ANNUAL REPORT 2012-2013

(April 1, 2012 – March 31, 2013)

Chemical Engineering

Introduction

The Department of Chemical Engineering has a strong focus on excellence in education and research. The Department has a dynamic faculty with a wide range of research specializations. Research activities in the Department are supported by excellent research students (Ph.D., M.Tech. and Dual Degree), very competent technical staff, and good experimental and computational facilities.

The recruitment of students into the Ph.D. programme continues to show an uptrend and has contributed to the increase in research activity in the Department. The Department also received good funding for sponsored projects this year. The total numbers of International journal publication this year is around 98. This is equivalent to about 2.88 numbers of papers per faculty in a year.

The Department-Industry interactions were multifold this year including continuing education courses (both open and in-house programmes), consultancy, and technology transfer.

The activities and achievements of the Department for the year 2012-2013 are given in the following sections.

Academic Programmes

Degrees Awarded

B.Tech.	:	53
Dual Degree (B.Tech., M.Tech.)	:	21
M.Tech.	:	14
M.S. (by Research)	:	00
Ph.D.	:	10
PGDIIT (Exit)	:	02

R&D activities

The department is involved in a variety of frontier and traditional areas in chemical engineering research, under the broad areas of:
Biological Systems Engineering
Energy & Environment
Materials Engineering
Process Systems Engineering
Reactor Engineering
Transport Phenomena and Complex Fluids
The department received grants from various sources towards many new projects during the year apart from various ongoing projects.

The Department received grants from various sources towards many new projects during the year apart from various ongoing projects. The summary of which is as follows:

Sponsored Research Projects (Ongoing)	87
Sponsored Projects (New)	21
Sanctioned Amount (2010-11)	Rs. 21,34,23,543/-
Completed Projects	10
Faculty involved	34

The details of these projects is given in the following table

Project Title	**Agency Name**	**Project Status**
Development of non-hazardous process for the synthesis of Dimethyl carbonate (DMC) from methanol and urea	Council of Scientific and Industrial Research	Ongoing
Development of platform technology for Nitrilase catalyzed biotransformation processes	DEPTT OF BIOTECHNOLOGY	Ongoing
Task force meeting	DEPTT OF BIOTECHNOLOGY	Ongoing
Nanocomposite hollow fiber membranes and biomaterials for hemodialysis and reconstructive medicine	DEPTT OF BIOTECHNOLOGY	Ongoing
Development of bacterial expression systems suited for large scale production of industrial enzymes.	DEPTT OF BIOTECHNOLOGY	Ongoing
DBT Screening Committee meeting on Development of Next Generation Imaging Technologies for Biomedical Applications	DEPTT OF BIOTECHNOLOGY	Ongoing
Reprogramming cellular networks in Salmonella enterica to develop novel vaccines.	DBT Innovative Yong Biotechnologist Award	Ongoing
Ramanujan Fellowship - Electrochemical oxygen reduction on platinum sub-monolayer electrocatalysts	Department of Science & Technology	Ongoing

