

4.4 DEPARTMENT OF CHEMICAL ENGINEERING

4.4.1 Introduction:

The Department of Chemical Engineering was established in 1959. The department has 28 faculty members who carry out research in state of the art areas. The focus of the research is geared towards: energy, materials and environment. Faculty work towards analyzing these systems by understanding their behavior at the molecular level as well as using a systems approach.

4.4.2 Academic Programmes:

New Courses introduced:

Sl. No.	Course No.	Title
1	CH5520	Mathematical methods for Chemical Engineers
2	CH5530	Process Simulation Lab.
3	CH5531	Advanced Chemical Engineering Lab.
4	CH2082	Computational Programming and Process Simulation Lab.

New lab(s) established:

Particle Characterization using HR-SEM.

Students on roll:

Programme	I year	II Year	III Year	IV Year	V Year & others	Total
B.Tech.	76	60	53	45	6	240
Dual Degree	20	14	13	14	17	78
M.Tech.	35	28	6	-	-	69
M.S.	10	8	6	1	-	25
Ph.D.	16	7	7	9	11	50
Total	157	117	85	69	34	462

Endowment prize instituted:

- Prof. R. Nagarajan has instituted prizes for the best girl students in all disciplines of IIT Madras.
- Prof. M. Ramanujam endowment prize was instituted for (i) best performance in course on Mechanical Operations and (ii) best M.Tech. / D.D. thesis in the area of Particle Technology.
- Smt. D.L. Saraswathi Memorial Prize was instituted for the best M.Tech. / D.D. thesis in the area of Environmental Engineering / Reaction Engineering.

Names of Student/Scholar who attended Conference/ /Seminar and Symposia Abroad/India:

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/ Seminar / Symposia / Workshop	Date and Venue	Financial Assistance from
Abroad:					
1	Venkat Reddy Regatte	CH08D004	International Congress on Chemical and Process Engineering (CHISA-19), Prague, Czech Republic	28.8.2010 – 1.9.2010	IIT Madras
2	Venkata Suresh Patnaikuni	CH07D001	International Congress on Chemical and Process Engineering (CHISA-19), Prague, Czech Republic	28.8.2010 – 1.9.2010	IIT Madras
3	R. Anandalakshmi	CH08D017	AJTEC 2011, Hawaii, USA	13 – 17.3.2011	IIT Madras
4	V. Prabu	CH08D011	241st ACS National Meeting and Exposition 2011, California, USA	27 – 31.3.2011	IIT Madras

India:					
1	Sujitkumar Bontapalle	CH08S003	ICPPC 2010, MG University Kottayam, Kerala	15 – 17.1.2010,	IIT Madras
2	B. Ashraf Ali	CH06D001	Chromatography Tips Trichy	17.5.2010	IIT Madras
3	Venkat Reddy Regatte	CH08D004	ChEmference 2010, IIT Kanpur	13 – 14.7.2010	IIT Madras
4	R. Anandalakshmi	CH08D017	ChEmference 2010, IIT Kanpur	13 – 14.7.2010	IIT Madras
5	M. Kranthi Kumar	CH09D001	ChEmference 2010, IIT Kanpur	13 – 14.7.2010	IIT Madras
6	Sujitkumar Bontapalle	CH08S003	ChEmference 2010, IIT Kanpur	13 – 14.7.2010	IIT Madras
7	Sarvani Kuchibhotla	CH09S004	ChEmference 2010, IIT Kanpur	13 – 14.7.2010	IIT Madras
8	B. Ashraf Ali	CH06D001	ICMOC – 2010, NIT - Durgapur	26 – 31.10.2010	IIT Madras
9	P. Kanagasabai	CH05D010	REACH 2010, IIT Madras	2 – 4.12.2010	
10	B. Ashraf Ali	CH06D001	REACH 2010, IIT Madras	2 – 4.12.2010	
11	Hemanth K. Bilihalli	CH05D008	REACH 2010, IIT Madras	2 – 4.12.2010	
12	Srinivasarao Modekurti	CH06D005	REACH 2010, IIT Madras	2 – 4.12.2010	
13	Suresh Krishnan	CH07D002	REACH 2010, IIT Madras	2 – 4.12.2010	
14	N.P. Dhanalakshmi	CH08D002	REACH 2010, IIT Madras	2 – 4.12.2010	
15	Venkat Reddy Regatte	CH08D004	REACH 2010, IIT Madras	2 – 4.12.2010	
16	V. Prabu	CH08D011	REACH 2010, IIT Madras	2 – 4.12.2010	
17	M. Sudhakar	CH08D013	REACH 2010, IIT Madras	2 – 4.12.2010	
18	K. Sivagami	CH08D015	REACH 2010, IIT Madras	2 – 4.12.2010	
19	A. Seenivasan	CH08D016	REACH 2010, IIT Madras	2 – 4.12.2010	
20	M. Kranthi Kumar	CH09D001	REACH 2010, IIT Madras	2 – 4.12.2010	
21	M. Nabil	CH09D004	REACH 2010, IIT Madras	2 – 4.12.2010	
22	Subin Poullose	CH09D006	REACH 2010, IIT Madras	2 – 4.12.2010	
23	Mahesh Arigonda	CH07S011	REACH 2010, IIT Madras	2 – 4.12.2010	
24	Sujitkumar Bontapalle	CH08S003	REACH 2010, IIT Madras	2 – 4.12.2010	
25	Abhijnan Sarkar	CH08S006	REACH 2010, IIT Madras	2 – 4.12.2010	
26	S. Arun Srikanth	CH09S001	REACH 2010, IIT Madras	2 – 4.12.2010	
27	Sarvani Kuchibhotla	CH09S004	REACH 2010, IIT Madras	2 – 4.12.2010	
28	M. Anandhan	CH09S005	REACH 2010, IIT Madras	2 – 4.12.2010	
29	V. Goutham Polisetty	CH10S004	REACH 2010, IIT Madras	2 – 4.12.2010	
30	Mercy Anna Philip	CH08D014	ICFANT 2010, Jadavpur University, Calcutta	9 – 11.12.2010	IIT Madras
31	V. Prabu	CH08D011	ASPACC 2010, Hyderabad	10 – 13.12.2010	IIT Madras
32	Sujitkumar Bontapalle	CH08S003	Macro 2010, IIT Delhi	15 – 17.12.2010	IIT Madras
33	N.P. Dhanalakshmi	CH08D002	FMFP 2010, IIT Madras	16 – 18.12.2010	IIT Madras
34	Mercy Anna Philip	CH08D014	ICMF 2011, GEC Thrissur	23 – 25.2.2011	IIT Madras
35	A. Seenivasan	CH08D016	ICMF 2011, GEC Thrissur	23 – 25.2.2011	IIT Madras
36	Subin Poullose	CH09D006	ICMF 2011, GEC Thrissur	23 – 25.2.2011	IIT Madras
37	M. Anandhan	CH09S005	ICMF 2011, GEC Thrissur	23 – 25.2.2011	IIT Madras

