

4.4. DEPARTMENT OF CHEMICAL ENGINEERING

4.4.1. Introduction

The Department of Chemical Engineering was established in 1959. The department has permanent faculty members who carry out research in state-of-the art areas. The focus of the research is on reaction and transport, energy, materials and environment. The faculty work towards analysing these systems by understanding their behaviour at the molecular level as well as using a system approach.

4.4.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1.	CH5018	Biomass Conversion Processes and Analysis
2.	CH5022	Solar Photoelectrochemistry

Students on roll as of September 2016+ research scholars admitted in January 2017

Programme	Year I	Year II	Year III	Year IV	Year V and others	Total
B.Tech.	69	66	63	09	-	207
Dual Degree	17	18	20	17	-	72
M.Tech.	32	26	01	-	-	59
M.S.	06	08	13	06	-	33
Ph.D.	17	27	32	21	45	97
Total	141	145	129	53	45	468

Students/scholars who attended conferences/workshops/seminars/symposia

Sl. No.	Student/Scholar	Roll No.	Conference/seminar/symposium/workshop	Date and Venue	Financial Assistance from
Abroad					
M.S.					
1.	Akshaya	CH14S008	AICHE-2016 Spring Meeting and Global Congress on Process Safety	10-14 April 2016 Houston, USA	IITM
2.	M. Arun	CH14S011	ICCEEE 2016: 18 th International Conference on Chemical, Ecological and Environmental Engineering	14-15 April 2016 Lisbon, Portugal	IITM
3.	D. M. Darsha Kumar	CH13S017	ESCAPE Conference	12-15 June 2016 Portoroz, Slovenia	IITM
4.	R. Srikanth	CH14S018	International Workshop on Computer Vision for Microscopy Image Analysis	26 June 2016, CVMI, Las Vegas, USA	IITM
5.	C. Srinesh	CH14S300	XVI Chemometrics and Analytical Chemistry	6-10 June 2016, Barcelona, Spain	IITM
6.	K. B. Iyeswaria	CH14S026	AEM2016	12-15 September 2016, University of Surrey, England	IITM
7.	Vishnu Prasad S.	CH14S021	ICCPE 2016-18 th International Conference on Chemical and Process	10-11 November 2016, Kyoto, Japan	IITM
Ph.D.					
8.	Amrutha	CH13D018	229 th ECS conference	29 May-2 June 2016, San Diego, California	IITM

Sl. No.	Student/Scholar	Roll No.	Conference/seminar/symposium/workshop	Date and Venue	Financial Assistance from
9.	S. Anupriya	CH12D026	9 th International Conference of Multiphase flow	22-25 May 2016 Firenze, Italy	IITM
10.	Deepak Ojha	CH13D001	21 st International Symposium on Analytical and Applied Pyrolysis (Pyro 2016)	9-12 May 2016 Nancy, France	IITM
11.	Sanjay Kumar	CH14D006	International Flow Battery Forum	7-9 June 2016 Karlsruhe, Germany	IITM
12.	Varghese Kurian	CH14D412	International Conference on Modeling and Optimization: Theory and Applications	17-19 August 2016, Bethlehem PA	IITM
13.	B. G. Abraham	CH13D021	67 th Annual Meeting of the International Society of Electrochemistry (ISE)	21-26 August 2016, The Hague, Netherlands	IITM
13.	Indu Chanchal Polpaya	CH14D011	SMASIS-2016 Smart Material Adaptive Structures and Intelligent System	28-30 September 2016, Stowe, VT, USA	IITM
14.	Deepak Kumar Ojha	CH13D001	AICHE 2016 Annual Meeting	13-18 November 2016, San Francisco CA, USA	IITM
15.	Babita Kumari Verma	CH14D207	AICHE 2016 Annual Meeting	10-18 November 2016, San Francisco, CA, USA	IITM
16.	N. Bhagavatula and V. S. S. R. Dinesh	CH12D025	69 th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD 2016)	20-22 November 2016, Portland, Oregon	IITM
17.	V. K. P. Janakey Devi	CH13D022	3 rd International Conference on Ionic Liquids in Separation and Purification Technology	8-11 January 2017, Kuala Lumpur, Malaysia	IITM
18.	P. Resmi Suresh	CH12D024	2017 AIChE Spring Meeting	26-30 March 2017, San Antonio, TX	IITM
PDF					
19.	T. Vidyadevi	CH16IPF01	4 th International Conference on Sustainable Environment and Agriculture (ICEA 2016)	26-28 October 2016, San Francisco, USA	IITM
India					
M.S.					
1.	C. Anoop	CH14S010	CHEMCON 2016	27-30 December 2016, Anna University (AU) and IIT Madras, Chennai	IITM
2.	Kommu Moulis	CH15S002	Chemference 2016	3-4 December 2016, IIT Gandhinagar	IITM
3.	P. C. Seshasai	CH15S009	CHEMCON 2016	27-30 December 2016, AU and IITM, Chennai	IITM
4.	Anupam Abha	CH15S014	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
5.	Garima	CH15S017	CHEMCON 2016	27-30 December 2016, AU and IITM, Chennai	IITM
6.	Sreeja Narayanan	CH15S020	CHEMCON 2016	27-30 December 2016, AU and IITM, Chennai	IITM
7.	J. R. Ila Sarkar		11 th International Symposium on Advances in Electrochemical Science and Technology (ISAEST-11)	8-10 December 2016, Chennai	IITM

Sl. No.	Student/Scholar	Roll No.	Conference/seminar/symposium/workshop	Date and Venue	Financial Assistance from
8.	CH14S027	International Conference on Sustainable Energy Technologies for Smart and Clean Cities	27-29 July 2016, IIT Tirupati	IITM	
Ph.D.					
8.	K. Nagarajan	CH10D011	Advances in Chemical and Environmental Engineering (ACEE 2016)	22-23 April 2016, NIT Jalandhar	IITM
9.	Seelam Narasimha Reddy	CH11D005	ACEE 2016	22-23 April 2016, NIT Jalandhar	IITM
10.	Application of Process Simulators in Chemical and Bioprocess Engineering	30 May-3 June 2016, NIT Warangal	IITM		
11.	G. Swaminathan Bharadwaj	CH11D036	International Conference on Soft Materials	12-19 December 2016, Jaipur	IITM
12.	M. Volga	CH12D009	ISAEST-11	8-9 December 2016, Chennai	IITM
13.	5 th International Hydrogen and Fuel Cell Conference	11-14 December 2016, Hyderabad	IITM		
14.	Debayan Das	CH12D014	International Conference on Applications of Fluid Dynamics (ICAFD)	17-24 December 2016, ISM Dhanbad	IITM
15.	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM		
16.	Neethu Thomas	CH12D020	4 th Soft Matter Young Investigators Meeting 2016	15-19 December 2016, International Centre, Goa	IITM
17.	M. P. Resmi Suresh	CH12D024	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
18.	R. Sundari	CH13D010	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
19.	Abhishek Kumar Gupta	CH13D016	International Conference on Frontiers at the Chemistry-Allied Sciences Interface (FCASI) 2016	25-26 April 2016, University of Rajasthan, Jaipur	IITM
20.	6 th International Conference on Functional Electroceramics and Polymers (ICEP-2017)	20 February-23 March 2017, IIT Kharagpur	IITM		
21.	Ashna	CH13D019	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
22.	M.Thirumala Rao	CH13D028	2 nd International Conference and Exhibition on Heat Treatment and Surface Engineering (HTSE 2016)	12-15 May 2016, Chennai Trade Centre Chennai	IITM
23.	Deepa Elizabeth	CH13D201	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
24.	P Lineesh	CH13D203	CHEMCON 2016	27-30 December 2016, Anna Univ. and IITM Chennai	IITM
25.	Chandra Shekar Besta	CH14D002	Trends in Industrial Measurements and Automation	6-8 January 2017, MIT, Chennai	IITM

Sl. No.	Student/Scholar	Roll No.	Conference/seminar/symposium/workshop	Date and Venue	Financial Assistance from
26.	Sanjay Kumar	CH14D006	International Conference on Sustainable Energy Technologies for Smart and Clean Cities	27-29 July 2016, IIT Tirupati	IITM
27.	Rumaiya Pervin	CH14D010	CompFlu	12-16 December 2016, IIT Hyderabad	IITM
28.	Durgadevi	CH14D018	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
29.	Babita K. Verma	CH14D207	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
30.	Nikita Saxena	CH14D208	Trends in Industrial Measurements and Automation	6-8 January 2017, MIT, Chennai	IITM
31.	K. Remya Ann Mathews	CH14D216	International Complex on Fluids Conference (Compflu-2016)	12-16 December 2016, IIT Hyderabad	IITM
32.	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM		
33.	K. Lakshmi Kumar	CH14D403	FCASI 2016	25-26 April 2016, University of Rajasthan, Jaipur	IITM
34.	ICEP-2017	20 February-23 March 2017, IIT Kharagpur	IITM		
35.	International Conference on Material Science and Technology	5-9 June 2016, Kerala	IITM		
36.	Ramya K A	CH14D408	Compflu-2016	12-16 December 2016, IIT Hyderabad	IITM
37.	CHEMCON 2016	27-30 December 2016, AU and IITM, Chennai	IITM		
38.	Shumaila Shahid	CH14D409	International Conference on Material Science and Technology	5-9 June 2016, Kerala	IITM
39.	Varghese Kurian	CH14D412	IWWA Annual Convention 2017	18-22 January 2017 VNIT, Nagpur	IITM
40.	Rajesh Pachimatla	CH15D004	iSAEST-11	8-10 December 2016, Chennai	IITM
41.	Ranjith P. M.	CH15D007	HTSE 2016	12-15 May 2016, Chennai	IITM
42.	CHEMCON 2016	27-30 December 2016, Chennai	IITM		
43.	Suriapparao D. V.	CH15D009	4 th International Conference on Material Cycles and Waste Management (4 th 3RINCs)	8-10 March 2017 New Delhi, India	IITM
44.	T. Krishnaveni	CH15D200	Compflu-2016	12-16 December, IIT Hyderabad	IITM
45.	CHEMCON 2016	27-30 December 2016, Chennai	IITM		
46.	Akash Choudhary	CH15D206	Compflu-2016	12-16 December 2016, IIT Hyderabad	IITM
47.	CHEMCON 2016	27-30 December 2016, Chennai	IITM		

Sl. No.	Student/Scholar	Roll No.	Conference/seminar/symposium/workshop	Date and Venue	Financial Assistance from
48.	Sushil M. Pachpinde	CH15D304	ICEP-2017	20 February-23 March 2017, IIT Kharagpur	IITM
49.	Raviteja Kurapati	CH15D403	Fourth International Conference on Polymer Processing and Characterization (ICPPC 2016)	8-11 December 2016, Mahatma Gandhi University, Kerala	IITM
50.	ICEP-2017	20 February-23 March 2017, IIT Kharagpur	IITM		
51.	Leo Lukose	CH15D404	CHEMCON 2016	27-30 December 2016, Chennai	IITM
PDF					
52.	P. Dhaiveegan	CH16IPF03	International Union for Materials Research Society and International Conference of Young Researchers on Advanced Materials	11-15 December 2016, IISc Bengaluru	IITM
53.	Poornima Budime Santhosh	CH15IPDF02	4 th Soft Matter Young Investigators Meeting 2016	15-19 December 2016, Goa	IITM
M.Tech.					
54.	Saurabh Tripathi	CH15M031	International Conference FEAST 2017	31 March-1 st April 2017 NIT-Tiruchirappalli	IITM
55.	Abhijith K. Haridas	CH15M037	CHEMCON 2016	27-30 December 2016, AU and IIT Madras, Chennai	IITM
56.	Krishna Saga	CH15M038	5 th International Hydrogen and Fuel Cell Conference (IHFC-2016)	11-1 December 2016, Hyderabad, India	IITM
B.Tech.					
57.	B. Saipraneet	CH13B016	4 th International Conference on Material Cycles and Waste Management (4 th 3RINCs)	8-10 March 2017, New Delhi, India	IITM

Students/scholars who won outside prizes and awards

Sl. No.	Student/scholar	Roll No.	Prize	Awarded by
Ph.D				
1.	Simi Santhosh	CH12D006	IICHe NRC Award 3 rd Best Paper in Indian Chemical Engineers (title: Tuning of proportional integral derivative controllers for critically damped second-order plus time delay systems)	IICHe
2.	Trivikram Reddy	CH12D008	Selected for the BASF International Summer Course Programme in Ludwigshafen, Germany	BASF
3.	P. Lineesh	CH13D203	Best Paper (title: Analysis of microwave heating of food materials enclosed in susceptor)	CHEMCON 2016
4.	A. Durgadevi	CH14D018	Best Paper (title: Experimental and theoretical investigation of CO ₂ absorption in NaOH in millichannel)	CHEMCON 2016
5.	Ravi Thej Pilla	CH14D024	Best Paper (title: Collective dynamics of self-propelled colloids by Brownian dynamics simulations)	CHEMCON 2016
6.	Babita Kumari Verma	CH14D207	Best Paper (title: Population interaction in the society as a result of industrial-agricultural linkage)	CHEMCON 2016
7.	Kinhal Krishna	CH14D214	Best Paper (title: Synthesis of copper nanoparticles in a droplet based continuous reactor)	CHEMCON 2016
8.	K. Remya Ann Mathews	CH14D216	Best Paper (title: Phase behaviour of bipolar patchy particles)	CHEMCON 2016
9.	Rajashekar Reddy	CH14D400	M. S. Shukla 2 nd Prize, IICHe for the Best Technical Paper (title: Experimental study of microwave assisted pyrolysis of Indian and Indonesian coals)	IICHe
10.	K. A. Ramya	CH14D408	Best Paper (title: Large amplitude oscillatory shear (LAOS) rheology of hydrogels and allied materials)	CHEMCON 2016