"Self-assembly in Colloidal systems: From photonics crystals to mud-cracking"	Department of Science & Technology	Ongoing
PROCESS AND PRODUCT IMPROVEMENTS IN KOLHAPUR TYPE JAGGERY MAKING UNIT	Department of Science & Technology	Ongoing
IRHPA Projects Workshop 2013	Department of Science & Technology	Ongoing
SERC School on Introduction to Systems and Synthetic Biology for Scientists or Engineers	Department of Science & Technology	Ongoing
Engineering Escherichia coli strains optimized for large scale lignocelluloses fermentation for biofuel production	Department of Science & Technology	Ongoing
Thermodynamically Stable Pickering Emulsions	Department of Science & Technology	Ongoing
Design and Synthesis of Porous Materials for Carbon Capture and Seuestration: Molecular modeling study	Department of Science & Technology	Ongoing
Genomic scale systemic modeling of gene regulatory networks, metabolic and signaling pathways to predict phenotypic response and experimental validation	Department of Science & Technology	Ongoing
Development of electrocatalysts for electrochemical reduction of carbon dioxide to formic acid and syn-gas	Department of Science & Technology	Ongoing
Development and setting up of propylene drying unit at Visakh Refinery	Hindustan Petroleum Corporation Ltd.	Ongoing
Coupled Geochemical and Transport processes in Geologic Carbon Sequestration: Evolution of Geochemical Gradients and Flow properties in Diffusion-Limited Zones	MCDONNELL ACADEMY ,ST. LOUIS, USA.	Ongoing
FOSS on Aakash	Internally funded by MHRD project	Ongoing
Hardware and Software optimization, and testing of Low Cost Access Devices (LCAD)	Ministry of Human Resource Development	Ongoing
Teachers Empowerment, Students Empowerment,and Integration Tools for Empowerment (Synchronous Delivery), abbreviated as the Talk to a Teacher project (Phase 2)	Ministry of Human Resource Development	Ongoing
National Mission on Education through ICT (Ministry of Human Resource Development)	Ministry of Human Resource Development	Ongoing
Metabolic engineering of a model cyanobacterium Synechococcus sp. PCC 7002 for enhanced bio-fuel production.	RELIANCE INDUSTRIES LTD., MUI	Ongoing

Consultancy projects:

The department undertook 21 jobs generating Rs. Rs.5148934/- The total number of faculty involved 09.

Extension activities:

CEP courses:

Nil

Symposium

Research Scholars' Symposium 2013
Azeotropy 2013
Mumbai-Pune Soft Matter Meet: Jan 2012,

Indo US Workshop on "Cyanobacteria: Molecular networks to biofuels, Dec 2012

Seminars:

Convener: Prof. P.W. Wangikar

- Dr. Prankul Middha's Talk
  "The use of CFD for explosion safety studies on process facilities" 11 Apr 2012, Senior Engineer , GexCon, Bergen, Norway
- Dr. Sirshendu De's Talk
  "Polymeric membranes: Tailor-made casting and their applications" 16 Apr 2012, Professor Dept. of Chemical Engg., I.I.T. Kharagpur
- Dr. Sirshendu De's Talk
  "Modeling approaches of pressure driven membrane separation processes" 17 Apr 2012, Professor Dept. of Chemical Engg., I.I.T. Kharagpur
- Dr. Sirshendu De's Talk
  “Development of low cost arsenic filter” 17 Apr 2012, Professor Dept. of Chemical Engg., I.I.T. Kharagpur
- Dr. Jean-Francois Leon's Talk
  “Monitoring of particulate air pollution for health impact assessment: active and passive remote sensing”, 18 Jul 2012, Leon Laboratoire d'Aérologie & Observatoire Midi-Pyrénées, FRANCE.
- Sajith K.V. 's Talk
  “Safety Talk for Research Scholars and Faculty" 9 Aug 2012, Safety Officer, IIT Bombay
- Prof. Anand Yethiraj's Talk
  “Physics and Materials Science of Colloid Spincoating .”, 23 Aug 2012,
  Associate Professor, Memorial University, St. John's, Canada.
- Dr.Bhaswar Ghosh's Talk
  “Divergent promoter architectures employed by the co-regulated budding yeast ribosomal protein genes”, 11 Oct 2012, Computational Systems Biology Lab Ecole Polytechnique Federale de Lausanne Lausanne, Switzerland.
- Dr. Ananya Debnath's Talk Modelling of processes involving biological chain and macro molecules”, 11 Oct 2012 Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany.
- Dr. Deepak Kunzru's Talk
  “Microstructured Reactors for Heterogeneous Reactions by Dr. Deepak Kunzru, Professor” 6 Nov 2012, Professor, Department of Chemical Engg. I.I.T. Kanpur.
- Dr. Abhijit Majumder's Talk
  “Field-Theoretic Modeling of Supramolecular Polymer Networks and Gels” 22 Nov 2012.

