Dhananjay		D. D. Sarode
	Hanwate-Anurag-Deorao		D. D. Sarode
14	-Gavali Kapil Netaji-	Particle board, plywood and sunmica	D. D. Sarode
	Boricha-Divya-Arvind		D. D. Sarode
	Gada-Mihir-Nemchand		D. D. Sarode
	Budhkar-Nikhil-Sachin		D. D. Sarode
15	-Kale Shalaka Karbhari-	Phosphogypsum and Redmud Composite	D. D. Sarode
	Dixit-Pratik-Anil		D. D. Sarode
	Ashtekar-Abhinav-Prakash		D. D. Sarode
	Bansode-Priyanka-Kamlakar		D. D. Sarode
16	Bhoye Swapnil	Different ceramic based flooring, wall tiles material	D. D. Sarode
	Chapte Pranav		D. D. Sarode
	Ladumor Kartik		D. D. Sarode
	Rathod Amar		D. D. Sarode
17	Amonkar Yash	Manufacturing of bricks from industrial wastes	D. D. Sarode
	Chheda Mihir		D. D. Sarode
	Atmapoojya Nikunj		D. D. Sarode
	Maheshwari Shruti		D. D. Sarode
18	Deshmane-Siddhant-Nitin	Hydrophobic and water proofing admixtures	D. D. Sarode
	Prabhu-Siddhartha-Chetan		D. D. Sarode
	Waghanna-Sarang-Pravinchandra		D. D. Sarode
	Rane-Yatish-Sunil		D. D. Sarode
19	Bodhankar Girija	Asbestos Composites	D. D. Sarode
	Ghoderao Shilpa		D. D. Sarode
	Sawant Tejal		D. D. Sarode
	Naphade Rutuja		D. D. Sarode
20	Chheda Aman	Fibre reinforced concrete	D. D. Sarode
	Naik Ankita		D. D. Sarode
	Nayak Sonal		D. D. Sarode
	Mukthyar		D. D. Sarode

POST GRADUATE STUDENTS' SEMINAR PROJECTS

POST GRADUATE SEMINAR

M E (Plastic) students

No.	Name of the Student	Topics
1	Sunil Kumar Patel	Application of Polymer Composite in Automobile Industry
2	Miss Pooja Misal	Polymer Composites in Civil Engineering
3	Girish L. Makwana	Polymer used in Industrial Flooring
4	Vishwa H. Dodia	Scanning Electron Microscopy (SEM) and X-RD
5	Akshay G. Koli	Nanoindentation and its uses

POST GRADUATE PROJECT

No.	Name of the Student	Topics	Guide
1	Patil Priyanka Vilas	Biodegradable Plastics in food Packaging	A. C. Rao

POSTDOCTORAL/Ph.D. STUDENTS' RESEARCH PROJECTS

No.	Research scholar	Previous institution	Project	Supervisor
1	Mr. Vishnu. N. Palaskar	VJTI, Mumbai.	Design, fabrication and performance evaluation of Hybrid Photovoltic/ Thermal solar water heating system	S. P. Deshmukh
2	Mr. Ashok Kumar Bharimalla	CIRCOT, Mumbai	Production of Nanocellose by Chemo-Mechanical process and its Polymer composite for Applications in Agricultural Packing	S. P. Deshmukh
3	Mr. Peter D'souza	VJTI Mumbai	Use of Microchannel Heat Sink in Refrigerator to enhance the Heat Transfer rate to Enhance COP.	S. P. Deshmukh
4	M. Dipak H. Kokate	MSDCL Mumbai	Resource Conservation Through Energy Monitoring & training Agricultural Water Pumps	S. P. Deshmukh
5	Mrs. Prerana P. Goswami	ICT Mumbai.	Optimization in Power systems	S. P. Deshmukh
6	M. Mohad Khalid A.	Sabbo Sidhique College of Engg. Mumbai	Investigation on Phase Change Due to Heat Transfer in Micro-channel / capillaries	S. P. Deshmukh
7	Mr. Vikramsinha S. Korpale	ICT, Mumbai	Optimization of Solar Assisted Dryer for Thermal Power Reneration.	S. P. Deshmukh
8	Mr. Kavhale Nagnath B.	Vartak Polytechnic, Vasai	Design and Analysis of Solar Chimney Power Plant	S. P. Deshmukh
9	Mrs. Dahake Asha Town Planning Dept, Govt of Maharashtra	Delhi School of Planning	Value addition to Industrial Waste	D. D. Sarode
10	Mr. Deshmukh Manoj Prakash	Sabbo Sidhique Polytechnic, Byculla,Mumbai	Development of Fiber Reinforced Composites	D. D. Sarode
11	Ms. Raut Supriya H.	Khalsa College, Mumbai	Studies of Carbonate precipitating and Degrading Microorganisms in Materials	D. D. Sarode