Sl. No.	Student/scholar	Roll No.	Prize	Awarded by
11.	Shumaila Shahid	CH14D409	Best Oral Presentation (title: Nanoparticles from polymeric waste) at 2 nd International Conference on Material Science and Technology (ICMST) 2016	St. Thomas College, Palai Kottayam, Kerala
12.	T. Krishnaveni	CH15D200	Best Paper (title: Induce recycle flows via electroosmosis)	CHEMCON 2016
13.	Leo Lukose	CH15D404	Best Paper (title: Heatline and entropy generation analysis of brine water in various shapes involving unit area and heat input during natural convection)	CHEMCON 2016
M.S.				
14.	Mohan Das	CH14S006	Short-listed for the next phase of the Lockheed Martin's C130/RO/RO Payload Design Challenge	Lockheed Martin, TATA Advanced Systems, DRDO and US Air Force, TATA Advanced
15.	J. R. Ila Sarkar	CH14S027	Best poster presentation award for poster titled, Manganese oxide supported on nitrogen-doped graphene as cathode catalyst for alkaline fuel cells, International Conference on Sustainable Energy Technologies for Smart and Clean Cities	IIT Tirupati
B.Tech.				
16.	M. Sanjana	CH14B061	Best Paper (title: Thermal hydraulic analysis of sodium-sodium heat exchanger for FBR applications; recommended to <i>Canadian Journal of Chemical Engineering</i>)	CHEMCON 2016
M.Tech.				
17.	Saurabh Tripathi	CH15M031	Best Paper (title: Identification of unstable centralized control systems) at the Frontiers in Engineering, Applied Science and Technology, NIT-Tiruchirappalli, 31 March-1 April 2017	International conference, FEAST 2017

Students/scholars who won convocation/Institute Day prizes

Sl. No.	Student/Scholar	Roll No.	Prize
Convocation 2016 prizes			
1.	Venkatachalam A.	CH12B094	Reliance Heat Transfer Private Limited Prize
2.	Raghavi Rao Kodati	CH11B051	Governor's Prize C. A. Sastry Endowment Prize
3.	Abhishek Sivaram	CH11B001	B Ravichandran Memorial Prize
4.	Vasudharini S. V.	CH14M031	Dr. K. Subba Raju Memorial Prize, Buti Foundation Gold Medal Award
5.	Vaishak Nair	CH11D012	GE Ecomagination Excellence Award
6.	Bharath R.	CH14M001	Bhagyalakshmi and Krishna Ayengar Award
7.	Dugyala Venkateshwar Rao	CH11D015	Institute Research Award
Institute Day 2016 Prizes			
1.	N. Pradeep	CH13B086	Dr. Anita Mehta-Damani Prize
2.	Venkatachalam A.	CH12B094	Dr R. K. Viswanath Memorial
3.	Sahithi Gorthy	CH11B089	Dr. Anita Mehta-Damani Prize
4.	Vasudharini S. V.	CH14M031	Messrs Chevron Products Company
5.	Srijith R.	CH12B091	Dr. Dilip Veeraraghavan Memorial Award
6.	Vasudharini S. V.	CH14M031	Swati/Jayalakshmi Memorial Award
7.	Ravindra Dhirhi	CH11B086	Prof. M. Ramanujam Memorial Award
Alumni Day 2016 Prizes			
1.	R. Mounica	CH12B052	48 th Indian Pharmaceutical Congress Prize
2.	Ravindra Dhirhi	CH11B086	Prof. M. Ramanujam Memorial Award
3.	Gattum Sowjanya Rani	CH11B077	Smt. D. L. Saraswati Memorial Prize

4.4.3. Faculty Members and Their Activities

Faculty

Name	Major Areas of Specialization
Professors	
A. Kannan (Head)	Mathematical modeling, simulation and optimization of chemical processes
Abhijit Deshpande	Rheology of complex fluids, polymers and polymeric composites, processing flow visualization
Arun K. Tangirala	Process systems engineering; control, identification and monitoring, applied signal processing
A. R. Balakrishnan	Thermodynamics of azeotropic mixtures, two-phase flow and boiling in narrow tubes
T. Panda	Bioprocess optimization, enzyme design, bionanotechnology
Preeti Aghalayam	Chemical reaction engineering
S. Pushpavanam	Modeling and simulation, non linear dynamics, flow visualization
Raghunathan Rengasamy	Process systems engineering, fuel cells, computational discrete microfluidics
S. Ramanathan	Electrochemistry, chemical mechanical planarization for semiconductor processing
R. Ravi	Applied statistical mechanics, foundations of thermodynamics and mechanics, process dynamics and control
P.S.T. Sai	Chemical reactor analysis and design
Shankar Narasimhan	Process design, data mining, fault diagnosis
Sreenivas Jayanti	Fuel cells, combustion, energy systems
Susy Varughese	Physics and mechanics of polymeric materials, polymeric nano composites
Tanmay Basak	Microware application, mathematical modeling and simulation
Uendra Natarajan	Polymer science and engineering, molecular simulation, statistical thermodynamics of complex fluids, nanostructured hybrid composite materials
Associate Professors	
M.G. Basavaraja	Directed assembly of colloids, microstructure and rheology of colloids, surfactants, polymer and their mixtures, Interfacial rheology, Ionic liquids, particulate gels
Niket S. Kaisare	Catalytic combustion, micro-reactors, advanced process control, energy and fuel processing
Raghuram Chetty	Electrocatalysis, fuel cells, wastewater treatment
R. Ravikrishna	Contaminated Sediment remediation, contaminant fate and transport, air pollution process and control
Rajnish Kumar	Gas hydrates (formation, inhibition and recovery) carbon dioxide capture, storage and utilization methane and hydrogen storage hydrothermal liquefaction at sub-critical and supercritical conditions
T. Renganathan	Multiphase systems, gasification, capture of CO ₂
Sridharakumar Narasimhan	Process system engineering, optimization, process control, fault diagnosis
Assistant Professors	
Arvind Kumar Chandiran	Solar cells, solar water splitting, carbon dioxide reduction, photoconductivity, oxide semiconductors and solar energy research
Ethayaraja Mani	Molecular simulations, self-assembly, mathematical modeling
R. Ramnarayanan	Applying physical chemistry concepts to biology, light and state of matter interaction, solid state materials
Sumesh P. Thampi	Hydrodynamics of complex fluids, interfacial flows, active matter
R. Vinu	Thermo-catalytic conversion of biomass to useful intermediates, Photocatalysis for environmental decontamination, microkinetic modeling of complex reactions
Professors Emeriti	
K. Krishnaiah	Chemical reactor analysis and design fluidization
Visiting Faculty	
Rajagopalan Srinivasan	Safe and environmentally benign process design and operations, supply chain management and enterprise optimization, computational systems biology
Hosted Fellows (Ramalingaswami Fellows)	
K. Vijaya Raghavan	Environmental biotechnology, water quality and waste water treatment
INSPIRE Fellows	
Nirav P. Bhatt	Data analysis, process systems engineering, kinetic modeling

Name	Major Areas of Specialization
Swagatika Sahoo	System biology, constraint-based metabolic modeling, human metabolism, metabolic disorders, and inherited metabolic disorders

Short-term courses/ workshops/ seminars/ symposia/conferences organized by faculty members

Sl. No.	Coordinators	Title	Period
Short-term courses			
1.	Ethayaraja Mani and Sumesh Thampi	Applications of Emulsions, Foams and Colloidal Dispersions	23-28 January 2017
2.	Shankar Narasimhan	Data Analysis for Model Identification using Time Series	7 January 2017
3.	R. Nagarajan	Contamination Control in High-Purity Manufacturing (Singapore)	27-28 June 2016
Workshops			
1.	Arun K. Tangirala	CEP workshop on Sparse Optimization for Signals and Systems	22-23 October 2016
2.	R. Ramnarayanan Aravind Kumar	Ishan-Vikas Programme for North East School Children	16 December 2016

Short-term courses/workshops/seminars/symposia/conferences/attended by faculty members at academic institutions and public sector undertakings:

Sl. No.	Faculty Member	Title	Institution	Period
Workshops				
1.	Arun K. Tangirala	Swayam Workshop	Ministry of Human Resource Development, New Delhi	2 March 2017
2.	Introduction to research: Preparation research proposal and journal articles	KPR Institute of Engineering and Technology, Coimbatore	24 June 2016	
3.	Systems identification	PSG College of Engineering, Coimbatore	27-28 August 2016	
4.	R. Nagarajan	Transition from joint-supervision to joint-degree program	University of Melbourne Australia	30-31 January 2017
5.	Preeti Aghalayam	Challenges and opportunities for development of UCG in India	CMPDI-Coal India Limited (CIL), New Delhi	27 March 2017
6.	T. Renganathan	Process simulation using Aspen Plus	Chemical Engineering Department, SRM University, Chennai	10 March 2011
7.	R. Vinu	Catalytic fast pyrolysis of microalgae for the production of fine chemicals and intermediates, UK--India Newton Researchers Link Workshop on Rational Designing of Catalysts for the Sustainable Production of Fuels and Chemicals	IIT Madras, Chennai	1-4 November 2016
8.	R. Vinu	Bioenergy Challenges	PSG College of Technology, Coimbatore	12 August 2016
9.	Swagatika Sahoo	Integration and analysis of multi-omics data within metabolic network context	IIT Madras, Chennai	4 March 2016
Seminar				
1.	Sreenivas Jayanti	Challenges and issues in New and Renewable Energy	RVR and JC College of Engineering, Guntur	3 March 2017
Symposium				
1.	Tanmay Basak	Delivered a Plenary talk at Computational Science Symposium 2017	Department of Computational and Data Sciences (CDS) at IISc, Bengaluru	16-18 March 2017
Conferences				
1.	Aravind Kumar Chandiran	2 nd International Conference on Solar Energy Photovoltaics	Bhubaneswar	17-19 December 2016

Sl. No.	Faculty Member	Title	Institution	Period
2.	Arun K. Tangirala	2017 Indian Control Conference	Indian Institute of Technology, Guwahati	5 January 2017
3.	M. Chidambaram	CHEMCON 2016	AC Tech, Anna University and IIT Madras	27-30 December 2016
4.	Ethayaraja Mani	Talk in the Colloids/Nanoparticles session, International meeting CompFlu 2016	IIT Hyderabad	12-14 December 2016
5.	Ethayaraja Mani	CHEMCON 2016	AC Tech, Anna University and IIT Madras	27-30 December 2016
6.	R. Nagarajan	Materials synthesis and characterization using acoustic fields, national conference on Advanced Materials: Processing and Characterization	TEQIP - II	28 February 2017
7.	Shankar Narasimhan	CHEMCON 2016	AC Tech, Anna University and IIT Madras	27-30 December 2016
8.	Upendra Natarajan	6 th International Conference	IIT Kharagpur	20-22 February 2017
9.	R. Vinu	CHEMCON 2016	AC Tech, Anna University and IIT Madras	27-30 December 2016
10.	Swagatika Sahoo	Predictive modeling for diagnosis and treatment of metabolic disorders, National Conference on Environment, Food Safety, and Predictive Modeling	VELS University, Chennai	4 October 2016
11.	Swagatika Sahoo	Metabolic modeling of inherited metabolic disorders at the Avidadham - International Conference on Recent Advances in Diagnostics and Treatment of Metabolic Disorders	Anna University, Chennai	19 March 2016
Short-term courses				
1.	Sumesh P. Thampi	Academic Research Opportunities, Challenges and Present Scenario	Government Engineering College, Trichur	7 October 2017
2.	Swagatika Sahoo	Computational Systems Biology	Department of Biotechnology, IIT Madras	11 February 2017
Others				
1.	Abhijit P. Deshpande	Invited for the committee of Ph.D. defence for Mr Sagar Srinivas of IISc Bengaluru on 11 July 2016		
2.	RuTAG Central Project Evaluation Committee (CPEC) meeting on 14 February 2017 coordinated by office of the Principal Scientific Adviser to the Government of India, New Delhi			
3.	M. Chidambaram	Nominated by Manipal Institute of Technology, Manipal, for an academic audit of the programmes organised by the Department of Chemical Engineering during February/March 2017		
4.	Ethayaraja Mani	Presentation about research findings and subsequent discussion at NASI, Allahabad on 21 July 2016		
5.	R. Nagarajan	Department of Heavy Industry, New Delhi to review plans for CAAR (Centre for Advanced Automotive Research) on 7 July 2016		
6.	Board of Directors Meeting of Indian Additives Limited on 24 March			
7.	Synopsis Meeting at VIT Vellore on 17 February			
8.	T. Panda	Expert Member in selection of Professor under CAS in Pondicherry University on 20 March 2017		

Sl. No.	Faculty Member	Title	Institution	Period
9.	S. Pushpavanam	Chief Guest Address at the Inaugural Ceremony of the programme on Theory and Applications of Absorption Processes (TAAP 2016) organised by the KSCSTE and MHRD-TEQIP II at NIT Calicut on 27 June 2016		
10.	S. Ramanathan	Expert resource faculty for the Training Programme on Corrosion Types and its Prevention Techniques at Department of Chemical Engineering, AC Tech, Chennai on 30 August 2016		
		Ramanathan was appointed as a member of the Syllabus Sub-Committee for framing the curricula and syllabi for in UG courses like Chemical Engineering, Petroleum Engineering, Chemical and Electro Chemical Engineering, Petro-chemical Technology, and Petro-chemical Engineering to be offered in 2017 by the constituent colleges and affiliated institutions of Anna University, Chennai under the Faculty of Technology, in accordance with the choice based credit system (CBCS).		
11.	P. S. T. Sai	Member in Expert Team for accreditation of following UG/PG Engineering programs in NIT Durgapur by the National Board of Accreditation		
12.	Shankar Narasimhan	External expert for defense of Ph.D. scholar Mr Nitin Minocha, Homi Bhabha National Institute, Mumbai on 2 September 2016		
13.	Selection Committee member by IIT Ropar for faculty positions at the meeting held on 20 January 2017			
14.	Expert member for evaluating nominations relating to Rakesh Mathur Awards for excellence in research in IIT Bombay on 2 March 2017			
15.	member for shaping up of course curriculum for BS-MS programme organised by IISER, Bhopal on 11 February 2017			
16.	Sreenivas Jayanti	Board Nominee in the faculty selection committee at Centre for Energy Studies, IIT Delhi on 1 July 2016		
17.	Tanmay Basak	External expert for Ph.D. Synopsis Evaluation in respect of Ph.D. candidate Mr Rohit Kumar Sngla by IIT Ropar on 7 July 2016		
18.	External expert for Ph.D. Evaluation of thesis in respect of candidate Mr Rahul Antony, NIT, Calicut			

Awards initiated by the department

Prof. Dr. Y. B. G. Varma Award for Teaching Excellence in Chemical Engineering Department Endowment (Donor: Ms. Usha Y. Ramakrishna) for an amount of ₹ 6,00,000 was introduced. The award is given to a faculty who follows an academic process by which students are motivated to learn; have a positive influence on how they think, see and feel; guides students successfully through exploration of the creative, critical thinking and problem-solving process; and encourages students to think and empowers them to find their own creativity.