- Prof. Ravi Prakash Jagadeeshan's Talk
  “Concentration Dependent Dynamics Of Semi-Dilute DNA Solutions” 6 Dec 2012, Department of Chemical Engineering,Monash University” 13 Jan 2012 ,
- Dr. Sujata Sohoni's Talk
  “Promoter engineering and energy perturbation to improve antibiotic production in/ Streptomyces coelicolor”, 12 Jan 2012, Research Scientist at Novozymes
- Dr. Barry C. Buckland”s Talk
  “BIOPROCESS ENGINEERING CHALLENGES FOR THERAPEUTIC PROTEIN AND VACCINES”, 18 Dec 2012, Professor, university college London.
- Rohan Hule's Talk
  "Exploring Structure-Property Relations: Side-Group Liquid Crystalline Polymers and Self-Assembled Peptide Hydrogels, 20 Dec 2012, Division of Chemisty and Chemical Engineering, California Institute of Technology.
- Dr. P. A. Ramachandran's Talk
  “Polysilicon production - Modelling and Scaleup”, 8 Jan 2013, Department of Chemical Engineering,Washington University, St. Louis.
- Dr. Suvajyoti Guha's Talk
  “Understanding Bio-nanoparticle Behavior through Physical Characterization” 10 Jan 2013. Food and Drug Administration, Silver Spring, Maryland, U. S. A.)
- Dr. Y S Mayya's Talk
  “Coagulation modelling of dispersing nanoparticle aerosols released from continuous sources.”, 24 Jan 2013, Ex-Head, Radiological Physics and Advisory Division, BARC.
- Dr. Vivek Trivedi's Talk
  “Supercritical fluid processing: Chemical engineering and novel drug delivery systems”, 14 Feb 2013, Lecturer in Formulation Science, School of Science,, University of Greenwich.
- Prof. Matthew Tirrell's Talk
  “IProtein Analogous Micelles: Versatile, Modular Nanoparticles .” 20 Feb 2013, Director, Institute of Molecular Engineering University of Chicago, Chicago, USA
- Samruddhi Kamble's Talk
  “YIELDING IN SOFT COLLOIDAL GLASSES USING RHEOLOGY AND LIGHT SCATTERING ”, 21 Mar 2013, PhD Student, IIT Bombay and NCL, Pune
- Apratim Chatterji's Talk
  “Self-assembly of ordered cylindrical nano-structures: A theoretical investigation of experimental results”, 28 Mar 2013, IISER-Pune.

Conferences /Symposia/Workshops and Seminars (participated):

Sharad Bhartiya

- Presented two papers at International Symposium of Advanced Chemical Processes (ADCHEM), held at Singapore, July 10-13, 2012. 1) Gupta, A., Bhartiya, S., Nataraj, P.S.V., Explicit-model predictive control: A simulation based scalability study, ADCHEM IFAC Proceedings Volumes (IFAC-PapersOnline) 8 (PART 1), pp. 204-209 2) Hariprasad, K.H., Bhartiya, S., Gudi, R.D. ,A multiple linear modeling approach for nonlinear switched systems, ADCHEM IFAC Proceedings Volumes (IFAC-PapersOnline) 8 (PART 1), pp. 63-68
- SERC School on Introduction to systems and synthetic biology for scientists and engineers, delivered one lecture on “Optimization and control of Biological Networks”, April 30-May 03, 2012

Venkat Gundabala

- Presented a talk titled "Microfluidic route to generation of celloidosomes" at the APS March meeting 2013 held at Baltimore, USA from March 18-22, 2013.

Vinay A. Juvekar

- Paper Presented: 'Investigation on dynamics of double emulsion droplet in a uniform electric field', Purushottam Soni, Vinay A. Juvekar, Vijay M. Naik, Electrostatics 2013, Budapest, Hungary, April 17-19, 2013.
- Paper Presented: Study of Equilibrium & mass transfer of co-extraction of mineral acid and Fe(III) from aqueous solution by Tri-n-Butyl Phosphate using Bulk Liquid Membrane, Diptendu Das, Vikas Kumar Rahi, V.A.Juvekar and R. Bhattacharya, ICCET 2013: International conference on Chemical Engineering and Technology, New York, June 5-6, 2013
- Poster Presented: 'Open Bipolar Electrolysis in Multi-Electrode Systems' Rajkumar S. Patil, V. A. Juvekar, MaCKiE 2013-Mathematics in Chemical Kinetics and Engineering , Chennai, February 4- 6, 2013

Devang V Khakhar

- Presented a paper "Rheology and Segregation of Granular Mixtures in Dense Flows" in the 21st International Conference on Discrete Simulation of Fluid Dynamics, July 23-27, 2012, Bangalore.