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA/WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS

DETAILS OF POSTGRADUATE/Ph.D. STUDENTS WHO PASSED OUT

Sr.	Name	Course	TIitle	Research Guide
1.	Ramteke Sandesh	Ph.D. Tech	Studies in PTFE as an additive in lubricating material for various application	Dr. A. C. Rao

SHORT ABSTRACT ON SALIENT FEATURES OF RESEARCH WORK

M. E. (PLASTIC ENGINEERING)

Name of the candidate:
Sachin Shinde
Supervisor: Dr. D. D. Sarode

Design and Development of Injection Moulds

Day by day there is increase in the use of plastic components in the electrical installations. Different types of relays are used in many industrial processes. Bimetallic relays are used very often in process controls. It consists of two conjoined pieces of metal which expand at different rates when exposed to heat. Due to this differential expansion, the strip bend and circuit is broken. After cooling it returns to original shape. Main components of bimetallic relay has housing, releasing lever, change over lever and bimetallic strips. In this research work molds for change over lever and housing are Designed, Developed and Manufactured. After the complete design the moulds are manufactured. Change over lever is made up from Thermoplastic material and Housing is made from Thermo set material. Hence the mould differs in construction and the way it is cured and cooled. Successful trials were taken after the fabrication of moulds.

M. E. (PLASTIC ENGINEERING)

Name of the candidate :
SUMIT S. KUTE
Supervisor : Dr.Vivek R.Gaval

Plastic Product Design of Automotive Component.

The Project work deals with design of automotive component which include replacing existing metal thermostat housing and covering with plastic withstanding the same existing conditions. The designing is carried out using principles of plastic design and engineering satisfying the existing functionary and strength requirements. The plastic product design is finalized and based on that injection mould is manufactured to produce the final product. The plastic product is moulded using the mould and overall dimensions of the moulding are compared with the required dimensions .This has ultimately assisted in reducing the weight of the final product and vehicle as a whole and savings in cost and energy.

M. E. (PLASTIC ENGINEERING)

Name of the candidate :
PRASAD BALAN IYER
Supervisor : Dr.Vivek.R.Gaval

Metal to Plastic Conversion in Automotive Industry: Design and Development.

Many companies have already been replacing components of their products with materials offering low cost ,weight reduction options and also to supplement their green footprints on environment. This work is one such project where an existing metal bracket used to mount engine control module unit is to be replaced with a plastic bracket. This project involves a systematic study of the basics of metal to plastic conversions. Based on criteria for selection of plastic raw material , PA 66 with 50% GF was chosen for the project to withstand the existing conditions of the metal part. Once the detailed design study is carried out plastic product design principles are applied so that strength, functionality and

mouldability of the part is not compromised. Using the Finite element analysis and mould flow software the mould design is finalised. After the finalization of the mould design ,the mould was manufactured ,the trials were taken and testing was carried out to optimize the part.