The award consists of a silver medal with gold plating, cash award of ₹ 30,000 and certificate.

Special lectures delivered by the faculty members at other institutions

Sl. No.	Faculty Member	Title of Lecture	Institution	Date
1.	Abhijit P. Deshpande	Carbon nano-fillers in epoxy adhesives for metal joining: influence of the interfacial effects and moisture diffusion on adhesive strength and hygrothermal aging	J.N. Tata Auditorium, Advanced Research School of Technology and Product Simulation and supported by Ministry of Chemicals and Fertilizers, GoI, Bengaluru	11-13 February 2017
2.	Arun Tangirala	Compressive sensing	College of Engineering, Pune	23-24 March 2017
3.	Basavaraj M. Gurappa	Oppositely charged colloids at planar and curved interfaces	IIT Kanpur	17 October 2016
4.	Kannan A.	Making Indian Food Clean and Safe	Madras Veterinary College, Chennai	20 January 2017
5.	Krishnaiah K.	Chemical Engineering in 21 Century	B. V. Raju Institute of Technology, Narsapur, Greater Hyderabad	10 September 2016
6.	R. Nagarajan	Acoustically-enhanced synthesis and dispersion of nano-particles	VIT Vellore	July 29-30 2016
7.	Niket S. Kaisare	Model Predictive Control (MPC) – History	NIT Trichy	October 2016
8.	Niket S. Kaisare	GIAN Course on Advanced Process Control	NIT Warangal	14-16 December 2016
9.	Niket S. Kaisare	Bridging low complexity models with detailed simulations for design and control	Ford India Private Limited	October 2016
10.	Raghuram Chetty	Recent advancement in energy harvesting and water treatment technologies	Jadhavpur University	13-17 June 2016
11.	Safety in chemical process industries	Anna University		20-27 June 2016
12.	Rajagopalan Srinivasan	Extracting value from your PHA investment	Indian Chemical Council workshop on Process Hazards Analysis, Chennai	17-18 March 2017
13.	T. Renganathan	Recent advancements in alternative, renewable energy technology and management	Department of Chemical Engineering, Coimbatore Institute of Technology	20-26 March 2017
14.	Sumesh P. Thampi	Active liquid crystals	National Institute of Technology, Karnataka	18 October 2016
15.	Upendra Natarajan	Electroactive ceramics and polymers	6 th International Conference, IIT Kharagpur	20-22 February 2017
16.	Swagatika Sahoo	Human metabolic reconstruction and biomedical applications at BT5240 course on computational systems biology	IIT Madras, Chennai	18 and 21 March 2016
17.	Predictive modeling for diagnosis and treatment of metabolic disorders	Sathyabama University		28 February 2017
18.	Constraint-based modeling of metabolic disorders and Modeling human metabolism	Department of Biotechnology, IIT Madras		6-11 February 2017

Visit abroad by faculty members

Sl. No.	Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1.	Arun K. Tangirala	Harvard University, Boston and Newton, Massachusetts, USA	31 May-16 June 2016	Mathworks Curriculum Conference 2016	---
2.	Arun K. Tangirala	Michigan State University, USA	31 March 2017	Expert talk: From Data to Directionality; Reconstructing Causal Networks from Measurements	IIT Madras

Sl. No.	Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
3.	Ethayaraja Mani	Rome, Italy	4-9 September 2016	30 th Conference of the Europe Colloid and Interface Society	Partial financial assistance
4.	Ethayaraja Mani	Department of Physics, Changshu Institute of Technology, Changshu, China	1-15 June 2016	Initiate research collaborations	IIT Madras
5.	R. Nagarajan	Malaysia and Singapore	13-19 June 2016	Research collaboration on IIT Madras	IIT Madras
6.	R. Nagarajan	USA and Canada	20-26 June 2016	Research collaboration on IIT Madras	IIT Madras
7.	R. Nagarajan	NUS, Singapore	14 June 2016	Presented a talk	IIT Madras
8.	R. Nagarajan	Germany	06-09 September 2016	Workshop RWTH Aachen University	
9.	R. Nagarajan	University of Bradford, UK	08-09 September 2016	World University leaders Congress	
10.	R. Nagarajan	Shibaura Institute of Technology	17 November 2017	Discuss research collaborations and student exchanges	
11.	R. Nagarajan	University of Tokyo, Japan	21 November 2016	Discuss research collaborations and student exchanges	
12.	R. Nagarajan	Tokyo Institute of Technology, Japan	21 November 2016	Discuss research collaborations and student exchanges	
13.	R. Nagarajan	Nagaoka University of Technology, Japan	22 November 2016	Discuss research collaborations and student exchanges	
14.	R. Nagarajan	Alumni luncheon in Tokyo, Japan	19 November 2016	Discuss research collaborations and student exchanges	
15.	R. Nagarajan	Participated in Annual Meeting of AOTULE (Asia Oceania Top Universities League in Engineering), Hong Kong	24-25 November 2016	Discuss research collaborations and student exchanges	
16.	R. Nagarajan	Visited City University of Hong Kong	25 November 2016	Discuss research collaborations and student exchanges	
17.	R. Nagarajan	Swinburne University	1 February 2017	Discussion regarding a proposed scale-up to our JDP leveraging the Touchstone program	
18.	R. Nagarajan	University of Australia, Melbourne	30-31 January 2017	Faculty Administrators' Workshop to transition from joint-supervision to joint-degree program	
19.	R. Nagarajan	University of Sydney	2 February 2017	Faculty and administrators' workshop to transition from joint-supervision to a proposed joint-degree programme	
20.	R. Nagarajan	University of Technology Sydney (UTS) and Deakin University	3 February 2017	Current JDP and mechanisms for scale-up	
21.	Niket Kaisare	Politecnico Di Milani, Italy	8 May-16 June 2016	Collaboration in ERC-StG-Grant Project SHAPE	Politecnico di Milano
22.	S. Pushpavanam	San Francisco, California, USA	13-18 November 2016	69 th AIChE Annual Meeting	Partial from institute
23.	S. Pushpavanam	Portland, USA	20-22 November 2016	Annual Meeting of the American Physical Society Division of Fluid Dynamics	Partial from institute

Sl. No.	Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
24.	S. Pushpavanam	Max Planck Institute for the Dynamics of Complex Technical Systems Magdeburg	17-25 August 2016	Colloquium on Trends in Process Engineering, MPI Magdeburg, Germany and discussion on initiatives for collaboration between MPI and IIT Madras	IIT Madras
25.	S. Pushpavanam	Sheraton Silver Spring in Maryland Coupled Autocatalytic	4-6 January 2017	Poster presentation	IIT Madras
26.	P. S. T. Sai	University of South Florida, Tampa, USA	17 August 2016	Lecture: Fast Fluidization versus Flash Distillation	
27.	Shankar Narasimhan	EPFL, Switzerland	8-12 November 2016	Ph.D. viva panel member of Mr. Sriniketh Srinivasan lecture on Monitoring, Management and Control of Water Distribution Networks	
28.	Sridharakumar Narasimhan	Las Vegas, USA	26 June-1 July 2016	2016 IEEE/CVF Conference	Partial
29.	Sridharakumar Narasimhan	Philadelphia, PA, USA	14-15 July 2016	2 nd Digital Pathology Congress	Partial
30.	Sridharakumar Narasimhan	Germany	5-12 September 2016	Kick-off workshop as part of the strategic partnership of the Sister Universities, RWTH Aachen and University of Lyon	No
31.	Sridharakumar Narasimhan	University of Melbourne, Australia,	30-31 January 2017	Invited as co-supervisor of a MIPP student to take part in the Melbourne India Postgraduate Program (MIPP) Conference	No
32.	Vijayaraghavan K	Chonbuk National University, South Korea	2 May-15 June 2016	Collaborative research works and to deliver a series of lectures	South Korea
33.	Vijayaraghavan K	University of Exeter, UK	30 July-5 August 2016	UK-India Workshop on Integrated Renewables for Autonomous Power Supply and Fuel Generation	Organizers
34.	R. Vinu	Giardini Naxos-Taormina, Sicily, Italy	19-22 June 2016	2 nd International Conference on Biomass 2016	DST
35.	R. Vinu	Politecnico di Milano, University of Milan, Italy	17 June 2016	To deliver a talk	DST
36.	R. Vinu	TU Berlin, Germany	17 July 2016	IGCS Summer School on Biomass and Coal: Carbon fuels of different ages: Indian and German Perspectives	Indo-German Centre for Sustainability

Honours and awards obtained by faculty members

Sl. No.	Faculty Member	Award	Awarded by	Awarded for	Date
Awards					
1.	M. Chidambaram	IChE NRC Award	CHEMCON 2016 AC Tech, Anna University and IIT Madras	3 rd Best Paper in Indian Chemical Engineer	27-30 December 2016
2.	Ethayaraja Mani	Amar Dye Chem Award	CHEMCON 2016 AC Tech, Anna University and IIT Madras	Excellence in Research 2016	27-30 December 2016

Sl. No.	Faculty Member	Award	Awarded by	Awarded for	Date
3.	K. Krishnaiah	Life Time Achievement Award	VIT	Lifetime Achievement Award in recognition of his outstanding life-long contributions to the Profession of Chemical Engineering	21-22 October 2016
4.	R. Ravi	Prof. Dr. Y. B. G. Varma Award for Teaching Excellence for 2016	IIT Madras	Excellence in Teaching	23 July 2016
5.	Shankar Narasimhan	CHEMCON NEERI Distinguished Speaker Award	CHEMCON 2016 AC Tech, Anna University and IIT Madras	Distinguished Speaker Award	27-30 December 2016
6.	R. Vinu	M. H. Shukla 2 nd Prize IICChE	CHEMCON 2016 AC Tech, Anna University and IIT Madras	Best technical paper	27-30 December 2016
7.	Shankar Narasimhan	Prof. M. S. Ananth Institute Chair	IIT Madras	Selected for the position of Professor	March 2016

Books

1.	K. Vijayaraghavan. 2016. <i>Biosorption of Metals: A Complete Handbook</i> , Vinanie Publishers, ISBN: 978-81-932494-0-6.				
2.	M. Chidambaram and R. Padma Sree. 2017. <i>Control of Unstable Single and Multivariable Systems</i> , Narosa Publishing House, New Delhi, ISBN 978-81-8487-582-9, pp 284 and figs 96				

Fellowships of academies and professional societies

Sl. No.	Faculty Member	Year of admission
INAE:		
1.	Shankar Narasimhan	2013
2.	A. R. Balakrishnan	2003
TNASC		
1.	A. R. Balakrishnan	1996
Institute of Engineers		
1.	A. R. Balakrishnan	2013
CSIR-Central Institute of Mining and Fuel Research, Dhanbad		
1.	Sreenivas Jayanti	2013-16

Editorial boards of journals

Sl. No.	Faculty Member	Position (Editor/Member)	Journal
1.	A. R. Balakrishnan	Editor	<i>International Journal of Heat and Mass Transfer</i>
2.	A. R. Balakrishnan		<i>International Communications in Heat and Mass Transfer</i>
3.	A. R. Balakrishnan		<i>Journal of Energy, Heat and Mass Transfer</i>
4.	A. R. Balakrishnan	Editor-in-Chief	<i>Journal of The Institution of Engineers (India): Series E (Chemical and Textile Engineering)</i>

Sl. No.	Faculty Member	Position (Editor/Member)	Journal
5.	T. Panda	Member	<i>Advances in Science, Engineering and Medicine</i> (American Scientific Publishers, USA)
6.	Raghuram Chetty	Member	<i>Nano Hybrids</i>
7.	Shankar Narasimhan	Member	<i>Indian Chemical Engineer: international Journal of Advances in Engineering Sciences and Applied Mathematics</i>
8.	Tanmay Basak	Associate Editor	<i>International Journal of Heat and Mass Transfer</i>
9.	Tanmay Basak		<i>International Communications in Heat and Mass Transfer</i>