Ateeque Malani

- Attended AIChE Annual Meeting at Pittusburg, USA in November 2012. Chaired two session on Molecular Modeling and Simulations of Complex System at AIChE Annual Meeting. Gave a departmental seminar at Chemical Engineering Department of University of Illinois at Chicago, USA on molecular level modeling of wetting behaviour and self-assembly processes.

Janaky Narayanan

- Lecture on Small angle x-ray scattering technique to study protein crystallization, protein-surfactant complexation and protein polymerizationt; in the National Workshop on Soft Condensed Matter, organized at Institute of Chemical Technology, Matunga, Mumbai during 6-8, June 2012.

Supreet Saini

- Network Architecture and cellular behavior in bacteria. International Conference on Networks in Biology, Social Science, and Engineering, IISc, Bangalore, India (2012)
- Impact of network map and architecture on gene expression dynamics. Foundations of Systems Biology and Engineering (FOSBE), Tsuruoka, Japan (2012)
- Dynamics and Control of the Clostridium acetobutylicum metabolic network. Clostridium XII, Nottingham, United Kingdom (2012)

Rochish Thaokar

- Presented Poster on "Mechanism of Electroformation" at Bio-Membrane Days, Berlin, Germany.
- Presented a talk on "Drop deformation and dielectrophoresis in quadrupole electric fields" in Internatiaonal Symposium on Electrohydrodynamics, Gdansk, Poland

Mukta Tripathy

- SERC School-cum-Symposium on Molecular Simulations, IIT Kanpur, 27-30 November 2012.
- Visiting Faculty, Indian Institute of Science, Bangalore, 10 May 2013 - 30 June 2013.

Ganesh A Viswanathan

- Presented a poster "Noise propagation in series MAPK cascades" in Gordon Conference on "Stochastic Physics in Biology", Ventura, USA, 2013.
- Presented a paper "Transversal pattern formation in non-adiabatic catalytic packed-bed reactors" in MaCKiE 2013: International workshop on Mathematics in Chemical Kinetics and Engineering, IIT Madras, Chennai, 2013.
- Served as Member of Organizing Committee, MaCKiE 2013: International workshop on Mathematics in Chemical Kinetics and Engineering, IIT Madras, Chennai, 2013.

Invited Lectures:

Invited Lectures: National/International

Sharad Bhartiya

- Stabilizing MPC for linear switched systems, ABB Corporate Research, January 25, 2013
- Mathematics in Biological Sciences, Popular Talk at MatheMite 07, V.E.S. College of Arts, Science & Commerce, Chembur, Mumbai, January 20, 2013.

Devang V. Khakhar

- Presented a plenary lecture "Rheology and Segregation of Granular Mixtures in Dense Flows" at the Asian Particle Technology Conference July 3-5, 2012, Singapore

Sachin C. Patwardhan

- Delivered keynote address titled “Advanced Process Monitoring and Control: An Overview” in Aditya Birla Group Simulation Conference 2012, Mumbai, 5’th Dec., 2012.
- Delivered series of two lectures titled “Bayesian Nonlinear State Estimation: A Tutorial Review” in Dept. of Chemical and Materials Engineering, University of Alberta on 29’th and 30’th May, 2012.