Names of students/scholars who won outside prizes and awards:

Sl.No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize awarded by
1	B. Ashraf Ali	CH06D001	Agilent Lap Top Bag – Rs.1500/- worth	Agilent Gas Chromatography
2	R. Anandalakshmi	CH08D017	Best oral presentation award	IIT Kanpur
3	N.P. Dhanalakshmi	CH08D002	Most popular poster award, REACH	IIT Madras
4	V. Prabu	CH08D011	Most popular poster award, REACH	IIT Madras
5	Sujitkumar Bontapalle	CH08S003	Second Prize	MG University, Kerala
6	Sujitkumar Bontapalle	CH08S003	First Prize, REACH	IIT Madras

Name of Students/Scholars who won Institute Convocation/Institute Day Prize:

Sl.No.	Name of the Student/Scholar	Roll No.	Name of Prizes	Name of Donor
1	C.K. Naveen Karthik	CH07B020	Institute Merit Prize 2011	Dr. R.K. Viswanath Memorial Prize
2	B Tanmay	CH07B037	Institute Merit Prize 2011	Dr. Dilip Veeraraghavan Memorial Prize
3	Waseem Siddiqui	CH06B063	Institute Merit Prize 2011	IIT Madras
4	K. Rajalakshmi	CH09M003	Institute Merit Prize 2011	IIT Madras
5	Shah Shalaka Hasmukh	CH09M044	Institute Merit Prize 2011	IIT Madras
6	Ankit Bhatnagar	CH05B051	Institute Merit Prize 2011	Smt. D.L. Saraswathi Memorial
7	N.V.S. Anuraag	CH06B064	Institute Merit Prize 2011	Prof. M . Ramanujam Memorial Award
8	C.K. Naveen Karthik	CH07B020	Institute Merit Prize 2011	K.M. Ramamurthi Prize
9	Rohit Kannan	CH08B036	Institute Merit Prize 2011	Prof. M . Ramanujam Memorial Award

4.4.3 Faculty and their activities:

Faculty:

Name and Qualifications	Major area of specialization
Professor:	
Dr. S. Pushpavanam [Head]	Modeling and simulation, non linear dynamics, flow visualization
Dr. Abhijit Deshpande	Rheology of complex fluids, polymers and polymeric composites Processing flow visualization
Dr. A. R. Balakrishnan	Transport Processes, Energy Conservation
Dr. M. Chidambaram	Process Control
Dr. A. Kannan	Rate enhancement of Reaction and Transport Processes
Dr. K. Krishnaiah	Chemical reactor analysis and design fluidization
Dr. R. Nagarajan	Particle Science & Technology , Ultrasonic Processing Statistical Quality Control
Dr. T. Panda	Bioprocess Optimization, bioprocess technology and enzyme design
Dr. V. S. Ramachandra Rao	Advanced Control strategies, Neuro Fuzzy Control
Dr. R. Ravi	Applied statistical mechanics, foundations of thermodynamics and mechanics, process dynamics and control
Dr. P.S.T. Sai	Chemical reactor analysis and design
Dr. Shankar Narasimhan	Process design, data mining, fault diagnosis

Dr. Sreenivas Jayanti	Fuel cells, Combustion, Energy systems
Dr. T.Swaminathan	Environmental Management, Biotechnology, Membrane technology, Environmental risk assessment
Dr. Tanmay Basak	Microware application, mathematical modeling and simulation
Associate Professor:	
Dr. Arun K. Tangirala	System identification and parameter estimation
Dr. Preeti Aghalayam	Chemical Reaction Engineering,
Dr. S. Ramanathan	Semiconductor processing, Electrochemistry, Chemical Reaction Engineering
Dr. Susy Varughese	Physics & mechanics of polymeric materials, polymeric nano composites
Dr. Upendra Natarajan	Polymer Science & Engineering, Molecular simulation, statistical thermodynamics of complex fluids, nanostructured hybrid composite materials.
Assistant Professor:	
Dr. M.G. Basavaraja	Directed assembly of colloids, Microstructure and rheology of colloids, surfactants, polymer and their mixtures, Interfacial rheology, Ionic liquids, Particulate gels
Dr. Niket S. Kaisare	Microreactor Technology, Multiscale modeling , Process control, Fuel Processing, Fuel cells.
Dr. Raghuram Chetty	Electrocatalysis, Fuel cells, Wastewater treatment
Dr. R. Ramnarayanan	Integrated Chemical Systems, Photoelectrochemistry, Solidstate synthesis.
Dr. R. Ravikrishna	Contaminated Sediment remediation, contaminant fate and Transport, Air Pollution process and control.
Dr. T. Renganathan	Multiphase reactors, Computational Fluid Dynamics
Dr. Sridharakumar Narasimhan	Process System Engineering, optimization, Process Control, Fault diagnosis.
Scientific Officers / Engineers:	
Dr. K. Krishnamurthy	

Short-term Courses/ Workshops/ Seminars/ Symposia /Conferences organized by the faculty members:

Sl. No.	Coordinator(s)	Title	Period
Symposia:			
1	Dr. S. Pushpavanam Dr. R. Nagarajan Dr. Abhijit P. Deshpande	"Advances in Thermodynamics & Transport Processes", under the theme of "Recent and Emergent Advances in Chemical Engineering (REACH)	2 – 4.12.2010
Workshop:			
1	Dr. Arun K. Tangirala	AICTE Sponsored STTP Workshop on "Time-Series Modelling & Spectral Analysis"	12 – 17.7.2010
Short term Course:			
1	Dr. P.S. Mehta (ME) Dr. Niket S. Kaisare Dr. Preeti Aghalayam	STTP on Automotive Emissions and Control	4 – 9.10.2010
2	Dr. Ravi Krishna	Environmental Chemodynamics	17 – 22.1.2011
3	Dr. S. Pushpavanam	SERC School on Pattern Formation in Material and Biomedical Science	24 – 28.1.2011
4	Dr. Abhijit P Deshpande	RESEARCH IN CHEMICAL ENGINEERING: FUTURE PERSPECTIVES	5 – 6.2.2011