4.4.4. Design and Development Activities**New facilities added or major equipment procured**

1.	Advanced Microflow Reactor Supplied by Corning for UAY project • Purchased from Toshvin Analytical Private Limited with the help of grant from Chevron. • New gas pipelines, vent and exhaust facilities were built to install the AAS. (The instrument is being used by the research scholars in the department. The department plans to schedule it for the use of students institute wide.)
2.	Atomic Absorption Spectroscopy
3.	Motorized Microscope Arrangement
4.	Evoqua water purifying system

Patents filed

Sl. No.	Faculty Member	Title of Patent
1.	Abhijit P. Deshpande	Carbon Dioxide Separator Membrane Structure, Method of Manufacturing Same, and Carbon Dioxide Separator including same
2.	R. Nagarajan	A Formulation Comprising Nano-scale Anti-cancer Compound
3.	S. Pushpavanam	Continuous Passive Foam Separator in Microfluidic Systems
4.	Recycle in lab on Chip Devices using Electro-kinetics	
5.	Sridharakumar Narasimhan	Methods and Apparatus for Analysing Cytological Specimens

Patents obtained

Sl. No.	Faculty Member	Title of Patent
1.	Sreenivas Jayanti	A Method of Oxy-Fuel Combustion

4.4.5. Research and Consultancy**Sponsored research projects**

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Co-ordinators
1.	Novel Natural Polymer Based Blends for Adhesive Applications	2016-2020	ABB Limited	29.35	Abhijit P. Deshpande and Susy Varughese
2.	Magnetic Field Assisted Alignment of Proton Conductive Channels for Polymer Electrolyte Membrane	2016-2018	Department of Science and Technology (DST)	14.40	Abhijit P. Deshpande
3.	Large Amplitude Oscillatory Shear of Physically Aggregating Complex Fluids	2014-2017	DST	54.26	Abhijit P. Deshpande and Basavaraja Madivala Gurappa

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Co-ordinators
4.	New Generation Heat Exchanger Design Using Additive Manufacturing and Shape Optimization	2017-2020	Department of Heavy Industries (IMPRINT)	342	Arul Prakash (AM), Sreenivas Jayanti, B. V. S. S. Prasad (ME), S. Vengadesan S (AM), G. Saravana Kumar (ED), Partho Kayal (GE), Jayesh Jain (GE), Subramani Adhiachari (GE) and D. Umamaheshwari (GE)
5.	Development of Unsupervised Detection and Classification Methods in Seismic Data Analysis	2016-2019	Board of Research in Nuclear Sciences	22.15	Arun K. Tangirala
6.	3-D Printing of Tablets Customized for Specific Target Profiles	2016-2017	Gyan Data Private Limited	8.05	Basavaraja Madivala Gurappa
7.	Oppositely Charged Particles at Interface: Microstructure, Mechanical Properties and their Application in Emulsion and Foam Stabilization	2015-2018	DST	61.10	Basavaraja Madivala Gurappa and Ethayaraja Mani
8.	Strengthening Research Infrastructure	2017	DST FIST II	385	Department of Chemical Engineering
9.	Collective Dynamics of Active Colloids in Bulk and Interfaces	2016-2018	DST	19.20	Ethayaraja Mani
10.	Collective Dynamics of Self-Propelling Colloids: Role of Interactions, Hydrodynamics and Activity	2017-2020	DST	45.19	Ethayaraja Mani and Sumesh Thampi
11.	Materials and Processing for Enhanced Solar Cell Performance - FIST 2016	2017-2022	DST	385	Head of the Department Ramanathan S., Basavaraja M. G., R. Vinu and Raghuram Chetty
12.	Role of Indian Spice Nanoemulsions in Enhancing Antibacterial Antifungal and Anticancer Efficacy	2015-2018	DST	33.20	R. Nagarajan
13.	Chemical Reaction Mechanisms - Analysis and Reduction	2016 - 2018	Applied Materials India Private Limited	6.31	Niket S. Kaisare
14.	Model Order Reduction for Convection Diffusion Process with Applications to Reformer	2015-2017	Nissan Research Support Program	10.73	Niket S. Kaisare and Sridharakumar Narasimhan
15.	Identification of Heterogeneous Reaction Systems Based in Multi-sensor Data - INSPIRE Faculty Award	2013-2018	DST	86.27	Nirav Pravinbhai Bhatt
16.	Svagata.eu - Experience Europe as an Indian	2013-2017	European Commission	4	S. Pushpavanam
17.	Development of Dry Slag, Granulation Technology and Energy Recovery System for Blast Furnace Slag for Producing Clinker Compatible Product	2016-2020	Ministry of Steel	40	S. Pushpavanam, Ajay Kumar Shukla, Sabita Sarkar and T. Renganathan
18.	Analysis of the Fate and Transport of Non-aqueous Phase Liquids (NAPLs) in Porous Media Under Drying and Rewetting Conditions using MRI	2016-2019	DST	54	R. Ravikrishna
19.	Retainer Consultancy for Corporate Manpower Development	2016-2018	Gyan Data Private Limited	3.45	Raghunathan Rengaswamy
20.	Understanding Dynamic Drop Formation in 2D Cannels and Development of a Rational Design Framework	2014-2017	DST	39.62	Raghunathan Rengaswamy
21.	Data Analytics/Optimization Approach to Reduce Power Utilization in Aluminium Smelting Process	2016		20.33	Raghunathan Rengaswamy and Shankar Narasimhan

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Co-ordinators
22.	Data Analytics for Aluminum Smelters	2016-2019		48	Raghunathan Rengaswamy, Ravindran Balaraman (CSE) and Shankar Narasimhan
23.	Nano-materials-RO antifouling Membrane Formulations for Water Desalination	2016-2018	DST	6.30	Raghuram Chetty and S. Mathava Kumar
24.	Development of Alternate Electrodes and Electrolyte Materials for Ameliorating the Performance of Vanadium Redox Flow Battery (National Post-Doctoral Fellowship)	2017-2019	DST	19.20	Raghuram Chetty
25.	Titania Nanotubes as an Alternative Catalyst Support for Direct Methanol Fuel Cells	2015-2018	Ministry of New and Renewable Energy	52.12	Raghuram Chetty and Ramaprabhu S.
26.	Development of Electrochemical Impedance Spectroscopy as a Tool for Malaria, Chikungunya and Dengue	2016-2019	DBT	24	S. Ramanathan and Sujatha Sunil, ICGEB
27.	Development of Electrochemical Impedance Spectroscopy as a Tool for Malaria, Chikungunya and Dengue Diagnosis	2016-2019	Department of Biotechnology	23.99	S. Ramanathan
28.	Mechanistic Investigations of Electrochemical Reactions Using Nonlinear Electrochemical Impedance Spectroscopic Experiments	2015-2018	DST	45.75	S. Ramanathan and M. Kamaraj
29.	Analysis of the Fate and Transport of Non-Aqueous Phase Liquids (NAPLs) in Porous Media under Drying and Rewetting Conditions Using Magnetic Resonance Imaging (MRI)	2016-2019	DST	50.34	R. Ravikrishna, Chandrakumar and Abhijit P. Deshpande
30.	Technical Advice for Data Analytics Projects	2016-2018	Gyan Data Private Limited	9	Shankar Narasimhan
31.	GTWG Proposal on Advance Coal Technology	2014-2017	DST	63.63	Sreenivas Jayanti and Preeti Aghalayam
32.	Development of 10KW/50KWh Redox Flow Battery System for Solar PV Applications	2017-2020	Impacting Research Innovation and Technology - IMPRINT	399.84	Sreenivas Jayanti, U. V. Varadaraju (CY), K. S. Swarup (EE), R. Rengasamy (CH), Raghuram Chetty (CH), R. Kodandaraman (CY), D. S. Monder (IITB), P. V. Suresh (NITW), Vasu Gollangi (BHEL, Hyderabad) and L. N. Satpathy (BHEL, Bengaluru)
33.	Retainer Consultancy with Gyan Data Private Limited	2016-2018	Gyan Data Private Limited	1.73	Sridharakumar Narasimhan
34.	Control and Operation of Urban Water Distribution Networks	2014-2017	DST	32.91	Sridharakumar Narasimhan, Shankar Narasimhan and B. S. Murty
35.	Continuous Manufacturing of dl-2-amino-l-butanol	--	Uchhatar Avishkar Yojana - IIT Madras	130	Sridharakumar Narasimhan, Shankar Narasimhan, Nirav Pravinbhai Bhatt, K. K. Balasubramanian
36.	Lattice Boltzmann Simulations of Sloshing Dynamics	2016-2019	Indian Space Research Organisation	35.16	Sumesh Thampi and A. Sameen
37.	Systems Biology for Enumeration of Clinical Heterogeneity of Metabolic Disorders - INSPIRE	2016-2021	DST	86.27	Swagatika Sahoo

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Co-ordinators
38.	Green roofs: An Extensive Study to Assess the Role of Substrate, Plants and Soil Microbes to Improve Runoff Quality (Ramalingaswami Fellowship)	2012-2017	Department of Biotechnology	85.97	K. Vijayaraghavan
39.	Analysis of Samples of Petrol, Diesel, Naphtha and Kerosene to Quantify/Detect Presence of Naphtha and Kerosene in case of Adulteration of Petrol and Diesel on Trial Basis	2016	Ministry of Petroleum and Natural Gas, New Delhi	4.68	R. Vinu
40.	Renault Nissan Technology and Business Centre India Private limited	2016	Testing Agreement (Technical Services Project)	50.16	R. Vinu
41.	Waste Heat Recovery Boiler Using Municipal Solid Waste: Analysis, Model Testing and Pilot Plant Design Commissioning and Testing	--	Uchhatar Avishkar Yojana - IIT Madras	557	R. Vinu, S. R. Chakravarthy, B. V. S. S. Prasad and T. Sundararajan

Industrial Consultancy Projects

Sl. No.	Faculty Members	Title	Industry	Amount (₹ in lakhs)
1.	Abhijit P. Deshpande and Susy Varughese	Novel Natural Polymer Based Blends for Adhesive Applications	ABB Limited	29.35
2.	Preeti Aghalayam	Analysis of Coal Using Various Characterization Techniques	Common Code	--
3.	Raghuram Chetty	HR - SEM Analysis CH	Common Code	5
4.	S. Ramanathan (ChE) and Kamaraj M. (MME)	Zinc-coating Solution Optimization	Messrs Sundram Fasteners Limited	--
5.	Sreenivas Jayanti	Assessment of Flow Regimes in Horizontal Boiling Tube	Common Code	--
6.	R. Vinu	Analysis of PEG decomposition using Py-GC/MS	Common Code	--

RBIC projects

Sl. No.	Faculty Members	Title	Industry	Amount (₹ in lakhs)
1.	R. Nagarajan and Pradeep T.	Stain-free Glass and Building Materials	Saint - Gobain Research India Limited	41.04
2.	Niket S. Kaisare	Chemical Reaction Mechanism: Analysis and Reduction	Applied Materials India Private Limited	6.21
3.	S. Pushpavanam and Ajay Kumar Shukla	Development of Technology for Clinker Production through Dry Granulation of BF Slag and Energy Recovery	JSW Steel Limited	15
4.	Raghunathan Rengaswamy and Shankar Narasimhan	Data Analytics/Optimization Approach to Reduce Power Utilization in Aluminium Smelting Process	GE India Technology Centre Private Limited	20.332
5.	Raghunathan Rengaswamy and B. Ravindran, CS	Data Analytics for Aluminum Smelters	GE India Technology Centre Private Limited	48
6.	S. Ramanathan and M. Kamaraj	Zinc-coating Solution Optimization	Sundram Fasteners Limited	17.4
7.	Shankar Narasimhan	Data Reconciliation in Thermal Power Plants	ABB Limited	10.70
8.	Tanmay Basak	Numerical Simulations on Microwave Heating of Metals Attached with Various Susceptors	Siemens Technology and Services Private Limited	5.10
9.	R. Vinu	EB Oxidation - Improving EBHP Selectivity (Phase 2)	Shell India Markets Private Limited	16.56
10.	R. Vinu	Microwave-assisted Pyrolysis of Coking and Non-Coking Coals and Product Characterization	Tata Steel, Jamshedpur	13.94

Sl. No.	Faculty Members	Title	Industry	Amount (₹ in lakhs)
11.	R. Vinu	Testing of Combustion Catalysts and Analysis of Emissions	Renault Nissan Technology and Business Centre India Private Limited (RNTBCL)	50.17
12.	R. Vinu and P. Selvam	Kinetic Studies of Biomass Devolatilization and Catalytic Hydrodeoxygenation	Shell India Markets Private Limited	35.46
13.	R. Vinu	Detailed Characterization in Terms of the Hydrocarbon Components in Petrol, Diesel, Kerosene and Naphtha	Ministry of Petroleum and Natural Gas	4.68
14.	R. Vinu	Synthesizing Liquid Biofuels from Indian Agro Residues and Waste Plastics via Microwave Assisted Co-pyrolysis combined with Microwave Catalytic Upgradation Process	Gail India Limited	86.24