Mukta Tripathy

- Particle Guided Self-Assembly of Polymer Melts, November 30, 2013, Indian Institute of Technology Kanpur
- Equilibrium Phase Behavior of Chemically Anisotropic Rods, May 23, 2013, Indian Institute of Science Bangalore
- Introduction to Integral Equation Theory of Spheres, June 28, 2013, Indian Institute of Science Bangalore

K. V. Venkatesh

- Invited plenary speaker at International Symposium on Frontiers in Computational Systems Biology and Bioengineering, February 28 - March 1, 2013, Iizuka, Fukuoka , JAPAN

Ganesh A Viswanathan

- "Library: A center stage?" in "Workshop on Meeting User Expectations", IIT Bombay, Powai, Mumbai, India (May 2013).
- "Noise propagation in MAPK Cascades" at Indian Institute of Technology Gandhinagar, Gandhinagar (October 2012).

Significant Awards and Distinctions:

Sharad Bhartiya

- Reviewed papers for BMC Systems Biology, Journal of Process Control, Nonlinear Analysis - Hybrid Systems; Indian Journal of Chemical Technology.
- Member of IPC, Control Systems 2012, April 22-25, 2012, New Orleans, Louisiana

Devang V. Khakhar

- J. C. Bose Fellowship

Honorary Work

Devang V. Khakhar

- Executive Editor, Advanced Powder Technology

Vinay A. Juvekar

- Paper Reviewed: ACS Applied Materials & Interfaces (1 No) , Industrial & Engineering Chemistry Research(3 No), The Journal of Physical Chemistry (1 No), Applied Surface Science(2No), Chemical Engineering Journal (1No), AIChE Journal (1No), Colloids and Surfaces A (1No), Fluid Phase Equilibria(1No), The Canadian Journal of Chemical Engineering (1No),Separation and Purification Technology(1No), Bulletin of Materials Science (1No), Ultrasonics Sonochemistry (1No)
- Reviewed papers: Chem. Eng. Jl (1No), ACS App. Mat. & Int. (1 No), J.Phys.Chem.(1No), AIChE Journal (1No), IECR (4No), Bull. Mat. Sci. (1No), Sep. Pur. Tech. (1No), Ult. Son. (1No) , Can. Jl. Chem. Eng (1No), . App. Sur. Sci. (2No) . Coll. Surf. A (1No), Flu.Ph.Eq. (1No)

Partha Sarathi Goswami

- Reviewed a paper in Computers and fluids (Elsevier)

Venkat Gundabala

- Reviewed article for "Applied Nanoscience".

Sarika Mehra

- Member of Advisory Editorial Board for Journal of Chemical Technology and Biotechnology.
- Reviewer for journals including Mathematical Biosciences, BMC Research Notes

Sachin C. Patwardhan

- Review of journal articles for 1. Computers and Chemical Engineering 2. Chemical Engineering Science 3. Journal of Process Control 4. Industrial and Engineering Chemistry Research.
- Evaluation of PhD thesis for Dept. of Chemical Eng., IIT Madras.
- Served as IPC member and associate editor for conference proceedings for IEEE Conference on Control Applications (CCA-2013), Hyredabad, India, Aug. 28-30, 2013.

Ganesh Viswanathan

- Reviewed papers for BMC Systems Biology

Faculty Members and their specializations:

Jhumpa Adhikari
Statistical Thermodynamics, Molecular Simulations
Rajdip Bandyopadhyaya
Porous Media, Colloids, Aerosols, Thin films, Surface Science, Nanoparticles, Nano-composites, Molecular Simulations
Jayesh Bellare
Separations, Surface Science, Nanoparticles, Microscopy, Drug Delivery
Sharad Bhartiya
Process Control, Modelling, Identification
Mani Bhushan
Process Safety Analysis, Process Control, Optimisation, Identification
Abhijit Chatterjee
Computational Material Science, Multiscale modeling, Energy application
Partha Sarthi Goswami
Turbulent suspensions, Multiphas flow
S Ganeshan
Heat and Mass Transfer
Ravindra D. Gudi
Process Safety Analysis, Process Control, Optimisation, Identification, Biochemical Engineering
Venkat Gundabala
Microfluidics, Colloids and nano-composite materials
Sameer Jadhav
Surface Science, Computational Flow Modelling (CFD), Drug Delivery, Biomolecular Engineering
Vinay A. Juvekar
Surfactants, Separations, Rheology, Electrohydrodynamics, Multiphase Reaction, Surface Science, Polymer Physics
Devang V. Khakhar
Surfactants, Rheology, Granular Flow, Reactor Modelling, Polymer Processing, Nano-composites, Drug Delivery
Sanjay. M. Mahajani
Separations, Computational Flow Modelling (CFD), Multiphase Reaction, Catalysis, Renewable Resources, Coal Gasification
Ateeque Malani
Computational Material science, Modeling and Interfacial science, Simulations.
Ranjan Kumar Malik
Separations, Modelling, Energy Integration
Anurag Mehra
Surfactants, Multiphase Reaction, Nanoparticles, Molecular Simulations, Food Engineering
Sarika Mehra
Systems Biology, Computational Biology, Biomolecular Engineering
Arun Sadashio Moharir
Separations, Reactor Modelling, Optimisation, Modelling, Pollution
Kannan M. Moudgalya
Process Control, Modelling
Mamata Mukhopadhyay
Separations, Food Engineering
V. M. Naik
Surfactants, Separations, Electrohydrodynamics, Colloids, Surface Science, Polymer Processing, Nanoparticles, Food Engineering

Hemant Nanavati
Statistical Themodynamics, Polymer Processing, Polymer Physics, Nano-composites, Molecular Simulations, Renewable Resources
Janaky Narayanan
Surfactants, Rheology, Surface Science, Microscopy
Santosh Noronha
Renewable Resources, Green Engineering, Systems Biology, Computational Biology, Biomolecular Engineering, Biochemical Engineering
Sachin C. Patwardhan
Process Control, Modelling, Identification
V Govardhana Rao
Separations, Rheology, Heat and Mass Transfer
Sandip Roy
Surfactants, Separations, Process Safety Analysis, Surface Science, Statistical Thermodynamics, Renewable Resources
Supreet Saini
Systems Biology, Synthetic Biology, Theoretical Biology
Arindam Sarkar
Electrochemistry, Material Science
Jyoti Seth
Complex Fluids, Renewable Energy
Hariharan S. Shankar
Pollution, Biochemical Engineering
Yogendra Shastri
Process systems engineering, Optimization, Biofuels sustainability
P. Sunthar
Surfactants, Granular Flow, Fluid Mechanics and Stability, Computational Flow Modelling (CFD), Polymer Physics, Drug Delivery
A. K. Suresh
Heat and Mass Transfer, Multiphase Reaction, Catalysis, Nanoparticles, Biochemical Engineering
Rochish M Thaokar
Surfactants, Electrohydrodynamics, Computational Flow Modelling (CFD), Colloids, Statistical Themodynamics, Nanoparticles, Drug Delivery
Mahesh S Tirumkudulu
Surfactants, Rheology, Computational Flow Modelling (CFD), Colloids, Coatings, Thin films, Surface Science, Drug Delivery
Mukta Tripathy
Colloid Science, Statistical Mechanics, Self-assembly, Polymer Science
Chandra Venkataraman
Aerosols, Surface Science, Nanoparticles, Nano-composites, Drug Delivery, Renewable Resources, Pollution, Climate Change
K. V. Venkatesh
Food Engineering, Systems Biology, Biomolecular Engineering, Biochemical Engineering
Madhu Vinjamur
Porous Media, Heat and Mass Transfer, Coatings, Food Engineering, Renewable Resources
Ganesh A Viswanathan
Reactor Modelling, Multiphase Reaction, Systems Biology, Computational Biology, Biomolecular Engineering
Pramod Wangikar
Process Control, Modelling, Computational Biology, Biomolecular Engineering, Biochemical Engineering

Publications:

Book chapters:

Nil

Articles in Journals

Articles in Journals (National):

Nil

Articles in Journals (International):

Pawar, A.A., Chen, D., Venkataraman, C. , "Influence of precursor solvent properties on matrix crystallinity and drug release rates from nanoparticle aerosol lipid matrices", *International Journal of Pharmaceutics*, 2012.