Short-term Courses/ Workshops/ Seminars/ Symposia/ Conferences/ Training attended by the faculty members in Academic institutions and Public Sector Undertakings:

Sl. No.	Name of faculty	Title	Institution	Period
Workshop:				
1	Dr. Sreenivas Jayanti Dr. Raghuram Chetty	Fuel Cells	DST EPSRC (UK)Chennai	15 – 17.9.2010
2	Dr. Raghuram Chetty Dr. Preeti Aghalayam	Emerging Issues in Energy and Environment Security: Challenges and Research Opportunities	DST, IIT Delhi (IUSSTF)	13 – 15.12.2010
Conference:				
1	Dr. Sreenivas Jayanti	Asia Pacific Combustion Conference	Hyderabad	10 – 12.12.2010
2	Dr. R. Nagarajan	PanIIT 2010 Conference	New Delhi	29 – 31.10.2010
3	Dr. S. Pushpavanam	EDGE 2011 Conference	New Delhi	9.3.2011

Special Lectures delivered by the faculty in other Institutions:

Sl. No.	Name of faculty	Topic of Lecture	Institution	Date
1	Dr. Sreenivas Jayanti	CFD for Two-phase Flow	BHEL Engineers, Hyderabad	10 – 11.11.201
2	Dr. Niket S. Kaisare	Transient Modeling and Control of Microreactors	NCL, Pune	27.1.2011
3	Dr. Niket S. Kaisare	Process Intensification using Microreactors: Theoretical Modeling and Control	Institute of Chemical Technology (UDCT), Mumbai	29.1.2011
4	Dr. R. Nagarajan	Nanoparticle dispersion behavior in colloidal suspensions & composites	VIT University	18.2.2011
5	Dr. T. Panda	Strategies for down stream operations of PHB from microbial cells	ICME, 2011 at GEC, Thrissur	23.2.2011

Visits abroad by faculty:

Sl. No.	Name of faculty	Country Visited	Date	Purpose of visit	Funding from
1	Dr. R. Nagarajan	Bangkok, Penang (Malaysia), Singapore & USA	19.4.2010 – 25.5.2010	Professional visit, present paper at ESTECH 2010	CPDA
2	Dr. S. Pushpavanam	Univ. of Ghent, Belgium	15.5.2010 – 15.7.2010	Professional visit	
3	Dr. R. Ramnarayanan	Sweden	8 –11.6.2010	Conference and partner meet	EUFP7
4	Dr. R. Ramnarayanan	Germany	12 –16.6.2010	TUM and Wolfgang Goethe Business School for research	EUFP7
5	Dr. Arun K. Tangirala	Leuven, Belgium	5 – 7.7. 2010	DYCOPS 2010	CPDA
6	Dr. Shankar Narasimhan	Singapore	24 – 28.7. 2010	PSE-ASIA 2010 Conference	CPDA
7	Dr. Sridharakumar Narasimhan	Singapore	24 – 28.7. 2010	PSE-ASIA 2010 Conference	CPDA
8	Dr. Niket S. Kaisare	Singapore	25 – 28 .7.2010	PSE Asia 2010 conference	CPDA
9	Dr. R. Ramnarayanan	USA	13 –26.8.2010	Conference and Research	EUFP7 and CPDA
10	Dr. A. R. Balakrishnan	Washington DC, USA	8 –13.8. 2010	14th International Heat Transfer Conference	

11	Dr. S. Pushpavanam	Prague, Czech Republic	28.8. – 1.9.2010	International Congress on Chemical and Process Engineering (CHISA-19)	CPDA
12	Dr. S. Ramanathan	Las Vega, USA	10 – 15.10.2010	Electrochemical Society Conference (ECS) Presentation Published – “High Selectivity slurries for STI CMP	CPDA
13	Dr. Shankar Narasimhan	Tehran, Iran	25 – 27.10.2010	To deliver lecture at National Iranian Oil Company (RIPE)	
14	Dr. S. Ramanathan	Salt Lake City, USA	8 – 12.11. 2010	To present Papers at AIChE Conference	CPDA
15	Dr. Tanmay Basak	Salt Lake City, Utah, USA	8 – 12.11.2010	AIChE Conference	CPDA
16	Dr. Niket S. Kaisare	Salt Lake City, Utah, USA	5 – 12.11. 2010	AIChE Conference	CPDA
17	Dr. R. Ramnarayanan	France	24 – 31.1.2011	EUIFP7 meet and Theme4 Researcher Exchange Program proposal defense	EUIFP7
18	Dr. S. Pushpavanam	USA	13 – 17.3.2011	ASME/JSME 8 th Thermal Engineering Joint Conference	CPDA
19	Dr. Tanmay Basak	USA	13 – 17.3.2011	ASME/JSME 8 th Thermal Engineering Joint Conference	CPDA
20	Dr. Sreenivas Jayanti	California, USA	27 – 31.3.2011	241st ACS National Meeting & Exposition,	CPDA

Honours and Awards obtained by faculty:

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date of award
i. Honours:					
1.	Dr. Niket S. Kaisare	Young Faculty Recognition Award (YFRA)	IIT-Madras	Excellence in research and teaching	5.9.2010
2.	Dr. Arun K. Tangirala	Young Faculty Recognition Award (YFRA)	IIT-Madras	Excellence in research and teaching	5.9.2010

Books, Monographs authored/co-authored:

Sl. No.	Name of faculty	Title	Publisher	Author/ Co-author
Books:				
1.	Dr. Abhijit P. Deshpande	Rheology of Complex Fluids	Springer	Dr. J. Murali Krishnan Dr. P.B. Sunil Kumar
Monographs:				
1.	Dr. S. Pushpavanam	PIV Techniques in Experimental measurement of Two Phase (Gas–Liquid) Systems	Springer	B. Ashraf Ali

2.	Dr. R. Nagarajan	Megasonic Cleaning	Elsevier	S. Awad
3.	Dr. R. Nagarajan	Ultrasonic Cleaning	Elsevier	S. Awad

Journal Editorial Boards:

Sl. No.	Name of faculty	Position (Editor/Member)	Journal Name
1	Dr. A.R. Balakrishnan	Editor	International Journal of Heat and Mass Transfer
2	Dr. A.R. Balakrishnan	Editor	International Communications in Heat and Mass Transfer.
3	Dr. A.R. Balakrishnan	Editor	Journal of Energy, Heat and Mass Transfer
4	Dr. Shankar Narasimhan	Editorial Board Member	ICE, Advances in Chemical Engineering
5	Dr. Shankar Narasimhan	Editor	International Journal on Advances in Engineering Sciences and Applied Mathematics (IITM Journal)
6	Dr. Tanmay Basak	Associate Editor	International Journal of Heat and Mass Transfer

4.4.4 Design and Development Activities:

New facilities added or major equipment procured:

Sl. No.	Name of Equipment	Value (Rs. in lakhs)
1	HR-SEM	200
2	GC-MS	40
3	GC	25

4.4.5 Research and Consultancy:

Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (Rs. In lakhs)	Co-ordinators
1	Transient Modeling, Design And Control Of An Integrated Fuel Processing –fuel Cell System	1.8.2007 to 31.5.2011	IIT Madras	5	Dr. Niket S. Kaisare
2	Electrogenenerated Chemiluminescence In Integrated Chemical Systems Using Modified Electrodes	6.6.2008 to 5.6.2011	Council of Scientific and Industrial Research	7.92	Dr. R. Ramnarayanan
3	Renovation Of The Undergraduate Laboratory	8.8.2008 to 7.8.2011	Chevron	99.59	Head, Chem. Engg.
4	Convex Optimization	8.9.2008 to 7.9.2011	IIT Madras	5	Dr. Sridharakumar Narasimhan
5	Hierarchical Modelling And Transient Analysis Of Thermally Integrated Catalytic Microreactors	29.9.2008 to 28.9.2011	Department of Science and Technology	17	Dr. Niket S. Kaisare Dr. Abhijit P. Deshpande
6	Polymer-based Evanescent Wave Chemical Sensors.....	21.10.2008 to 20.10.2011	Department of Science and Technology	33.53	Dr. R. Ramnarayanan
7	Titanium Compounds Of Interest Electrochemical Titanium Production	9.2.2009 to 8.2.2012	Defense Research and Development Organization, India	14.97	Dr. R. Ramnarayanan
8	Ruthenium Based Electrocatalysts Supported On Carbon Nanotubes For Oxygen Reductin Reaction	17.2.2009 to 16.2.2012	IIT Madras	5	Dr. Raghuram Chetty

9	Development Of Non-platinum Cathode Catalysts For Direct Methanol Fuel Cells.	30.4.2009 to 29.4.2012	Department of Science and Technology	20.36	Dr. Raghuram Chetty
10	Strengthening Of Research/post Graduate Teaching Facilities.....	30.4.2009 to 29.4.2014	Department of Science and Technology FIST	275	Head, Chem. Engg.
11	Integrating Nanomaterials In Formulations	1.7.2009 to 30.6.2012	European Union Framework Program 7	24.01	Dr. R. Ramnarayanan
12	Characterizing Metal Loss Defects From De-noised Radial Influx Leakage Signals	7.7.2009 to 6.7.2011	Board of Research in Nuclear Sciences	19.5	Dr. Arun K. Tangirala
13	Megasonic Cleaning	1.8.2009 to 31.7.2011	Crest Ultrasonics Corporation, USA	6.63	Dr. R. Nagarajan
14	Atomistic molecular dynamics simulation of the interaction between anionic polyelectrolytes and surfactants	9.10.2009 to 8.10.2012	Department of Science and Technology	12.24	Dr. Upendra Natarajan
15	Rheology Of Ionic Polymers Near Gelation.	12.11.2009 to 11.11.2012	Department of Science and Technology	37.44	Dr. Abhijit P. Deshpande
16	Center for Social Innovation & Entrepreneurship (CSIE)	1.4.2010 to 31.3.2011	The Lemelson Foundation & Batch of '84 alumni	27.44	Dr. R. Nagarajan
17	Inkjet Printing Of Conducting Polymers For Optoelectronic Devices - Processability.....	12.4.2010 to 11.4.2012	Department of Science and Technology	19.2	Dr. Susy Varughese
18	Office of Alumni Affairs (OAA)	1.5.2010 to 31.3.2015	IIT Madras	61.69	Dr. R. Nagarajan
19	Eco Friendly Disposal Methods For Sanitary Napkins	16.3.2011 to 15.9.2011	RUTAG	1	Dr. Susy Varughese
20	Understanding Mixing And Reaction Processes In Micro-reactors	4.3.2011 to 3.3.2013	Council of Scientific and Industrial Research	11.34	Dr. S. Pushpavanam

Industrial Consultancy projects:

Sl. No.	Name of faculty	Title	Industry	Amount (Rs. in lakhs)
1	Dr. S. Pushpavanam	Modeling Coal Gasification	BPCL	50.81
2	Dr. A. Kannan	Tea Extraction Studies In Vending	Tata Tea Limited	7.02
3	Dr. S. Ramanathan	Dynamic Light Scattering (dls) Testing Facility	Orchit Pharma	.50
4	Dr. P. Sessa Talpa Sai	Modeling Of Scrubber System For Alkali Removal from Flue Gas In Igcc	BHEL	2.76
5	Dr. Susy Varughese	Preparation And Characterization Carbon Dioxide Separation	Bloom Energy Ltd., USA	8.7
6	Dr. P. Sessa Talpa Sai	Study Of Mercury Emission And Control Options For Coal Fired Power Plants	BHEL	2.5

RBIC projects:

Sl.No.	Name of faculty	Title	Industry	Amount (Rs. in lakhs)
1	Dr. B. Viswanathan (PI) Dr. R. Ramnarayanan (Co-PI)	Solar radiation induced photo-electrochemical method for hydrogen generation	Tata Chemicals	5.79

2	Dr. R. Nagarajan	Modelling of Counter-Current Spray Drier	Hindustan Unilever Limited	6.6
3	Dr. R. Nagarajan	Anti-Fouling Strategies for Coal-Fired Power Plants	BHEL Trichy	20.76
4	Dr. T. Renganathan Dr. S. Pushpavanam	Development of Simulators and Optimizer for Plasma Enhanced Integrated Gasification Combined Cycle Plant	Korea Institute of Science and Technology Korea	39.3
5	Dr. Preeti Aghalayam Dr. Niket S. Kaisare	Predictive models for PGM-based Catalytic Convertors	General Motors	13.22