Retainer Consultancy

Sl. No.	Faculty Member	Title	Industry	Amount (₹ in lakhs)
1.	Arun K. Tangirala	Retainer Consultancy with Gyan Data Private Limited	Gyan Data Private Limited	2.76
2.	Basavaraja Madivala Gurappa	3-D Printing of Tablets Customized for Specific Target Profiles	Gyan Data Private Limited	8.05
3.	Nirav Pravinbhai Bhatt	Consultant in Training of Manpower in the Areas of Data Analysis and Process Systems	Gyan Data Private Limited	2.30
4.	Raghunathan Rengaswamy	Retainer Consultancy for Corporate Manpower Development	Gyan Data Private Limited	3.45
5.	Raghunathan Rengaswamy	3D Printing of Pharmaceutical Drugs	Gyan Data Private Limited	8.05
6.	Shankar Narasimhan	Technical Advice for data Analytics Projects	Gyan Data Private Limited	9.00
7.	Sridharakumar Narasimhan	Retainer Consultancy with GyanData Private Limited	Gyan Data Private Limited	1.73

Research publications of the faculty members and research scholars

Papers published in refereed international journals: 119

Papers published in refereed national journals: 6

Papers presented in international conferences: 24

Papers presented in national conferences: 25

Papers published in refereed international journals

1. A. Kumar and S. Narasimhan. 2016. Optimal Input Signal Design for Identification of Interactive and Ill-Conditioned Systems. *Industrial and Engineering Chemistry Research* 55(14): 4000-4010. doi: 10.1021/acs.iecr.5b02283
2. S. Kathari and A. K. Tangirala. 2016. Estimation of network connectivity strengths in linear causal dynamic systems. *IFAC-PapersOnLine* 49(1): 77-82. doi: 10.1016/j.ifacol.2016.03.032
3. S. K. Perepu and A. K. Tangirala. 2016. Reconstruction of missing data using compressed sensing techniques with adaptive dictionary. *Journal of Process Control* 47: 175-190. doi: 10.1016/j.jprocont.2016.08.008
4. Jerome P. Ortmann and Niket S. Kaisare. 2016. Modeling of cryo-adsorption of hydrogen on MOF-5 pellets: Effect of pellet properties on moderate pressure refueling. *International Journal of Hydrogen Energy* 41(1): 342-354. doi:10.1016/j.ijhydene.2015.10.138
5. R. Savitha, R. Raghunathan and R. Chetty. 2016. Rutile nanotubes by electrochemical anodization. *RSC Advances* 6(78): 74510-74514. doi: 10.1039/c6ra16708j
6. B. G. Abraham, K. K. Maniam, A. Kuniyil and R. Chetty. 2016. Electrocatalytic performance of palladium dendrites deposited on titania nanotubes for formic acid oxidation. *Fuel Cells* 16(5): 656-661. doi: 10.1002/fuce.201600023
7. K. K. Maniam, V. Muthukumar and R. Chetty. 2016. Electrodeposition of dendritic palladium nanostructures on carbon support for direct formic acid fuel cells. *International Journal of Hydrogen Energy* 41(41): 18602-18609. doi: 10.1016/j.ijhydene.2016.08.064
8. Nithin Sebastian Kuncheria, Kirann Abraham Jacob, Raghuram Chetty and A. Fazil. 2016. Electrochemical study of PT deposited pyrolysed glucose and sucrose. *Imperial Journal of Interdisciplinary Research* 2(11)

9. B. Ashraf Ali, Raghuram Chetty and S. Pushpavana. 2016. Electrolytic degradation of uric acid using nickel electrodes in an unpartitioned and partitioned batch cell. *International Journal of Chemical Engineering and Processing* 2(1): 1-10
10. R. Ravi Krishna, T. Swaminathan and K. Sivagami. 2016. Optimization studies on degradation of monocrotophos in an immobilized bead photo reactor using design of experiment. *Desalination and Water Treatment* 57(59): 28822-28830. doi: 10.1080/19443994.2016.1195288
11. B. Vikraman, R. R. Krishna, T. Swaminathan and K. Sivagami. 2016. Chlorpyrifos and Endosulfan degradation studies in an annular slurry photo reactor. *Ecotoxicology and Environmental Safety* 134: 327-331. doi: 10.1016/j.ecoenv.2015.08.015
12. J. R. Picardo, T. G. Radhakrishna and S. Pushpavanam. 2016. Solutal Marangoni instability in layered two-phase flows. *Journal of Fluid Mechanics* 793: 280-315. doi: 10.1017/jfm.2016.135
13. A. Sahu, A. B. Vir, L. N. S. Molleti, S. Ramji and S. Pushpavanam. 2016. Comparison of liquid-liquid extraction in batch systems and micro-channels. *Chemical Engineering and Processing: Process Intensification* 104: 190-200. doi: 10.1016/j.cep.2016.03.010
14. J. S. Kasule, J. Maddala, P. Mobed and R. Rengaswamy. 2016. Very large scale droplet microfluidic integration (VLDMI) using genetic algorithm. *Computers and Chemical Engineering* 85: 94-104. doi: 10.1016/j.compchemeng.2015.10.018
15. R. Suresh, H. Kumar Tanneru and R. Rengaswamy. 2016. Modeling of rechargeable batteries. *Current Opinion in Chemical Engineering* 13: 63-74. doi: 10.1016/j.coche.2016.08.005
16. S. Santosh and M. Chidambaram. 2016. A simple method of tuning parallel cascade controllers for unstable FOPTD systems. *ISA Transactions* 65: 475-486. doi: 10.1016/j.isatra.2016.08.007
17. S. Nikita and M. Chidambaram. 2016. Improved relay auto-tuning of pid controllers for unstable SOPTD systems. *Chemical Engineering Communications* 203(6): 769-782. doi: 10.1080/00986445.2015.1103229
18. N. Murugesan, T. Panda and S. K. Das. 2016. Effect of gold nanoparticles on thermal gradient generation and chemotaxis of E. coli cells in microfluidic device. *Biomedical Microdevices* 18(4). doi: 10.1007/s10544-016-0077-8
19. N. Murugesan, S. Singha, T. Panda and S. K. Das. 2016. A diffusion based long-range and steady chemical gradient generator on a microfluidic device for studying bacterial chemotaxis. *Journal of Micromechanics and Microengineering* 26(3). doi: 10.1088/0960-1317/26/3/035011
20. Tapobrata Panda and R. Indira Iyer. 2016. Biosynthesis of Gold and Silver Nanoparticles with Anti-Microbial Activity by Callus Cultures of *Michelia champaca* L. *Journal of Nanoscience and Nanotechnology* 16(7): 7345-7357. doi: 10.1166/jnn.2016.12406
21. T. Panda and Subin Poullose. 2016. Synthesis of Silver Nanoparticles for Possible Printing Applications. *Advanced Science, Engineering and Medicine* 8(12): 954-959. doi: 10.1166/ase.2016.1942
22. V. Anand, V. Sunjeev and R. Vinu. 2016. Catalytic fast pyrolysis of *Arthrospira platensis* (spirulina) algae using zeolites. *Journal of Analytical and Applied Pyrolysis* 118: 298-307. doi: 10.1016/j.jaap.2016.02.013
23. D. K. Ojha, S. Shukla, R. S. Sachin and R. Vinu. 2016. Understanding the interactions between cellulose and polypropylene during fast co-pyrolysis via experiments and DFT calculations. *Chemical Engineering Transactions* 50: 67-72. doi: 10.3303/CET1650012
24. V. Nair, P. Dhar and R. Vinu. 2016. Production of phenolics via photocatalysis of ball milled lignin-TiO₂ mixtures in aqueous suspension. *RSC Advances* 6(22): 18204-18216. doi: 10.1039/c5ra25954a
25. G. SriBala, R. Chennuru, S. Mahapatra and R. Vinu. 2016. Effect of alkaline ultrasonic pretreatment on crystalline morphology and enzymatic hydrolysis of cellulose. *Cellulose* 23(3): 1725-1740. doi: 10.1007/s10570-016-0893-2
26. V. Nair and R. Vinu. 2016. Peroxide-assisted microwave activation of pyrolysis char for adsorption of dyes from wastewater. *Bioresource Technology* 216: 511-519. doi: 10.1016/j.biortech.2016.05.070
27. B. R. Reddy and R. Vinu. 2016. Microwave assisted pyrolysis of Indian and Indonesian coals and product characterization. *Fuel Processing Technology* 154: 96-103. doi: 10.1016/j.fuproc.2016.08.016
28. S. B. Kota, A. Subramani and S. Jayanti. 2016. Auto-ignition temperature and burning rate of potassium pool fire in a confined enclosure. *Combustion and Flame* 168: 286-295. doi: 10.1016/j.combustflame.2016.03.004
29. V. S. Naidu, P. Aghalayam and S. Jayanti. 2016. Evaluation of CO₂ gasification kinetics for low-rank Indian coals and biomass fuels. *Journal of Thermal Analysis and Calorimetry* 123(1): 467-478. doi: 10.1007/s10973-015-4930-4
30. S. Kumar and S. Jayanti. 2016. Effect of flow field on the performance of an all-vanadium redox flow battery. *Journal of Power Sources* 307: 782-787. doi: 10.1016/j.jpowsour.2016.01.048
31. V. Satyam Naidu, P. Aghalayam and S. Jayanti. 2016. Synergetic and inhibition effects in carbon dioxide gasification of blends of coals and biomass fuels of Indian origin. *Bioresource Technology* 209: 157-165. doi: 10.1016/j.biortech.2016.02.137
32. D. Kareemulla and S. Jayanti. 2016. Detailed plant layout studies of oxy-enriched CO₂ pulverized coal combustion-based power plant with CO₂ enrichment. *Clean Technologies and Environmental Policy* 18(6): 1985-1996. doi: 10.1007/s10098-016-1125-z
33. Sreenivas Jayanti and P. V. Suresh. 2016. Peclet number analysis of cross-flow in porous gas diffusion layer of polymer electrolyte membrane fuel cell (PEMFC). *Environmental Science and Pollution Research* 23(20): 20120-20130. doi: 10.1007/s11356-016-6629-x
34. P. Purnima and S. Jayanthi. 2016. A high-efficiency, auto-thermal system for on-board hydrogen production for low-temperature PEM fuel cells using dual reforming of ethanol. *International Journal of Hydrogen Energy* 41(31): 13800-13810. doi: 10.1016/j.ijhydene.2016.01.147
35. M. Bhattacharya, S. Panda and T. Basak. 2016. A generalized approach on microwave processing for the lateral and radial irradiations of various groups of food materials. *Innovative Food Science and Emerging Technologies* 33: 333-347. doi: 10.1016/j.ifset.2015.11.009
36. V. M. Rathnam, P. Biswal and T. Basak. 2016. Analysis of entropy generation during natural convection within entrapped porous triangular cavities during hot or cold fluid disposal. *Numerical Heat Transfer; Part A: Applications* 69(9): 931-956. doi: 10.1080/10407782.2015.1109362
37. D. Das and T. Basak. 2016. Analysis of average Nusselt numbers at various zones for heat flow visualizations during natural convection within enclosures (square vs triangular) involving discrete heaters. *International Communications in Heat and Mass Transfer* 75: 303-310. doi: 10.1016/j.icheatmasstransfer.2016.04.017
38. P. Biswal, V. Mani Rathnam and T. Basak. 2016. Analysis of entropy production vs. energy efficiencies during natural convection in porous trapezoidal cavities exposed to various thermal ambience. *Journal of the Taiwan Institute of Chemical Engineers* 65: 118-133. doi: 10.1016/j.jtice.2016.04.003
39. P. Biswal, A. Nag and T. Basak. 2016. Analysis of thermal management during natural convection within porous tilted square cavities via heatline and entropy generation. *International Journal of Mechanical Sciences* 115-116: 596-615. doi: 10.1016/j.ijmecsci.2016.07.011
40. D. Das and T. Basak. 2016. Role of distributed/discrete solar heaters during natural convection in the square and triangular cavities: CFD and heatline simulations. *Solar Energy* 135: 130-153. doi: 10.1016/j.solener.2016.04.045
41. P. Biswal and T. Basak. 2016. Role of various concave/convex walls exposed to solar heating on entropy generation during natural convection within porous right angled triangular enclosures. *Solar Energy* 137: 101-121. doi: 10.1016/j.solener.2016.07.008
42. D. Kavya, D. Das and T. Basak. 2016. Analysis of thermal management on processing of fluids within rhombic cavities: Heatlines vs. entropy generation. *Journal of the Taiwan Institute of Chemical Engineers* 68: 301-322. doi: 10.1016/j.jtice.2016.09.014
43. K. Nagarajan, T. Renganathan and K. Krishnaiah. 2016. Hydrodynamics of a continuous countercurrent liquid-solid system: Experiments and modeling. *RSC Advances* 6(42): 35486-35497. doi: 10.1039/c6ra05595h
44. S. Samdavid, T. Renganathan and K. Krishnaiah. 2016. Hydrodynamics of a cocurrent downward liquid-liquid extraction column. *RSC Advances* 6(15): 12439-12445. doi: 10.1039/c5ra23649e
45. K. Nagarajan, T. Renganathan and K. Krishnaiah. 2016. Dye removal in steady-state continuous countercurrent liquid-solid adsorber. *Separation Science and Technology* 51(12): 1955-1961. doi: 10.1080/01496395.2016.1196220
46. N. Goswami, S. Pushpavanam, D. S. Pillai, O. Bidiarani and S. Paruya. 2016. Periodically-forced density wave oscillations in boiling flow at low forcing frequencies: Nonlinear dynamics and control issues. *Chemical Engineering Science* 140: 123-133. doi: 10.1016/j.ces.2015.09.037
47. Dipin S. Pillai, B. Dinesh, T. Sundararajan and S. Pushpavanam. 2016. A viscous potential flow model for core-annular flow. *Applied Mathematical Modelling* 40(7-8): 5044-5062. doi: 10.1016/j.apm.2015.12.017
48. M. S. Amruta, Fathima Fasmin, P. Ilayaraja and Sudakar Chandran. 2016. Anodic dissolution of Ti in acidic fluoride media. *ECS Transactions* 72(17): 75-90. doi: 10.1149/07217.0075ecst
49. T. Spinner, B. Srinivasan and R. Rengaswamy. 2016. Optimal back-off point determination and controller weight selection for multivariate systems under finite-horizon control. *Journal of Process Control* 40: 134-145. doi: 10.1016/j.jprocont.2016.01.008
50. M. Danny Raj and Raghunathan Rengaswamy. 2016. Coalescence of drops in a 2D microchannel: critical transitions to autocatalytic behaviour. *Soft Matter* 12(1): 115-122. doi: 10.1039/c5sm01915j