M.E (PLASTIC ENGINEERING)

Name: Sharad V. Patil
Guide: Dr. S. P. Deshmukh

Tool Development for Thermoplastic Injection Molding

The automotive Industry is on the brink of a revolution, and the plastic industry is poised to play a major role in it. Nowadays, the plastics are used in automotive mainly to make cars more energy efficient by reducing its weight, together with providing durability, corrosion resistance, toughness, design flexibility, resilience and high performance at low cost. This work is one such project plastic fuel tank was proposed with its flange and fuel pump. It involves a systematic study of the basics of the tool design, development and manufacturing of thermoplastic injection mold. Based on the criteria of the selection of plastic raw material, POM was chosen for the fuel tank to withstand the working conditions of the part. Detailed design study of the part was performed for the product. Once the design issues were identified, Plastic product Design principles were applied so that strength, functionality and moldability of part were not compromising of detailed Mould Flow Analysis was performed to gather critical understanding of fill time, temperature drop, sink marks, weld lines, and deflection. Based on firm understanding of the simulation of mould concept and designing was done, involving selection and designing of mold base as per the machine, designing of the gate, cooling water layout, angular mechanisms, the ejection system and standard mold parts. After the finalization of mold design, the mold was manufactured, trials were taken and part testing was performed to validate the design. Gauges design, and development was also performed. Finally part validation was performed for leakage and electrical conductivity testing.

OTHER INFORMATION

GUEST LECTURES

Events Organized

1) Guest Lecture by Shri. Gopal Kabra, Manager (Business Development), Helcoet Rubber and Plastics, Pune, on "Techno-Commercial evolution of Injection molded Components.
2) Guest Lecture by Dr. M. B. Parmar, Manageing Director, Polyblend COlour Concentrate, Goregaon on " Additives for plastic Industry" on 22nd Nov. 13 from 3.30 to 5.30pm
3) Guest Lecture by Dr. M. B. Parmar, Manageing Director, Polyblend COlour Concentrate, Goregaon on "Recycling of Plastic Wastes" on 29nd Nov. 13 from 3.30 to 5.30pm
4) Guest Lecture by Prof. Dr. Sachin Waigaonkar, Department of Mechanical Engineering, BITS Goa on "Rotational Moulding of LLDPE using Nano Scale Reinforcement" from 11 am to 1 pm on 7th March 2014

AWARDS & HONOURS

Dr. S.P. Deshmukh, Ph.D. students Dipak Kokate and Dhanji M. Kale received 'Wipro Earthian Award' for their research paper on 'Sustainable Development: Conservation of resources; Electricity and ground water through integration of solar water pumps and micro drip irrigation system in Agriculture water pumping'. by (i) Dipak Kokate (ii) Dhanji M. Kale and Mentor Dr. S.P. Deshmukh.

INDUSTRIAL CONSULTANCY

Name of Company	Area of Advice	Period
Hindustan Unilever Ltd.	Water Purifier	Jan. 2014-Sep.2014

DR R S N SAHAI, DR. V. R. GAVAL AND MRS PRERNA GOSWAMI PROMOTED TO ASSISTANT PROFESSOR (SELECTION GRADE)

DR A C RAO IS GIVEN EXTENSION TILL AUGUST 2017

PHOTO GALLERY

WIPRO EARTHIAN AWARD

RESEARCH GROUP

DR. S. P. DESHMUKH RESEARCH GROUP

Left to Right: Mr. Vikramshinha S. Korpale, Ashok Bharimalla, V. N. Palaskar, Dr. S. P. Deshmukh(Sitting), Nagnath Kavhale, Khalid Usmani, Prerna Goswami, Peter D'zouza.

PREFACE

MR. AMOGH S. LOKHANDE
Librarian

This document reports the performance of the Professor M.M. Sharma Library, ICT with respect to it's collection development, usage and staff's achievements etc. during the year 2013-2014.

The newly renovated library building also needed additional man-power to tend to it as well as it's users. Hence, there was additional temporary workforce (4 Library Attendants and 2 Library Assistants – all 6 purely temporary positions) sanctioned for the library after due follow-up by the Librarian. Accordingly, four individuals joined our library as Library Attendants (purely Temporary) with effect from May 2, 2013.