Malani, A., K. G. Ayappa, . , "Relaxation and jump dynamics of water at the mica interface", *J. Chem. Phys.*, vol. 136, pp. 194701, 2012.

Malani, A. , "Confined fluids in a Janus pore: influence of surface asymmetry on structure and solvation forces", *Mol. Sim.*, 2012.

Arya, R.K., Vinjamur, M. , "Sensitivity analysis of free-volume theory parameters in multicomponent polymer-solvent-solvent systems", *Journal of Polymer Engineering*, vol. 32, issue 8-9, pp. 463 - 473, 2012.

Arya, R.K., Vinjamur, M. , "Measurement of concentration profiles using confocal Raman spectroscopy in multicomponent polymeric coatings-model validation", *Journal of Applied Polymer Science*, 2012.

Bhattacharjee, J., Aswal, V.K., Hassan, P.A., Pamu, R., Narayanan, J., Bellare, J. , "Structural evolution in catanionic mixtures of cetylpyridinium chloride and sodium deoxycholate", *Soft Matter*, vol. 8, pp. 10130-10140, 2012.

Boda, A., De, S., Ali, S.M., Tulishetti, S., Khan, S., Singh, J.K. , "From microhydration to bulk hydration of Sr2+ metal ion: DFT, MP2 and molecular dynamics study", *Journal of Molecular Liquids*, vol. 172, pp. 110-118, 2012.

Bavdekar, V.A., Shah, S.L., Patwardhan, S.C. , "Perspectives on state estimation: Spot estimates versus distributions", *IFAC Proceedings Volumes (IFAC-PapersOnline)*, vol. 8, issue PART 1, pp. 715 - 721, 2012///.

Bavdekar, V.A., Patwardhan, S.C. , "Development of grey box state estimators for systems subjected to time correlated unmeasured disturbances", *Journal of Process Control*, vol. 22, issue 9, pp. 1543 - 1558, 2012///.

Manohar, C., Narayanan, J. , "Average packing factor approach for designing micelles, vesicles and gel phases in mixed surfactant systems", *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, vol. 403: Elsevier, pp. 129-132, June 2012.

Chatre, A., Thaokar, R.M., Mehra, A. , "Color and surface plasmon effects in nanoparticle systems: Case of silver nanoparticles prepared by microemulsion route", *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, vol. 404, 83-92, 2012.

Chattopadhyay, S., Ehrman, S.H., Bellare, J., Venkataraman, C. , "Morphology and bilayer integrity of small liposomes during aerosol generation by air-jet nebulisation", *Journal of Nanoparticle Research*, vol. 14, 2012.

Chikramane, P.S., Kalita, D., Suresh, A.K., Kane, S.G., Bellare, J.R. , "Why Extreme Dilutions Reach Non-zero Asymptotes: A Nanoparticulate Hypothesis Based on Froth Flotation", *Langmuir*, vol. 28, pp. 15864-15875, 2012.

Cherian, R., Venkataraman, C., Ramachandran, S., Quaas, J., Kedia, S. , "Examination of aerosol distributions and radiative effects over the Bay of Bengal and the Arabian Sea region during ICARB using satellite data and a general circulation model", *Atmospheric Chemistry and Physics*, vol. 12, issue 3, pp. 1287 - 1305, 2012///.

Daggupati, S., Mandapati, R.N., Mahajani, S.M., Ganesh, A., Pal, A.K., Sharma, R.K., Aghalayam, P. , "Compartment Modeling and Flow Characterization in Nonisothermal Underground Coal Gasification Cavities", *Industrial & Engineering Chemistry Research*, vol. 51, pp. 4493-4508, 2012.

Dahe, G.J., Teotia, R.S., Bellare, J.R. , "Correlation between spinning temperature, membrane morphology, and performance of Psf/PVP/NMP/Water hollow fiber membrane forming system", *Journal of Applied Polymer Science*, vol. 124, pp. E134-E146, 2012.