51. R. Gautam, R. Sarathi, S. Acharya, M. Kumar, A. Sharma and R. Vinu. 2016. Understanding electrical treeing activity in electron beam irradiated XLPE cable insulation. *IEEE Transactions on Dielectrics and Electrical Insulation* 23(3): 1652-1662. doi: 10.1109/TDEI.2016.005621
52. M. Bhattacharya, S. Panda and Tanmay Basak. 2016. A review on the susceptor assisted microwave processing of materials. *Energy* 97: 306-338. doi: 10.1016/j.energy.2015.11.034
53. M. Sabapathy, Y. Shelke, M. G. Basavaraj and E. Mani. 2016. Synthesis of non-spherical patchy particles at fluid-fluid interfaces: via differential deformation and their self-assembly. *Soft Matter* 12(27): 5950-5958. doi: 10.1039/c6sm00809g
54. V. R. Dugyala, J. S. Muthukuru, M. G. Basavaraj and E. Mani. 2016. Role of electrostatic interactions in the adsorption kinetics of nanoparticles at fluid-fluid interfaces. *Physical Chemistry Chemical Physics* 18(7): 5499-5508. doi: 10.1039/c5cp05959c
55. Neethu Thomas and E. Mani. 2016. An analytical solution to the kinetics of growth of gold nanorods. *RSC Advances* 6(36): 30028-30036. doi: 10.1039/c5ra24411k
56. V. R. Dugyala, T. G. Anjali, S. Upendar, E. Mani and M. G. Basavaraj. 2016. Nano ellipsoids at the fluid-fluid interface: Effect of surface charge on adsorption, buckling and emulsification. *Faraday Discussions* 186: 419-434. doi: 10.1039/c5fd00136f
57. T. G. Anjali and M. G. Basavaraj. 2016. Contact angle and detachment energy of shape anisotropic particles at fluid-fluid interfaces. *Journal of Colloid and Interface Science* 478: 63-71. doi: 10.1016/j.jcis.2016.05.060
58. Sashikumar Ramamirtham, A. Shahin and Abhijit P. Deshpande. 2016. Phase behavior and micro-structure of fat-oil mixtures: engineering the shape of fat clusters. *Journal of the American Oil Chemists' Society* 94(1): 121-132. doi: 10.1007/s11746-016-2926-2
59. C. Ajith, S. Varughese, A. P. Deshpande and Madivala G. Basavaraj. 2016. Proton conductivity in crosslinked hydrophilic ionic polymer system: Competitive hydration, crosslink heterogeneity, and ineffective domains. *Journal of Polymer Science, Part B: Polymer Physics* 54(11): 1087-1101. doi: 10.1002/polb.24012
60. G. Swaminath Bharadwaj, P. B. Kumar, Shigeyuki Komura and Abhijit P. Deshpande. 2016. Spherically symmetric solvent is sufficient to explain lower critical solution temperature in polymer solutions. *Macromolecular Theory and Simulations* doi: 10.1002/mats.201600073
61. S. M. M. Reddy, P. Dorishetty, A. P. Deshpande and G. Shanmugam. 2016. Hydrogelation induced by change in hydrophobicity of amino acid side chain in Fmoc-functionalised amino acid: significance of sulfur on hydrogelation. *ChemPhysChem* 17(14): 2170-2180. doi: 10.1002/cphc.201600132
62. S. P. Thampi, I. Pagonabarraga, R. Adhikari and R. Govindarajan. 2016. Universal evolution of a viscous-capillary spreading drop. *Soft Matter* 12(28): 6073-6078. doi: 10.1039/c6sm01167e
63. Michael F. Adamer, Sumesh P. Thampi, Julia M. Yeomans and Amin Doostmohammadi. 2016. Stabilization of active matter by flow-vortex lattices and defect ordering. *Nature Communications* 7. 7. doi: 10.1038/ncomms10557
64. Amin Doostmohammadi, Tyler N. Shendruk, Ramin Golestanian, Julia M. Yeomans and Sumesh P. Thampi. 2016. Active micromachines: Microfluidics powered by mesoscale turbulence. *Science Advances* 2(7): e1501854. doi: 10.1126/sciadv.1501854
65. S. P. Thampi and J. M. Yeomans. 2016. Active turbulence in active nematics. *European Physical Journal: Special Topics* 225(4): 651-662. doi: 10.1140/epjst/e2015-50324-3
66. M. Das and S. Varughese. 2016. A novel sonochemical approach for enhanced recovery of carbon fiber from CFRP waste using mild acid-peroxide mixture. *ACS Sustainable Chemistry and Engineering* 4(4): 2080-2087. doi: 10.1021/acssuschemeng.5b01497
67. S. C. H. Mangalara and S. Varughese. 2016. Green recycling approach to obtain nano- and microparticles from expanded polystyrene waste. *ACS Sustainable Chemistry and Engineering* 4(11): 6095-6100. doi: 10.1021/acssuschemeng.6b01493
68. K. G. Sarojini, P. Dhar, S. Varughese and S. K. Das. 2016. Coalescence dynamics of PEDOT:PSS droplets impacting at offset on substrates for inkjet printing. *Langmuir* 32(23): 5838-5851. doi: 10.1021/acs.langmuir.6b01219
69. R. Nagarajan and M. J. Nirmala. 2016. Nanoemulsions in cancer therapeutics. *J. Nanomedicine Nanotechnology* 7(2). doi: 10.4172/2157-7439.1000e137
70. V. Govindaraj, J-M. Herri, Y. Y. Ouabbas, M. M. Khodja, M. M. Belloum, J. Sangwai, R. Nagarajan and Samer Said. 2016. A study on the influence of nanofluids on gas hydrate formation kinetics and their potential application to the CO₂ capture process. *Journal of Natural Gas Science and Engineering* 32: 95-108. doi: 10.1016/j.jngse.2016.04.003
71. M. Bhuvaneshwari, V. Iswarya, R. Nagarajan, N. Chandrasekaran and A. Mukherjee. 2016. Acute toxicity and accumulation of ZnO NPs in Ceriodaphnia dubia: Relative contributions of dissolved ions and particles. *Aquatic Toxicology* 177: 494-502. doi: 10.1016/j.aquatox.2016.07.003
72. J. Kumari, N. Chnadrsekaran, R. Nagarajan and A. Mukherjee. 2016. Individual, co-transport and deposition of TiO₂ and ZnO nanoparticles over quartz sand coated with consortium biofilm. *Journal of Environmental Chemical Engineering* 4(4): 3954-3960. doi: 10.1016/j.jece.2016.09.005
73. R. Nagarajan and M. J. Nirmala. 2016. Microemulsions as potent drug delivery systems. *J. Nanomedicine Nanotechnology* 7(3). doi: 10.4172/2157-7439.1000e139
74. R. Nagarajan and M. J. Nirmala. 2016. Spices as potent microbial agents. *J. Nanomedicine Nanotechnology* 7(5). doi: 10.4172/2157-7439.1000e144
75. A. V. Raut, R. K. Satvekar, S. S. Rohiwal, A. P. Tiwari, A. Gnanamani, S. Pushpavanam, S. G. Nanaware and S. H. Pawar. 2016. *In vitro* biocompatibility and antimicrobial activity of chitin monomer obtain from hollow fiber membrane. *Designed Monomers and Polymers* 19(5): 445-455. doi: 10.1080/15685551.2016.1169379
76. D. S. Pillai, R. Vignesh, S. Pushpavanam, T. Sundararajan, B. K. Nashine, P. Selvaraj and A. J. Sudha. 2016. Experimental simulation of fragmentation and stratification of core debris on the core catcher of a fast breeder reactor. *Nuclear Engineering and Design* 301: 39-48. doi: 10.1016/j.nucengdes.2016.02.038
77. P. Sappidi and U. Natarajan. 2016. Polyelectrolyte conformational transition in aqueous solvent mixture influenced by hydrophobic interactions and hydrogen bonding effects: PAA-water-ethanol. *Journal of Molecular Graphics and Modelling* 64: 60-74. doi: 10.1016/j.jmgm.2015.12.004
78. A. K. Gupta and U. Natarajan. 2016. Tacticity effects on conformational structure and hydration of poly-(methacrylic acid) in aqueous solutions-a molecular dynamics simulation study. *Molecular Simulation* 42(9): 725-736. doi: 10.1080/08927022.2015.1086485
79. P. Sappidi and U. Natarajan. 2016. Effect of salt valency and concentration on structure and thermodynamic behavior of anionic polyelectrolyte Na⁺-polyethacrylate aqueous solution. *Journal of Molecular Modeling* 22(11). doi: 10.1007/s00894-016-3144-4
80. A. V. Raut, H. M. Yadav, A. Gnanamani, S. Pushpavanam and S. H. Pawar. 2016. Synthesis and characterization of chitosan-TiO₂:Cu nanocomposite and their enhanced antimicrobial activity with visible light. *Colloids and Surfaces B: Biointerfaces* 148: 566-575. doi: 10.1016/j.colsurfb.2016.09.028
81. J. Kumari, N. Chandrasekaran, R. Nagarajan and A. Mukherjee. 2016. Individual, co-transport and deposition of TiO₂ and ZnO nanoparticles over quartz sand coated with consortium biofilm. *Journal of Environmental Chemical Engineering* 4(4). doi: 10.1016/j.jece.2016.09.005
82. L. Das, B. Srinivasan and R. Rengaswamy. 2016. Multivariate control loop performance assessment with Hurst Exponent and Mahalanobis Distance. *IEEE Transactions on Control Systems Technology* 24(3): 1067-1074. doi: 10.1109/TCST.2015.2468087
83. S. Biswas, E. Mani, A. Mondal, A. Tiwari and S. Roy. 2016. Supramolecular polyelectrolyte complex (SPEC): PH dependent phase transition and exploitation of its carrier properties. *Soft Matter* 12(7): 1989-1997. doi: 10.1039/c5sm02732b
84. L. Das, B. Srinivasan and R. Rengaswamy. 2016. A novel framework for integrating data mining with control loop performance assessment. *AIChE Journal* 62(1): 146-165. doi: 10.1002/aic.15042
85. S. Srinivasan, D. M. Darsha Kumar, J. Billeter, S. Narasimhan and D. Bovin. 2016. On the use of shape constraints for state estimation in reaction systems. *IFAC-PapersOnLine* 49(7): 73-78. doi: 10.1016/j.ifacol.2016.07.219
86. C. S. C. Chiew, H. K. Yeoh, P. Pasbakhsh, K. Krishnaiah, P. E. Poh, B. T. Tey and E. S. Chan. 2016. Halloysite/alginate nanocomposite beads: Kinetics, equilibrium and mechanism for lead adsorption. *Applied Clay Science* 119: 301-310. doi: 10.1016/j.clay.2015.10.032
87. S. Shokri, M. A. Marvast, M. T. Sadeghi and S. Narasimhan. 2016. Combination of data rectification techniques and soft sensor model for robust prediction of sulfur content in HDS process. *Journal of the Taiwan Institute of Chemical Engineers* 58: 117-126. doi: 10.1016/j.jtice.2015.06.018
88. N. Sathya Narayanan, M. Patnaik and V. Kamakoti. 2016. ProMAC: A proactive model predictive control based MAC protocol for cognitive radio vehicular networks. *Computer Communications* 93: 27-38. doi: 10.1016/j.comcom.2016.05.012
89. A. Prajapati, T. Renganathan and K. Krishnaiah. 2016. Kinetic studies of CO₂ capture using K₂CO₃/Activated carbon in fluidized bed reactor. *Energy and Fuels* 30(12): 10758-10769. doi: 10.1021/acs.energyfuels.6b01994
90. R. Ravi and B. Sivaramakrishna. 2016. A hierarchy of transport models motivated by studies of the Stefan tube. *International Communications in Heat and Mass Transfer* 77: 132-139. doi: 10.1016/j.icheatmasstransfer.2016.06.013