This year saw the Institute (Library) winning the 'Best Usage' award for Deemed Universities at the RSC Librarian Appreciation Day function held on August 30, 2013 at Hyderabad. Shri Amogh S. Lokhande, Librarian, received this award at the hands of Dr. Jagdish Arora, Director, INFLIBNET.

Under the auspices of TEQIP phase II programme, three of the library staff members participated in the training programme on 'Library Automation and Networking' organized by and held at NISCAIR, New Delhi during August 19-23, 2013. While, ten of the library staff members participated in the English speaking training course conducted, under the TEQIP phase II, at ICT during November 2013-February 2014.

The library acquired access to electronic backfiles (archives) of 101 journal titles from three different publishers, namely, Taylor and Francis (43 titles), Elsevier (38 + 15 = 53 titles) and Sage Publications (5 titles),

PROFESSOR M. M. SHARMA LIBRARY

This year saw the Institute (Library) winning the 'Best Usage' award for Deemed Universities at the RSC Librarian Appreciation Day function held on August 30, 2013 at Hyderabad. Shri Amogh S. Lokhande, Librarian, received this award at the hands of Dr. Jagdish Arora, Director, INFLIBNET.

through the funding available under the TEQIP phase II. This has ensured that the students, faculty and researchers of the ICT have electronic access to the archives of these journals previously not available with the library/Institute.

The full-text access to electronic journals from publishers such as ACS, RSC, Springer, Taylor & Francis and Wiley continued during the year through the UGC-INFLIBNET. Though, there was a scare when INFLIBNET declared the discontinuation of it's e-journal consortium due to paucity of funds. In due course, MHRD and UGC provided the funds to ensure the consortium continues. Such incidents reaffirm the value of print issues of journals (and other documents) in these times of electronic access. The library continued to subscribe to the databases – SCOPUS and REAXYS (renewed for 3 years, up to 2016), and, e-journals via Sciencedirect. The library's collection crossed 76000 volumes, and, the library subscribed to 125 print journal titles (for 2014). Thus, the Professor M.M. Sharma Library continues to satisfy the information needs of the students, teachers and researchers from within and outside this Institute.

During the year, Ms. Priti P. Sawant, Senior Library Assistant, received the "Professor M. M. Sharma Best Library Employee" award. I congratulate her on behalf of the entire library team. Congratulations are also due to another of my colleague, Ms. Vanita S. Howal, Library Assistant, who passed her UGC-NET and M.Phil. examinations during the year.

LIBRARY COMMITTEE

Professor P. R. Vavia
Chairman

Professor R. V. Adivarekar
Member

Professor N. Sekar
Member

Dr. S.P. Deshmukh
Member

Dr. A.W. Patwardhan
Member

Dr. R.R. Deshmukh
Member

Jyotsna Waghmare
Member

D. Jotwani
Expert: Librarian,
Central Library, IIT,
Mumbai

Mr. A.S. Lokhande
Member Secretary

SUPPORT STAFF

P. P. Sawant
Senior Library Assistant

V. U. Dalvi
Junior Library Assistant

Vanita Howal
Library Assistant

Prajakta Khamkar
Library Assistant

S.G. Khetle
Library Attendant

J.S. Pawar
Library Attendant

G.G. Anjarlekar
Library Attendant

Wahid Khan
Library Attendant

S.H. Keni
Library Attendant

A.S. Jadiyar
Library Attendant

R.V. Malusare
Library Attendant

S.S. Shende
Library Attendant

LIBRARY TIMINGS:

On Working days
8:30 a.m. – 8:30 p.m.
On 2nd and 4th Saturdays, Sundays and holidays
11.00 a.m.– 6.00 p.m.

The library remains closed on Independence Day, Republic Day, Ganesh Chaturthi, and Dassera.