Research Publications of the faculty members & research scholars:

- Total No. of papers published in Refereed National Journals : Nil
- Total No. of papers published in Refereed International Journals : 86
- Total No. of papers presented in National Conferences : 02
- Total No. of papers presented in International conferences : 33

In Refereed International Journals:

1. Title: Analysis of entropy generation for distributed heating in processing of materials by thermal convection
Author(s): Kaluri RS, Basak T, Source: International Journal Of Heat And Mass Transfer Volume: 54 Issue: 11-12 Pages: 2578-2594 Published: MAY 2011
2. Title: Feasibility of using ultrasound-assisted process for sulfur and ash removal from coal; Author(s): Ambedkar B, Chintala TN, Nagarajan R, Jayanti S; Source: Chemical Engineering and Processing Volume: 50 Issue: 3 Pages: 236-246 Published: MAR 2011
3. Title: Effect of ultrasound on bubble breakup within the mixing chamber of an effervescent atomizer; Author(s): Jagannathan TK, Nagarajan R, Ramamurthi K; Source: Chemical Engineering and Processing Volume: 50 Issue: 3 Pages: 305-315 Published: MAR 2011
4. Title: Effect of Composition on Chain Dimensions of Styrene-Methylmethacrylate Random Copolymers under Theta Condition; Author(s): Karyappa RB, Natarajan U; Source: Journal Of Macromolecular Science Part B-Physics Volume: 50 Issue: 5 Pages: 996-1005 Published: 2011
5. Title: Electrochemical characterization of copper chemical mechanical polishing in L-glutamic acid-hydrogen peroxide-based slurries; Author(s): Selvam NV, Srinivasan R; Source: Journal Of Solid State Electrochemistry Volume: 15 Issue: 4 Pages: 837-844 Published: APR 2011
6. Title: Leak detection in gas pipeline networks using an efficient state estimator. Part-I: Theory and simulations
Author(s): Reddy HP, Narasimhan S, Bhallamudi SM, Bairagi S
Source: Computers & Chemical Engineering Volume: 35 Issue: 4 Pages: 651-661 Published: APR 2011
7. Title: Role of entropy generation on thermal management during natural convection in porous square cavities with distributed heat sources
Author(s): Kaluri RS, Basak T
Source: Chemical Engineering Science Volume: 66 Issue: 10 Pages: 2124-2140 Published: MAY 15 2011
8. Title: Finite element based heatline approach to study mixed convection in a porous square cavity with various wall thermal boundary conditions; Author(s): Basak T, Pradeep PVK, Roy S, Pop I; Source: International Journal of Heat and Mass Transfer Volume: 54 Issue: 9-10 Pages: 1706-1727 Published: APR 2011
9. Title: On the occurrence of two-stage combustion in alkali metals
Author(s): Subramani A, Jayanti S
Source: Combustion and Flame Volume: 158 Issue: 5 Pages: 1000-1007 Published: MAY 2011
10. Title: Crosslinked poly(vinyl alcohol)/sulfonated poly(ether ether ketone) blend membranes for fuel cell applications-Surface energy characteristics and proton conductivity
Author(s): Kanakasabai P, Vijay P, Deshpande AP, Varughese S
Source: Journal of Power Sources Volume: 196 Issue: 3 Special Issue: Sp. Iss. SI Pages: 946-955 Published: FEB 1 2011

11. Title: Propane combustion in non-adiabatic microreactors: 1. Comparison of channel and posted catalytic inserts
Author(s): Regatte VR, Kaisare NS
Source: Chemical Engineering Science Volume: 66 Issue: 6 Pages: 1123-1131 Published: MAR 15 2011
12. Title: Ultrasonic coal-wash for de-sulfurization
Author(s): Ambedkar B, Nagarajan R, Jayanti S
Source: Ultrasonics Sonochemistry Volume: 18 Issue: 3 Pages: 718-726 Published: MAY 2011
13. Title: Effect of potential drifts and ac amplitude on the electrochemical impedance spectra
Author(s): Victoria SN, Ramanathan S
Source: Electrochimica ACTA Volume: 56 Issue: 5 Pages: 2606-2615 Published: FEB 1 2011
14. Title: Experimental and theoretical investigation on microwave melting of metals
Author(s): Chandrasekaran S, Basak T, Ramanathan S
Source: Journal of Materials Processing Technology Volume: 211 Issue: 3 Pages: 482-487 Published: MAR 1 2011
15. Title: Analysis of unsteady gas-liquid flows in a rectangular tank: Comparison of Euler-Eulerian and Euler-Lagrangian simulations
Author(s): Ali BA, Pushpavanam S
Source: International Journal of Multiphase Flow Volume: 37 Issue: 3 Pages: 268-277 Published: APR 2011
16. Title: Synthesis of Fe³⁺ doped TiO₂ photocatalysts for the visible assisted degradation of an azo dye
Author(s): Sathishkumar P, Anandan S, Maruthamuthu P, Swaminathan T, Zhou M F, Ashokkumar M
Source: Colloids And Surfaces A-Physicochemical and Engineering Aspects Volume: 375 Issue: 1-3 Pages: 231-236 Published: FEB 5 2011
17. Title: Macroscopic properties of liquid-solid circulating fluidized bed with viscous liquid medium
Author(s): Vidyasagar S, Krishnaiah K, Sai PST
Source: Chemical Engineering and Processing Volume: 50 Issue: 1 Pages: 42-52 Published: JAN 2011
18. Title: Effects of thermal boundary conditions on entropy generation during natural convection
Author(s): Basak T, Kaluri RS, Balakrishnan AR
Source: Numerical Heat Transfer Part A-Applications Volume: 59 Issue: 5 Pages: 372-402 Published: 2011
19. Title: Effect of diameter on two-phase pressure drop in narrow tubes
Author(s): Venkatesan M, Das SK, Balakrishnan AR
Source: Experimental Thermal and Fluid Science Volume: 35 Issue: 3 Pages: 531-541 Published: APR 2011
20. Title: Analysis of distributed thermal management policy for energy-efficient processing of materials by natural convection
Author(s): Kaluri RS, Basak T
Source: Energy Volume: 35 Issue: 12 Pages: 5093-5107 Published: DEC 2010
21. Title: Numerical study of on-board fuel reforming in a catalytic plate reactor for solid-oxide fuel cells
Author(s): Janardhanan VM, Appari S, Jayanti S, Deutschmann O
Source: Chemical Engineering Science Volume: 66 Issue: 3 Pages: 490-498 Published: FEB 1 2011
22. Title: Multivariable optimization studies of cathode catalyst layer of a polymer electrolyte membrane fuel cell
Author(s): Srinivasarao M, Bhattacharyya D, Rengaswamy R, Narasimhan S
Source: Chemical Engineering Research & Design Volume: 89 Issue: 1A Pages: 10-22 Published: JAN 2011
23. Title: Incorporating delayed and infrequent measurements in Extended Kalman Filter based nonlinear state estimation
Author(s): Gopalakrishnan A, Kaisare NS, Narasimhan S
Source: Journal Of Process Control Volume: 21 Issue: 1 Pages: 119-129 Published: JAN 2011
24. Title: Effect of Chemical Substituents on the Structure of Glassy Diphenyl Polycarbonates
Author(s): Sulatha MS, Natarajan U ; Source: Journal Of Physical Chemistry B Volume: 115 Issue: 7 Pages: 1579-1589 Published: FEB 24 ,2011