91. G. Samdani, P. Aghalayam, A. Ganesh, R. K. Sapru, B. L. Lohar and S. Mahajani. 2016. A process model for underground coal gasification - Part-I: Cavity growth. *Fuel* 181: 690-703. doi: 10.1016/j.fuel.2016.05.020
92. G. Samdani, P. Aghalayam, A. Ganesh, R. K. Sapru, B. L. Lohar and S. Mahajani. 2016. A process model for underground coal gasification - Part-II growth of outflow channel. *Fuel* 181: 587-599. doi: 10.1016/j.fuel.2016.05.017
93. V. S. Prasad and P. Aghalayam. 2016. Microkinetic modeling of the effects of oxygen on the catalytic reduction of NO on Pt and Rh in automotive aftertreatment. *Industrial and Engineering Chemistry Research* 55(35): 9362-9371. doi: 10.1021/acs.iecr.6b01717
94. K. Vijayaraghavan and R. S. Praveen. 2016. *Dracaena marginata* biofilter: Design of growth substrate and treatment of stormwater runoff. *Environmental Technology (United Kingdom)* 37(9): 1101-1109. doi: 10.1080/09593330.2015.1102330
95. K. Vijayaraghavan. 2016. Green roofs: A critical review on the role of components, benefits, limitations and trends. *Renewable and Sustainable Energy Reviews* 57: 740-752. doi: 10.1016/j.rser.2015.12.119
96. K. Vijayaraghavan, Y. Premkumar and J. Jegan. 2016. Malachite green and crystal violet biosorption onto coco-peat: characterization and removal studies. *Desalination and Water Treatment* 57(14): 6423-6431. doi: 10.1080/19443994.2015.1011709
97. K. Shrinivas, R. P. Kulkarni, S. Shaikh, R. V. Ghorpade, R. Vyas, S. S. Tambe, S. Ponrathnam and B. D. Kulkarni. 2016. Prediction of reactivity ratios in free radical copolymerization from monomer resonance-polarity (Q-e) parameters: genetic programming-based models. *International Journal of Chemical Reactor Engineering* 14(1): 361-372. doi: 10.1515/ijcre-2014-0039
98. A. Santhosham and P. Aghalayam. 2016. Understanding NO emissions in diesel and biodiesel based engines. *RSC Advances* 6(64): 59513-59526. doi: 10.1039/c6ra08719a
99. S. Kumar and S. Jayanti. 2016. High-energy efficiency with low-pressure drop configuration for an all-vanadium redox flow battery. *Journal of Electrochemical Energy Conversion and Storage* 13(4): 1-6. doi: 10.1115/1.4035847
100. C. S. Besta and M. Chidambaram. 2016. Tuning of multivariable PI controllers by BLT method for TITO systems. *Chemical Engineering Communications* 203(4): 527-538. doi: 10.1080/00986445.2015.1039121
101. M. Bhuvaneshwari, V. Iswarya, R. Nagarajan, N. Chandrasekaran and A. Mukherjee. 2016. Acute toxicity and accumulation of ZnO NPs in *Ceriodaphnia dubia*: Relative contributions of dissolved ions and particles. *Aquatic Toxicology* 177: 494-502. doi: 10.1016/j.aquatox.2016.07.003
102. S. Arunkumar, J. Adhavan, M. Venkatesan, S. K. Das and A. R. Balakrishnan. 2016. Two phase flow regime identification using infrared sensor and volume of fluids method. *Flow Measurement and Instrumentation* 51: 49-54. doi: 10.1016/j.flowmeasinst.2016.08.012
103. R. Avvari and S. Jayanti. 2016. Flow apportionment algorithm for optimization of power plant ducting. *Applied Thermal Engineering* 13594311: 715-726. doi: 10.1016/j.applthermaleng.2015.10.135
104. S. Gopalakrishnan, A. K. Devassikutty, M. Mathew, D. Ayyappan, S. Thiagarajan and R. Rengaswamy. 2016. Passive release of fungal spores from synthetic solid waste surfaces. *Aerosol and Air Quality Research* 16(6): 1441-1451. doi: 10.4209/aaqr.2015.07.0438
105. A. E. Valsan, R. Ravikrishna, C. V. Biju, C. Pohlker, V. R. Despres, J. A. Huffman, U. Poschl and S. S. Gunthe. 2016. Fluorescent biological aerosol particle measurements at a tropical high-altitude site in southern India during the southwest monsoon season. *Atmospheric Chemistry Physics* 16(15): 9805-9830. doi: 10.5194/acp-16-9805-2016, 2016.
106. V. R. Palleti, R. Rengaswamy, R. Teja, S. Murty Bhallamudi and S. Narasimhan. 2016. Sensor network design for contaminant detection and identification in water distribution networks. *Computers and Chemical Engineering* 87: 246-256. doi: 10.1016/j.compchemeng.2015.12.022
107. A. Rajeev, V. Erapalapati, N. Madhavan and M. G. Basavaraj. 2016. Conversion of expanded polystyrene waste to nanoparticles via nanoprecipitation. *Journal of Applied Polymer Science* 133(4). doi: 10.1002/app.42904
108. Balakrishnan, S., V. Midhun Reddy, R. Nagarajan and Nilesh Vasa. 2016. Suitability of laser-induced breakdown spectroscopy in screening potential additives to mitigate fouling deposits. *Applied Physics A* 122(399): 1-7. doi: 10.1007/s00339-016-9964-3
109. D. Maurya, A. K. Tangirala and S. Narasimhan. 2016. Identification of linear dynamic systems using dynamic iterative principal component analysis. *IFAC-PapersOnLine* 49(7): 1014-1019. doi: 10.1016/j.ifacol.2016.07.335
110. Debayan Das, Pratibha Biswal, Monisha Roy and Tanmay Basak. 2016. Role of the importance of 'Forchheimer term' for visualization of natural convection in porous enclosures of various shapes. *International Journal of Heat and Mass Transfer*. 97: 1044-1068. doi: 10.1016/j.ijheatmasstransfer.2015.12.026
111. Monisha Roy, S. Roy and Tanmay Basak. 2016. Finite element simulations on heatline trajectories for mixed convection in porous square enclosures: Effects of various moving walls. *European Journal of Mechanics - B/Fluids* 59: 140-160. doi: 10.1016/j.euromechflu.2016.04.011
112. Monisha Roy, S. Roy and Tanmay Basak. 2016. Analysis of entropy generation for mixed convection within porous square cavities: Effects of various moving walls. *Numerical Heat Transfer, Part A: Applications* 70(7): 738-762. doi: 10.1080/10407782.2016.1193354
113. M. Roy, P. Biswal and T. Basak. 2016. On the finite element based evaluation of Nusselt numbers for curved walls. *International Communications in Heat and Mass Transfer* 77: 123-131. doi: 10.1016/j.icheatmasstransfer.2016.06.015
114. V. M. Rathnam, M. Roy and T. Basak. 2016. Analysis of entropy generation during natural convection in tilted triangular enclosures with various base angles. *Numerical Heat Transfer; Part A: Applications*. 69(12): 1332-1354. doi: 10.1080/10407782.2016.1139976
115. R. Dhirhi, K. Prasad, A. K. Shukla, S. Sarkar, T. Renganathan, M. Kaza and S. Pushpavanam. 2016. Experimental study of rotating dry slag granulation unit: Operating regimes, particle size analysis and scale up. *Applied Thermal Engineering* 107: 898-906. doi: 10.1016/j.applthermaleng.2016.07.049
116. V. Nair and R. Vinu. 2016. Production of guaiacols via catalytic fast pyrolysis of alkali lignin using titania, zirconia and ceria. *Journal of Analytical and Applied Pyrolysis* 119: 31-39. doi: 10.1016/j.jaap.2016.03.020
117. Venkateshwar Rao Dugyala, Hirsay Lama, Dillip K. Satapathy and M. G. Basavaraj. 2016. Role of particle shape anisotropy on crack formation in drying of colloidal suspension. *Scientific Reports* 6. doi: 10.1038/srep30708
118. Hisayama, Venkateshwar Rao Dugyala, Madivala G. Basavaraj and Dillip K. Satapathy. 2016. Magnetic-field-driven crack formation in an evaporated anisotropic colloidal assembly. *Physical Review E* 94(1): 12618. doi: 10.1103/PhysRevE.94.012618
119. M. Tripathy, A. P. Deshpande and P. B. S. Kumar. 2016. How much can we coarse-grain while retaining the chemical specificity? A study of sulfonated poly(ether ether ketone). *Macromolecular Theory and Simulations* 25(2): 155-169. doi: 10.1002/mats.201500077

Papers published in refereed national journals

1. G. M. S. Nandagopal, R. Antony, A. K. Rakesh and N. Selvaraju. 2016. Conservative level set simulation of droplet formation in a circular T and Y junction microchannel. *Journal of Scientific and Industrial Research* 75(12): 730-734
2. V.D. Ram, A. Karlmarx and M. Chidambaram. 2016. Identification of unstable second-order transfer function model with a zero by optimization method. *Indian Chemical Engineer* 58(1): 29-39
3. N. Thanga Mani and M. Chidambaram. 2016. Discrimination of models for autocatalytic polymerization reactions by periodic operation. *Indian Chemical Engineer* 58(2): 95-105
4. S. Hazarika and M. Chidambaram. 2016. Static decouplers with P-PI dual loop controllers for unstable system. *Indian Chemical Engineer* 58(2): 172-185
5. V. Dhanya Ram and M. Chidambaram. 2016. Identification of centralised controlled multivariable systems. *Indian Chemical Engineer* 58(3): 240-254
6. M. Gopinath, R. Chetty and K. S. Rajmohan. 2016. Review on challenges and opportunities in the removal of nitrate from wastewater using electrochemical method. *Journal of Environmental Biology* 37 (6): 1519-1528

Papers presented at international conferences

1. S. Jayanti and P. Purnima. 2016. A high-efficiency, auto-thermal system for on-board hydrogen production for low-temperature PEM fuel cells using dual reforming of ethanol. *International Journal of Hydrogen Energy*. doi: 10.1016/j.ijhydene.2016.01.147
2. R. Vinu, D.K. Ojha, S. Shukla and R. S. Sachin. 2016. Understanding the interactions between cellulose and polypropylene during fast co-pyrolysis via experiments and DFT calculations. *2nd International Conference on Biomass (ICONBM 2016)*. doi: 10.3303/CET1650012
3. S. Narasimhan, S. Srinivasan, D.M.D. Kumar and J. Billeter. 2016. On the use of shape constraints for state estimation in reaction systems. *IFAC Papersonline*. doi: 10.1016/j.ifacol.2016.07.219
4. A.K. Tangirala and D. Maurya. 2016. Identification of linear dynamic systems using dynamic iterative principal component analysis. *IFAC Papersonline*. doi: 10.1016/j.ifacol.2016.07.335
5. A.K. Tangirala and S. Kathari. 2016. Estimation of network connectivity strengths in linear causal dynamic systems. *IFAC Papersonline*. doi: 10.1016/j.ifacol.2016.03.032