SPECIALITY AREAS:

Chemistry, Applied Chemistry, Chemical Technology, Chemical Engineering, Pharmacy, Energy & Environmental Engineering, Biotechnology, Food Technology & Fermentation, Polymer Science & Technology, Textile Science & Technology, Oils & Surfactants, Dyestuff Technology.

FACILITIES OFFERED:

Circulation
Internet service (for teachers, students & researchers)
Current awareness
Document Delivery Service (from DELNET)
Photocopying service
Reference & Referral service

LIBRARY COLLECTION AS ON 31ST MARCH 2013

1. Number of books: 76202
2. Number of scientific and technical journals subscribed:
   - 2.1 Foreign: 103
   - 2.2 Indian: 23
3. Microfiches: 20,000
4. Theses & Dissertations: 4211
5. Electronic Resources
   - 5.1 CD-ROMs: 1270
   - 5.2 Online Journals (via IP) from Elsevier, Wiley, Springer, RSC, ACS, Taylor and Francis
   - 5.3 Online Journal Backfiles: 99 titles
     - Wiley: 40 Titles
     - Biotechnology, biochemistry & biophysics: 15 titles
     - Chemistry:11 titles
     - Polymer:10 titles
     - Chemistry Societies:4 titles
     - RSC: 59 titles
   - 5.4 Online databases, namely, SCIFINDER, SCOPUS and REAXYS.

All the E-resources are available for ICT faculty/ scientists/students as per the license agreements.

LIBRARY RESOURCES ADDED DURING THE YEAR 2013-2014:

1. Number of books: 186
2. Number of scientific and technical journals subscribed:
   - 2.1 Foreign: 102
   - 2.2 Indian: 23
3. Microfiches: Nil
4. Theses & Dissertations: Nil
5. Electronic Resources
   - 5.1 CD-ROMs: 24
   - 5.2 Online Journal Backfiles:

     Taylor and Francis: Chemistry backfiles (43 titles)

     Elsevier: Chemical engineering backfiles (38 titles)

     Elsevier: Organic chemistry backfiles (15 titles)

     Sage: 5 titles

MEMBERSHIP OF CONSORTIA & DOCUMENT DELIVERY SERVICES:

UGC-INFLIBNET e-journals consortium

INDEST-AICTE consortium

FINANCIAL RESOURCES

General Fund

Institutional Grants

Library Endowment Fund

TEQIP phase II (World Bank)

MEMBERSHIP

Students of the institute

Undergraduates: 958

Post-graduates: 1212

Academic staff + Other Academic staff: 151

Outside visitors

Daily membership: 550

Individual membership: 36

Corporate Members: 5

USE OF THE LIBRARY RESOURCES:

Books issue/return transactions: 5343/ 5390

Photocopies: 50371

BOOKS WEEDED OUT: Nil

JOURNALS/ISSUES WEEDED OUT: Nil

BOOKS WITHDRAWN FROM THE ACTIVE SHELVES: Nil

JOURNALS/ISSUES WITHDRAWN FROM THE ACTIVE SHELVES: Nil

DEPARTMENTAL ACHIEVEMENTS:

- ICT received the 'Best Usage' award for Deemed Universities at the RSC Librarian Appreciation Day function held on Friday, August 30, 2013 at Hyderabad.
- Shri Amogh S. Lokhande, Librarian, delivered a lecture on 'Effective Literature Survey' for the Post-Graduate and Doctoral degree students of the Department of Fibres and Textile Processing Technology, ICT, on January 15, 2014, in the Textiles Conference Room.
- Shri Amogh S. Lokhande, Librarian, organized an Author Workshop at K.V. Auditorium, ICT, on February 5, 2014. Dr. Richard Threlfall, Managing Editor, Asian Journal of Organic Chemistry was the expert speaker, who guided the participant students on the various facets of the journal article publishing process, and, how they could improve the possibility of ensuring the selection of their manuscripts.
- A.S. Lokhande delivered a lecture on 'Literature survey and Electronic Resources' for the students of T.Y.B.Tech. (Dyes) on Thursday, March 20, 2014, in the Department of Dyestuff and Intermediates Technology, ICT.