Dahe, G.J., Teotia, R.S., Bellare, J.R. , "The role of zeolite nanoparticles additive on morphology, mechanical properties and performance of polysulfone hollow fiber membranes", *Chemical Engineering Journal*, vol. 197, pp. 398-406, 2012.

Das, S., Bellare, J.R., Banerjee, R. , "Protein based nanoparticles as platforms for aspirin delivery for ophthalmologic applications", *Colloids and Surfaces B-Biointerfaces*, vol. 93, pp. 161-168, 2012.

Deshmukh, S.D., Thaokar, R.M. , "Deformation, breakup and motion of a perfect dielectric drop in a quadrupole electric field", *Physics of Fluids*, vol. 24, 2012.

Dhakhwa, S., Bandyopadhyay, S., Majozi, T., Garg, A. , "Efficacy of Chemical Oxidation and Coagulation for COD and Color Reduction from Pulp Mill Effluent", *Journal of Environmental Engineering-Asce*, vol. 138, pp. 1194-1199, 2012.

Dhananjaneyulu, V., Sagar, P.V.N., Kumar, G., Viswanathan, G.A. , "Noise Propagation in Two-Step Series MAPK Cascade", *Plos One*, vol. 7, 2012.

Deshpande, S.S., Joy, P., Patwardhan, S.C. , "Computationally efficient globally linearizing control of a CSTR and the Tennessee Eastman problem using quadratic perturbation models", *Proceedings of the American Control Conference*, pp. 3503 - 3508, 2012///.

Detroja, K.P., Gudi, R.D. , "Fault isolability analysis based on steady state fault signatures", *2012 11th International Conference on Environment and Electrical Engineering, EEEIC 2012 - Conference Proceedings*, pp. 782 - 787, 2012///.

Dey, L., Venkataraman, C. , "A wet electrostatic precipitator (WESP) for soft nanoparticle collection", *Aerosol Science and Technology*, vol. 46, issue 7, pp. 750 - 759, 2012///.

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Das, S., Bellare, J.R., Banerjee, R. , "Protein based nanoparticles as platforms for aspirin delivery f or ophthalmologic applications", *Colloids and Surfaces B: Biointerfaces*, vol. 93, pp. 161 - 168, 2012///.

Gadkari, S., Thaokar, R. , "Role of Viscosity Ratio in Liquid-Liquid Jets under Radial Electric Field ", *International Journal of Chemical and Environmental Engineering*, vol. 1, issue 6, pp. 102, 2012.

Ghosh, S., Patil, S., Ahire, M., Kitture, R., Gurav, D.D., Jabgunde, A.M., Kale, S., Pardesi, K., Shinde, V., Bellare, J., Dhavale, D.D., Chopade, B.A. , "Gnidia glauca flower extract mediated synthesis of gold nanoparticles and evaluation of its chemocatalytic potential", *Journal of Nanobiotechnology*, vol. 10, 2012.

Ghosh, S., Patil, S., Ahire, M., Kitture, R., Kale, S., Pardesi, K., Cameotra, S.S., Bellare, J., Dhavale, D.D., Jabgunde, A., Chopade, B.A. , "Synthesis of silver nanoparticles using Dioscorea bulbifera tuber extract and evaluation of its synergistic potential in combination with antimicrobial agents", *International Journal of Nanomedicine*, vol. 7, pp. 483-496, 2012.

Gupta, V.H., Singh, M., Amarapurkar, D.N., Sasi, P., Joshi, J., Baijal, R., Hassan, P., Amarapurkar, A.D., Joshi, K., Wangikar, P.P. , "Antituberculous drug induced hepatotoxicity: Role of drug metabolizing enzyme polymorphism in prediction", *Hepatology*, vol. 56, pp. 593A-593A, 2012.

Gupta, V.K.N., Mehra, A., Thaokar, R. , "Worm-like micelles as templates: Formation of anisotropic silver halide nanoparticles", *Colloids and Surfaces a-Physicochemical and Engineering Aspects*, vol. 393, pp. 73-80, 2012.

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****Note***: Publications shown above are published in the calendar year 2012.*

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