25. Title: Quantifying Enhancement in Heat Transfer Due to Natural Convection During Canned Food Thermal Sterilization in a Still Retort
Author(s): Koribilli N, Aravamudan K, Varadhan MUSVA
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26. Title: Theoretical analysis on pulsed microwave heating of pork meat supported on ceramic plate
Author(s): Basak T, Rao BS
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27. Title: Extrudate swell of linear and branched polyethylenes: ALE simulations and comparison with experiments
Author(s): Ganvir V, Gautham BP, Pol H, Bhamla MS, Sclesi L, Thakkar R, Lele A, Mackley M
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Author(s): Periadurai T, Vijayakumar CT, Balasubramanian M
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Author(s): Venkatesh RP, Ramanathan S
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Author(s): Krishnan J, Swaminathan T
Source: Latin American Applied Research Volume: 40 Issue: 4 Pages: 359-364 Published: OCT 2010
31. Title: Theoretical analysis on the role of annular metallic shapes for microwave processing of food dielectric cylinders with various irradiations
Author(s): Basak T
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32. Title: Effect of Tube Diameter on Two-Phase Flow Patterns in Mini Tubes
Author(s): Venkatesan M, Das SK, Balakrishnan AR
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Author(s): Subramani A, Jayanti S
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Author(s): Basak T, Roy S, Matta A, Pop I
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35. Title: Effect of depth on onset of engulfment in rectangular micro-channels
Author(s): Cherlo SKR, Pushpavanam S
Source: Chemical Engineering Science Volume: 65 Issue: 24 Pages: 6486-6490 Published: DEC 15 2010
36. Title: Optimal design of periodic test input signals for multivariable impulse response models
Author(s): Kaisare NS, Lee JH
Source: Optimal Control Applications & Methods Volume: 31 Issue: 5 Special Issue: Sp. Iss. SI Pages: 451-469 Published: SEP-OCT 2010
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Author(s): Rene ER, Murthy DVS, Swaminathan T
Source: Clean Technologies and Environmental Policy Volume: 12 Issue: 5 Pages: 525-535 Published: NOV 2010

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Author(s): Koley MK, Manoharan PT, Koley AP
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Author(s): Victoria SN, Sharma PP, Suni II, Ramanathan S
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40. Title: Efficient Methodologies for Processing of Fluids by Thermal Convection within Porous Square Cavities
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43. Title: Rheology of crosslinking poly vinyl alcohol systems during film formation and gelation
Author(s): Rakesh G, Deshpande AP
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Author(s): Selvaraju N, Pushpavanam S
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45. Title: Natural Convection in a Partially Heat Generating Rod Bundle Inside an Enclosure
Author(s): Krishna DJ, Thansekhar MR, Venkateshan SP, Basak T, Das SK
Source: Journal Of Heat Transfer-Transactions of the Asme Volume: 132 Issue: 10 Article Number: 102501 Published: OCT 2010
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Author(s): Krishnan S, Kannan A
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47. Title: Entropy Generation Minimization Versus Thermal Mixing due to Natural Convection in Differentially and Discretely Heated Square Cavities
Author(s): Kaluri RS, Basak T
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48. Title: Elevated nitrogen isotope ratios of tropical Indian aerosols from Chennai: Implication for the origins of aerosol nitrogen in South and Southeast Asia
Author(s): Pavuluri CM, Kawamura K, Tachibana E, Swaminathan T
Source: Atmospheric Environment Volume: 44 Issue: 29 Pages: 3597-3604 Published: SEP 2010
49. Title: Electrochemical impedance spectroscopic studies of copper dissolution in glycine-hydrogen peroxide solutions
Author(s): Venkatesh RP, Ramanathan S
Source: Journal Of Solid State Electrochemistry Volume: 14 Issue: 11 Pages: 2057-2064 Published: NOV 2010
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Author(s): Kaluri RS, Anandalakshmi R, Basak T
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Author(s): Rajendran K, Ravi R
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52. Title: Modeling and simulation of co-gasification of coal and petcoke in a bubbling fluidized bed coal gasifier
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Author(s): Suresh PV, Jayanti S
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Author(s): Basak T, Aravind G, Roy S, Balakrishnan AR
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Author(s): Mandela RK, Rengaswamy R, Narasimhan S, Sridhar LN
Source: Chemical Engineering Science Volume: 65 Issue: 16 Pages: 4548-4556 Published: AUG 15 2010
61. Title: Quantitative analysis of directional strengths in jointly stationary linear multivariate processes
Author(s): Gigi S, Tangirala AK
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Author(s): Shao Q, Chundawat SPS, Krishnan C, Bals B, Sousa LD, Thelen KD, Dale BE, Balan V
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Author(s): Ravikrishna R, Lee HW, Mbulgwe S, Valsaraj KT, Pardue JH
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Author(s): Cherlo SKR, Devaki K, Pushpavanam S
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67. Title: Heatline approach for visualization of heat flow and efficient thermal mixing with discrete heat sources
Author(s): Kaluri RS, Basak T, Roy S
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68. Title: Steam-moderated oxy-fuel combustion
Author(s): Seepana S, Jayanti S
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Author(s): Pavuluri CM, Kawamura K, Swaminathan T
Source: Journal Of Geophysical Research-Atmospheres Volume: 115 Article Number: D11302 Published: JUN 3 2010
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Author(s): Bharathwaj R, Natarajan U, Dhamodharan R
Source: Applied Clay Science Volume: 48 Issue: 3 Pages: 300-306 Published: APR 2010
71. Title: Numerical simulations on efficient microwave processing of thermoplastics with ceramic composites
Author(s): Basak T, Durairaj S
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Author(s): Ravi R, Philip L, Swaminathan T
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Author(s): Selvanathan S, Tangirala AK
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Author(s): Subramanian M, Kannan A
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78. Title: Pilot Plant Studies on Accelerated Deactivation of Commercial Hydrotreating Catalyst
Author(s): Venkatesh RP, Bhaskar M, Sakthivel S, Selvaraju N, Velan M
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79. Title: Molecular characterization of urban organic aerosol in tropical India: contributions of primary emissions and secondary photooxidation
Author(s): Fu PQ, Kawamura K, Pavuluri CM, Swaminathan T, Chen J
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81. Title: Visualization of heat transport due to natural convection for hot materials confined within two entrapped porous triangular cavities via heatline concept ; Author(s): Basak T, Roy S, Ramakrishna D, Pop I
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Author(s): Basak T, Roy S, Ramakrishna D, Pop I
Source: Numerical Heat Transfer Part A-Applications Volume: 57 Issue: 6 Pages: 431-452 Published: 2010
83. Title: Parameter Estimation in Water Distribution Networks
Author(s): Kumar SM, Narasimhan S, Bhallamudi SM
Source: Water Resources Management Volume: 24 Issue: 6 Pages: 1251-1272 Published: APR 2010
84. Title: Optimization of Mesh-Based Anodes for Direct Methanol Fuel Cells
Author(s): Chetty R, Scott K, Kundu S, Muhler M
Source: Journal of Fuel Cell Science and Technology Volume: 7 Issue: 3 Article Number: 031011 Published: JUN 2010
85. Title: Ignition strategies for fuel mixtures in catalytic microburners
Author(s): Seshadri V, Kaisare NS
Source: Combustion Theory and Modelling Volume: 14 Issue: 1 Pages: 23-40 Published: 2010
86. Title: Experimental Investigation of High-Frequency, High-Intensity Ultrasonics for Thermal Destratification of Liquids Stored in insulated Containers: Effect of storage pressure
Author(s): Jagannathan TK, Srijith Mohanan, Nagarajan R
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In Proceedings of National Conferences:

1. "The role flow configuration in microreactors with catalytic inserts", Regatte, V.R., Kaisare, N.S. ChEmference, Annual Research Symposium, IIT Kanpur, India, July 13-14, 2010.
2. "Electrodeposited Palladium For Oxygen Reduction Reaction in Direct Methanol Fuel Cells", Kranthi Kumar maniam, Raghuram chetty, ChEmference, Annual Research Symposium, IIT Kanpur, India, July 13-14, 2010.

In Proceedings of International Conferences:

1. "Synthesis, luminescent and electrical characterization of two ruthenium complexes", Manickam Sundar, Sivasankaran Sowmya, Varghese Bonney John, Ramanathan Ramnarayanan, INOR-153, Abstracts of Papers, 240th ACS National Meeting, Boston, MA, August 22-26, 2010.
2. "Magneli phases from ilmenite and rutile at lower temperature", Sivasankaran Sowmya, B Shubhamangala, Ramanathan Ramnarayanan, INOR-162, Abstracts of Papers, 240th ACS National Meeting, Boston, MA, August 22-26, 2010.
3. "Numerical analysis of fractal catalyst structuring in microreactors", Reddy V. R., A. Mukherjee and N. S. Kaisare, CHISA: 19th International Congress of Chemical and Process Engineering, Prague, Czech Republic, August 2010
4. "State Estimation in Presence of Infrequent and Delayed Primary Measurements", Kaisare N. S. and S. Narasimhan, PSE-Asia 2010: 5th International Conference on Design, Operation and Control of Chemical Processes, July 2010, Singapore
5. "Approximate Dynamic Programming based Control of Distributed Parameter Systems", Joy M. and N. S. Kaisare, PSE-Asia 2010: 5th International Conference on Design, Operation and Control of Chemical Processes, July 2010, Singapore
6. "Sono-Synthesis and Study of Polystyrene/Alumina Nanocomposites", M.A. Philip, R. Nagarajan and U. Natarajan, International Conference on Materials for the Future (ICMF 2011), 23-25 February 2011, Thrissur, Kerala.

7. "Acoustic enhancement of heat transfer in furnace tubes", N.P. Dhanalakshmi, N.Sivagaminathan, R.Nagarajan and BVSSS Prasad, IIT Madras, Chennai.L.M. Subramanian, R. Dhanuskodi and K. Narayanan R & D, BHEL Trichy, Proceedings of the 37th National & 4th International Conference on Fluid Mechanics and Fluid Power, December 16-18, 2010, IIT Madras, Chennai, India.
8. "Ultrasound-Assisted Formulation of Nano-Composites: Functional Property Evaluation", M.A. Philip, R. Nagarajan and U. Natarajan, International Conference on Fundamentals & Applications of Nanoscience & Technology (ICFANT 2010), 9-11 December 2010, Jadavpur, Kolkatta.
9. "Process Intensification of mass transfer via power ultrasound", N.P. Dhanalakshmi and R.Nagarajan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
10. "Molecular thermodynamics of polymer chains confined between surfaces containing end-tethered polymer molecules", B.Sujithkumar, U. Natarajan, 2nd International Conference on Polymer Processing and Characterization (ICPPC), 15th-17th Jan., Kottayam (2010). Presenting student received 2nd Prize.
11. "Molecular thermodynamics of polymer chains confined between surfaces containing end-tethered polymer molecules", B.Sujitkumar, U. Natarajan, Macro 2010 (New Delhi).
12. "Molecular thermodynamics of diblock copolymer chains confined between surfaces bearing end-tethered molecules", B.Sujitkumar, U. Natarajan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India. Presenting student received 1st Prize.
13. "Synthesis of Polystyrene-clay nanocomposites by in situ RAFT", R. Bharathwaj, U Natarajan, R. Dhamodharan, First International Conference on Composites and Nanocomposites (ICNC 2011) at January 7-9, 2011, Kottayam, Kerala, India.
14. "Modeling and simulation of Integrated Gasification Combined cycle", Ravikiran, A., Renganathan, T. and Pushpavanam, S. Chemcon(2010), 63rd Annual Section of Indian Institute of Chemical Engineering. International Level Symposium, Annamalai University, Chidambaram, Tamil Nadu.
15. "Water Sorption Characteristics of Ionic Polymer Blend Membranes", P Kanakasabai, Mahesh Arigonda, BVR Prasad, Abhijit P Deshpande, Susy Varughese, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
16. "Dynamics of Water Diffusion in Sulfonated Poly Ether Ether Ketone Membranes", V Goutham Polisetty, Amala M Mathai, Abhijit P Deshpande, Susy Varughese, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
17. "Model Order Reduction and Design of MPC for Hyperbolic Distributed System", M. Sudhakar, Niket S. Kaisare, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
18. "A Population Balance Model for Vulcanization of Natural Rubber", M. Anandhan, Niket S. Kaisare, K. Kannan, Bijo Varkey, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
19. "Modelling and Optimization Studies of a Polymer Electrolyte Membrane (PEM) Fuel Cell", M. Srinivasarao, D. Bhattacharyya, R. Rengaswamy, S.Narasimhan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
20. "Model of Pre-Cooling Process in a LPG Terminal", S. Arun Srikanth, Sridharakumar Narasimhan, Shankar Narasimhan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
21. "Sensor Network Design", Nabil.M, Sridharakumar Narasimhan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
22. "Propane Combustion in Microreactor With Catalyst Inserts", Venkat Reddy Regatte, Niket S. Kaisare, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
23. "Electrodeposited Palladium Nanoparticles on Modified Graphite Electrodes for Oxygen Reduction Reaction", Kranthi Kumar Maniam, Raghuram Chetty, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT

Madras, Chennai, India.

24. "Enhancement of Esterification Reaction Using Ionic Liquids" , Sarvani Kuchibhotla, P. Sessa Talpa Sai, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
25. "Photo Catalytic Degradation of Pesticides in a Slurry Reactor", K. Sivagami, R. Ravi Krishna, T. Swaminathan, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
26. "Bubble column reactor: Comparison of Euler- Eulerian and Euler- Lagrangian simulations", B.Ashraf Ali, S.Pushpavanam, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
27. "Transport and Thermodynamic Properties of sp bonded Liquid Metals: Molecular Dynamics Simulations and Hard Sphere Perturbation Theories" , Hemanth K. Bilihalli, R. Ravi, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
28. "Influence of Non-Newtonian Fluid Hydrodynamics on Thermal Food Sterilization", Suresh Krishnan, Kannan.A, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
29. "Synthesis And Characterization Of Carbon Nanotubes-Supported Ruthenium-Based Cathode Catalyst For Fuel Cells", Abhijnan Sarkar, Raghuram Chetty, Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
30. "Nano-assisted drug delivery system", Seenivasan A., Panda T., Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
31. "Eco-friendly Synthesis of Silver Nanoparticles", Subin Poulouse, Praseetha P. Nair, Panda T., Recent and Emerging Advances in Chemical Engineering (REACH), International symposium on 'Thermodynamics and Transport Processes, Dec 2-4, 2010, IIT Madras, Chennai, India.
32. "Nano-assisted carriers for lovastatin oral delivery system", Seenivasan A., Panda T., International Conference on Materials for the Future (ICMF 2011), 23-25 February 2011, Thrissur, Kerala.
33. "Silver Nanoparticles through greener way", Subin Poulouse, Praseetha P. Nair, Panda T., International Conference on Materials for the Future (ICMF 2011), 23-25 February 2011, Thrissur, Kerala.

Distinguished Visitors to the Department:

Sl.No.	Name of the visitor and Designation	Date of visit	Purpose of visit
1	Dr. A. Chowdhury Bruker Analytical Instruments	9 th April 2010	To give a Seminar talk
2	Dr. S. Ramakrishna FSU	4 th August 2010	- do -
3	Dr. Balaji Iyer Post Doctoral Fellow, UCSD	21 st September 2010	- do -
4	Dr. Kris Villez Post Doctoral Research Associate Purdue University	7 th January 2011	- do -
5	Prof. Sirish L. Shah University of Alberta, Edmonton Canada	5 th January 2011	- do -
6	Mr. D. Chandrasekhar Distinguished Alumnus	4 th February 2011	- do -
7	Dr Rainer Lohmann University of Rhode Island	18 th February 2011	- do -
8	Dr. S.Gowri sankar Additional General Manager & Team Leader BHEL R&D Gateway, IITM-RP	25 th February 2011	- do -
9	Dr. Prabhakar Ranganathan Department of Mechanical and Aerospace Engineering	11 th March 2011	- do -

	Monash University, Australia		
10	Dr. Nandakumar R. Dave Distinguished Alumnus	25 th March 2011	- do -
11	Dr. Young Sang Cho, Korea Institute of Science and Technology, Korea	11 th May & 25 th Aug. 2010	Project on simulation of plasma enhanced integrated gasification combined cycle plant
12	Dr. BongJu Lee, National Fusion Research Institute Korea	6 th - 9 th Sep 2010	Project on construction of pilot scale plasma enhanced integrated gasification combined cycle plant

4.4.6 Activities of the Department/Centre:

a. Results obtained in research work (from M.S. & Ph.D thesis) of the scholar/faculty (last year sample enclosed from Director's Speech)

Modifications in bubble column reactor have been analysed with a view to exploit mixing characteristics. This can be used to release reactants from one chamber to another in a controlled manner and optimise selectivity in a consecutive-competitive reaction system. Fuel supply manifold in a PEMFC fuel cell has been investigated and adopted to ensure good flow characteristics of hydrogen in the serpentine channel to prevent water flooding.

b. Inter disciplinary group achievements of the Departments.

A training program for NGO's and college students in the rural areas was conducted at the Vivekananda Kendra, Kanniyakumari to increase awareness on water conservation through grey-water recharging.

c. Socially relevant activities carried out by the Department

Prof. S. Pushpavanam visited the University of Ghent, Belgium to further collaboration with the Mathematics Department. The interaction is in the area of micro-fluidics and its applications in mass-transfer and chemical reactions.

d. International collaboration achievements by the Department

Several high end equipments have been purchased to improve the analytical instrumentation ability in the department. These include a High Resolution Scanning Electron Microscope (HR_SEM), Gas-Chromatograph (GC) and a Gas Chromatograph with Mass Spectroscopy (GC-MS). This has improved the accessibility of these instruments to research scholars enabling them to carry out state of the art research.