INDIVIDUAL ACHIEVEMENTS:

- Shri Amogh S. Lokhande, Librarian, was invited as the Resource Person at the National Workshop on Library Automation at SGGSIET, Nanded, held during December 3-7, 2013.
- Shri Amogh S. Lokhande, Librarian, presented a paper in the National Conference on 'CHAN-GING TRENDS IN ACADEMIC LIBRARIANSHIP IN ELECTRONIC ENVI-RONMENT' organized by and held at C.T. Bora College, Shirur, Dist. Pune during December 13-14, 2013.
- Shri Amogh S. Lokhande, Librarian, published the following article, Nanotechnology literature: a bibliometric study. In-ternational Journal of Information Dissemination and Technology, Vol.3 Iss.4 (December 2013), p.288-291.
- Ms. Vanita S. Howal passed the UGC-NET examination in the subject Library and Information Science held in December 2012. The result was declared in June 2013.
- Ms. Vanita S. Howal passed the M.Phil. examination in Library and Information Science from YCMOU in June 2013.
- Ms. P.P. Sawant, Shri V.U. Dalvi and Ms. V.S. Howal attended the training programme on 'Library Automation and Networking' organized by and held at NISCAIR, New Delhi, during August 23-27, 2013, under the TEQIP phase II.
- Ms. P.P. Sawant, Shri V.U. Dalvi, Ms.V.S. Howal, Shri A.S. Jadiyar, Shri S.S. Shende, Shri P.R. Gurav, Shri A.J. Deudkar, Shri D.A. Bhosle, Shri V.S. Tondlekar and Shri G.G. Kadam completed the English Speaking training course held during November 18, 2013 to March 4, 2014, under TEQIP phase II at ICT. Shri V.U. Dalvi and Shri G.G. Kadam were selected as 'Best performer' in their respective batches of English Speaking training course.

AWARDS AND PRIZES:

- Ms. Priti P. Sawant, Senior Library Assistant, was awarded the "Professor M. M. Sharma Best Library Employee" award for her meritorious service.
- Ms. Priti P. Sawant won 2nd prize in the Carrom (Singles) competition held at ICT.

PREFACE

COUNSELLING SERVICES

As in the past, I met the Hostelites and discussed some of their problems. Some feel lonely and lost without their family and need a little help soon they are able to settle down comfortably.

RITA DOCTOR
(COUNSELLOR)

Every year an Orientation programme is held for the Freshers who are present in large numbers along with their parents. It makes them aware of the Counselling Services and they feel free to meet me whenever the need arises. However in 2013, there was no general Orintation Programme where I could address the new entrants. As a result, very few 1st year students met me (and that was only because some seniors had guided them to me) or even knew that there was a counsellor on the premises. The parents who accompanied some of them were equally oblivious of the counseling facility provided by the college.

As in the past, I met the Hostelites and discussed some of their problems. Some feel lonely and lost without their family and need a little help soon they are able to settle down comfortably. Meeting students from various branches, in groups of ten discussing various issues with them including their strengths and weaknesses, helps them to come later for a follow- up session, on a one to one basis. This time I met Post Graduate students from Green Technology, Chemistry and Pharma, along with several undergraduates.

This year in all, I could meet about 175 students both boys and girls in almost equal proportion. Nearly 60% came for follow-up sessions. The problems continue to be more or less of the same type Academic problems take center stage. Difficulty in understanding certain subjects, not being on good terms with the teacher, not performing well in the exam, are a major source of worry. Psychological and emotional problems, such as discord in the family, not being able to adjust to other students including room partners, not being able to accept defeat or failure, not being in a relationship, troubled by a one sided relationship, breakup of a relationship, uncertainty about future goals- are some more sources of disturbance for the young students.

A few of the Post Graduate students have problems with their Guides, who they claim expect them to do the Departmental work and their personal work, leaving them little time for their own Research work. There could be many more problems which the students may be facing. It would be in their interest to approach the Counsellor.