6. M. Chidambaram and S. Nikita. 2016. Improved relay auto-tuning method for unstable TITO systems. *21st IEEE International Conference on Emerging Technologies and Factory Automation (ETFA 2016)*. doi: 10.1109/ETFA.2016.7733714
7. M. Chidambaram and C. S. Besta. 2016. Decentralized PID controllers by synthesis method for multivariable unstable systems. doi: 10.1016/j.ifacol.2016.03.104.
8. A.K. Tangirala and S. Yerramilli. 2016. Detection and diagnosis of model-plant mismatch in MIMO systems using plant-model ratio. doi: 10.1016/j.ifacol.2016.03.064
9. R. Vinu, X. Zhou and L. J. Broadbelt. 2016. Mechanistic understanding of thermochemical conversion of polymers and lignocellulosic biomass. *Thermochemical Process Engineering, 2016*. doi: 10.1016/bs.ache.2016.09.002
10. A. Kannan and A. Sundar. 2016. Analysis of energy consumption in industrial distillation columns. *19th Topical Conference on Refinery Processing 2016 - Topical Conference at the 2016. AIChE Spring Meeting and 12th Global Congress on Process Safety*.
11. M. Chidambaram, K. Ghousiya Begum, T.K. Radhakrishnan and A. Seshagiri Rao. 2016. IMC based PID controller tuning of series cascade unstable systems. 10.1016/j.ifacol.2016.03.154
12. R. Rangaswamy, K. B. Iyeeswaria and Sridharakumar Narasimhan. 2016. Water-induced pore blockage and its effects on low-temperature PEM fuel cells-A simulation study. AEM 2016, University of Surrey.
13. Susy Varughese, Indu Chanchal Polpaya and C. Lakshmana Rao. 2016. Electrochemical behavior and microstructure of highly sensitive polyaniline ethylene vinyl acetate composite piezo-resistive materials. *ASME 2016 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*. doi: 10.1115/SMASIS2016-9163
14. Shankar Narasimhan, Varghese Kurian and Sridharakumar Narasimhan. 2016. A novel technique for scheduling of pumps in water distribution system. *International Conference on Modeling and Optimization: Theory and Applications*. Lehigh University, Bethlehem.
15. Nirav Bhatt, Darsha Kumar Dhurvas and Shankar Narasimhan. 2016. On-line approach for diagnosis and rectification of model-plant mismatch in open reaction systems using incremental framework. *European Symposium on Computer Aided Process Engineering Conference with EFCE in Portoroz Slovenia*.
16. R. Vinu, D.K. Ojha, S. Shukla and R. S. Sachin. 2016. High-quality bio-oil production via fast copyrolysis (FCP) of cellulose and polypropylene. *2nd International Conference on Biomass 2016 (IConBM 2016)*.
17. Sridharakumar Narasimhan and R. Srikanth. 2016. Unsupervised segmentation of cervical cell images using Gaussian Mixture Model. International workshop on computer vision for microscopy image analysis, *Computer Vision for Microscopy Image Analysis (CVMI)*.
18. S. Jayanti and Sanjay Kumar. 2016. Optimization of electrode-flow field interaction in an all-vanadium redox flow battery. *International Flow Battery Forum*.
19. R. Vinu and Deepak Ojha. 2016. Product distribution and kinetics of hydrolysis of agro residues via Py-GC/MS and Py-FT-IR. *AIChE Annual Meeting, San Francisco*.
20. S. Pushpavanam and Babita Kumari Verma. 2016. Modeling plasma gasification of biomass with thermodynamic and kinetic approach in series. *AIChE Annual Meeting*.
21. Preeti Aghalyam, Vishnu S. Prasad and Preeti Aghalyam. 2016. Experiments and modelling of NO reduction on Pt catalyst. *International Conference on Chemical and Process*.
22. A. Kannan and T. Vidyadevi. 2016. Single and multi-component adsorption studies of heavy metal ions and dyes over commercial activated carbon. *4th International Conference on Sustainable Environment and Agriculture (ICEA 2016)*.
23. S. Pushpavanam and B.V.N.S.S.R. Dinesh. 2016. Biofluid dynamics of two-phase stratified flow through flexible membranes. *69th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD 2016)*. doi: 10.1103/BAPS.2016.DFD.M20.3
24. A. R. Balakrishnan, V.K.P. Janakey Devi and P. S. T. Sai. 2016. Ionic liquids as entrainers for the separation of 1-propanol + water and 2-propanol +water mixtures: quantum chemical approach using COSM-RS. *3rd International Conference on Ionic Liquids in Separation and Purification Technology*.
3. M. Chidambaram and Nikita Saxena. 2016. Tuning of PID controllers for unstable system with two unstable poles. *Advances in Control and Optimization of Dynamical Systems*
4. S. Ramanathan, M. S. Amrutha and Srini Raghavan. 2016. Characterization of effect of dissolved oxygen on Cu-BTA interaction by electrochemical impedance spectroscopy. *Asian Pacific Corrosion Control Conference (APCCC17)*.
5. S. Ramanathan and M. S. Amrutha. 2016. Zirconium dissolution in HF medium-effect of mass transfer. *18th National Conference on Corrosion Control*
6. M. Chidambaram and Chandra Shekar Besta. 2016. Timing of centralized PID controllers by BLT method for unstable TITO systems. *International Conference on Advances in Dynamics, Vibration and Control (ICADV-2016)*.
7. M. Chidambaram and Chandra Shekar Besta. 2016. Decentralized PID controller by synthesis method for multivariable systems. *Advances in Control and Optimization of Dynamical Systems*
8. Arun K. Tangirala and Sudhakar Kathari. 2016. Estimation of networks connectivity strengths in linear causal dynamic systems. *Advances in Control and Optimization of Dynamical Systems (ACODS 2016)*
9. S. Pushpavanam and Babita Kumari Verma. 2016. ALLEE effect in population interaction based on occupation: agriculturists and industrialists. *Complex System Approach to Self-Organization*
10. Raghuram Chetty, Ila Sarkar and Jogesh Ramala. 2016. Pt anchored on functionalized graphene nanosheets for methanol oxidation in fuel cells. *ESSI's 2nd National Conference on Materials for Energy Conversion and Storage (MECS 2016)*
11. R. Ragunathan and Mahendra K. Gupta. 2016. Observer design for rectangular descriptor systems with Lipschitz nonlinearities. *Conference on Computational and Theoretical Partial Differential Equations*.
12. R. Vinu and D.K. Ojha. 2016. Production of biofuel via fast pyrolysis of agro wastes. *International Conference on Energy Innovations - Today and Tomorrow*.
13. R. Vinu and Gautam. 2016. Catalytic and non-catalytic fast pyrolysis of microalgae, *Nannochloropsis* sp. *International Conference on Energy Innovations - Today and Tomorrow*.
14. S. Ramanathan and P.M. Ranjith. 2016. Investigation on dissolution rate of tantalum in HF Acid. *Eleventh International Symposium (Poster) on Advances in Electrochemical Science and Technology (ISAEST-11)*
15. S. Ramanathan and M.S. Amrutha. 2016. Titanium dissolution studies in acidic fluoride medium using quartz crystal microbalance. *Eleventh International Symposium (Poster) on Advances in Electrochemical Science and Technology (ISAEST-11)*
16. S. Ramanathan and P. Rajesh. 2016. Mechanistic analysis of electrochemical reactions using non-linear electrochemical impedance spectroscopy. *Eleventh International Symposium (Poster) on Advances in Electrochemical Science and Technology (ISAEST-11)*.
17. S. Ramanathan, Ankitha George and Sujatha Sunil. 2016. Detection of sulphur-containing amino acids using electrochemical techniques. *Eleventh International Symposium on Advances in Electrochemical Science and Technology (ISAEST-11)*.
18. S. Ramanathan and Tirumala Rao. 2016. Corrosion studies of molybdenum in sulphuric acid. *Eleventh International Symposium on Advances in Electrochemical Science and Technology (ISAEST-11)*.
19. S. Ramanathan and Fathima Fasmin. 2016. Corrosion studies of Zr in acid chloride medium. *18th National Conference on Corrosion Control*.
20. S. Ramanathan, M.S. Amrutha, F. Fasmin, P. Illayaraja and S. Chandran. 2016. Anodic dissolution of Ti in acidic fluoride media. *ECS Conference*.
21. S. Ramanathan and Tirumala Rao. 2016. Anodic dissolution of Nb in HF. *Heat Treatment and Surface Engineering (HTSE) 2016 conference*.
22. S. Ramanathan and P.M. Ranjith. 2016. Studies of Ta dissolution in HF acid. *CHEMCON 2016*.
23. S. Ramanathan and P. M. Ranjith. 2016. Electrochemical studies on Ta dissolution in HF acid. *HTSE 2016*.
24. S. Ramanathan, Abhijith K. Haridas and M. Kamaraj. 2016. An experimental measurement of erosion with application to natural gas industry. *Chemcon 2016*.
25. S. Ramanathan, K. A. Ramya and Abhijit P. Deshpande. 2016. Modeling non-linear rheological response of crosslinked hydrogels. *Complex Fluids -CompFlu*

Paper presented in national conferences

1. S. Jayanti and Sanjay Kumar. 2016. Vanadium redox flow battery as future energy shortage technology in India. *SETS and CC-2016*.
2. R. Rangasami, Venkata Reddy Palleti and Shankar Narasimhan. 2016. Exploiting sensor response times to design sensor networks for monitoring water distribution networks. *4th International Conference on Advances in Control and Optimization of Dynamical Systems*.

Distinguished visitors to the Department

Sl. No.	Name and Designation	Date of visit	Purpose of visit (Title of Seminar)
1.	Prof. Rajagopalan Srinivasan, IIT Gandhinagar	10 May 2016	Cognitive Engineering for Process safety
2.	Dr. Guruswamy Kumaraswamy, Scientist, Polymer and Advanced Materials Laboratory, National Chemical Laboratory, Dr. Homi Bhabha Road, Pune	18 May 2016	Cubic phases and cubosomes from ternary systems containing glycerol mono-oleate

Sl. No.	Name and Designation	Date of visit	Purpose of visit (Title of Seminar)
3.	Dr. Ramaraja P. Ramasamy, Chair and Associate Professor, Biochemical and Biological Engineering, University of Georgia	27 June 16	Electrochemical engineering at the interface of Biology, Material Science and Nanotechnology
4.	Dr. Nakamura Kazuho, Associate Professor, Faculty of Engineering, Division of Materials Science and Chemical Engineering, Yokohama National University, Japan	18 October 2016	Fouling phenomena in membrane filtration process
5.	Dr. Suresh Dhaniyala, Bayard D. Clarkson Distinguished Professor, Co-Director Centre for Air, Resources Engineering and Sciences Mechanical and Aeronautical Engineering	26 October 2016	New sensors for large-scale air quality monitoring
6.	Dr. Kevin Ward, Department of Chemical Engineering, University of Florida, USA	2 November 2016	Faraday instability in mechanically forced systems
7.	Dr Vibhor Jajoo, University of Bordeaux, France	2 November 2016	Faraday instability in binary fluids
8.	Steve Granick, Director, IBS Centre for Soft and Living Matter, South Korea and Professor Emeritus, University of Illinois, USA	7 November 2016	Some surprises and open questions in soft matter
9.	Dipin S. Pillai, PDF, Department of Chemical Engineering, University of Florida	9 November 2016	Evaporative instabilities in pure and binary mixtures
10.	Dr. Karthikeyan Kaliyappan, University of Waterloo, Canada	5 December 2016	High-performance nano-structural materials for electrochemical energy storage applications
11.	Dr Prabhakar Ranganthan, Senior Lecturer, Mechanical and Aerospace Department, Monash University, Australia	16 December 2016	Mechanobiology: a new frontier for chemical engineers
12.	Dr. Venkat Venkatasubramanian, Samuel Ruben-Peter G. Viele, Professor of Engineering, Center for the Management of Systemic Risk, Department of Chemical Engineering, Columbia University, New York	22 December 2016	Beauty in mathematics and physics
13.	Dr. Srinivasa R. Raghavan, Patrick and Marguerite Sung Professor, Department of Chemical and Biomolecular Engineering, University of Maryland, College Park	5 January 2017	Nature-inspired "smart" materials: ability to move, destroy or change shape
14.	Dr. Arvind Uppili, Senior Principal Researcher, Mitsubishi Electric Research Laboratories, Cambridge, Massachusetts, USA	13 January 2017	Embedded optimization for model predictive control (MPC)
15.	Dharik S. Mallapragada, ExxonMobil Research and Engineering Company, Annandale, NJ	19 January 2017	Overview of environmental assessment activities at ExxonMobil Corporate Strategic Research
16.	Kaustav Niyogi, Doctoral Researcher, Ghent University, Laboratory for Chemical Technology Technologiepark, Ghent, Belgium	23 January 2017	Single and two phase cold flow hydrodynamics study in Vortex unit technology
17.	Dr. Nitin Kaistha, Professor, IIT Kanpur	30 January 2017	Robust plantwide control structures for recycle systems
18.	Dr. Manikandan Mathur, Department of Aerospace Engineering, IIT Madras	2 February 2017	Laboratory modelling of internal gravity waves
19.	Dr. Sreenivasulu Peta, Postdoctoral Associate, Rutgers University, USA	17 March 2017	Facile and green methods for synthesis of nano porous nano materials for catalytic applications
20.	Dr. Abhinav Raut, Centre for Interdisciplinary Research, D. Y. Patil University, Maharashtra	20 March 2017	Cell laden building blocks by microfluidics for developing 'organ factory'
21.	Dr. Kazuho Nakamura, Yokohama National University, Japan	24 March 2017	IITM-YNU collaboration
22.	Dr. Deshdeep Sahdev, IIT Kanpur	27 March 2017	Resolving atoms and a lot more at QuazarTech
23.	Dr. Anubhab Roy, Department of Applied Mechanics, IIT Madras	29 March 2017	Particle pair interactions in viscous flows
24.	Dr. Sadhan C. Jana, Department of Polymer Engineering University of Akron, OH, USA	6 January 2017	Multifunctional materials based on nanofibers and open and closed cell aerogel foams for sustainability

Sl. No.	Name and Designation	Date of visit	Purpose of visit (Title of Seminar)
25.	Dr Rangarajan Radhakrishnan, Postdoctoral Research Associate, Department of Physics, Durham University, Durham	11 January 2017	Shear banding in large amplitude shear of soft glassy materials

4.4.6. Other Activities of the Department

Faculty and staff members

Sl. No.	Description
1.	Raghuram Chetty has been nominated as Warden, Jamuna Hostel for the period of three years from September 2016.
2.	Dr. Rajnish Kumar, Associate Professor, joined the Department of Chemical Engineering w.e.f. 13 December 2016.
3.	Dr. K. Krishnaiah was given extension of the terms as Emeritus Professor w.e.f. 1 July 2016.
4.	Dr. Rajagopalan Srinivasan was appointed as Visiting Professor in the Department of Chemical Engineering w.e.f. 11 July 2016 for the period of one year.
5.	Dr. Basavaraja Madivala Gurappa was appointed as Associate Professor w.e.f. 22 July 2016, AN, in the Department of Chemical Engineering.
6.	Dr. T. Renganathan was appointed as Associate Professor w.e.f. 22 July 2016, AN, in the Department of Chemical Engineering.
7.	Dr. Aravind Kumar Chandiran was appointed as Assistant Professor w.e.f. 28 August 2016.
8.	Mr. J. Desinghu was promoted as Technical Superintendent w.e.f. 13 April 2016.
9.	Mr. A. Pandian was appointed as Technical Officer w.e.f. 1 April 2015.
10.	Ms. Ranjani P. Junior Technician joined the department on 24 August 2016.
11.	Fabrication of Constant Temperature Bath by Mr. R. Palanivelu, JTS, Chemical Engineering Workshop.
12.	CNN News 18 conferred Mr. Selva Ganapathy, Junior Technical Superintendent, Department of Chemical Engineering, IIT Madras with The Indian of the Year 2015 (Public Services Category and also the overall category for the services rendered during Chennai floods in December 2015) on 9 June 2016. These awards were given by Union Ministers Mr. Nitin Gadkari and Mr. Arun Jaitley. The awards were for The People of Chennai.
13.	Mr. Selva Ganapathy, JTS, was selected for the New Zealand Excellence Award and will get \$5000 as a grant towards tuition fee from New Zealand Government for his MBA programme. He has availed 15 months EOL from the institute.
14.	Mr. K. Thirunavukkarasu developed a Double Pipe Heat EXC Hanger Module for a third-year course CH3051 Process Heat Transfer.
15.	Ms. M. Saraswathi, Senior Assistant, has received a cash prize of ₹ 2000 as first prize, for writing 10,000 or more Hindi words per year, on 7 October 2016 on the Hindi Day Celebration at the institute.
16.	Mr. K. Thirunavukkarasu (JTS) was promoted to Technical Superintendent on 26 October 2016.
17.	Mr. S. Ravikumar, Junior Attendant, was promoted to Junior Technician on 26 October 2016.

Inter-disciplinary group achievements of the departments

Sl. No.	Description
1.	Department of Chemical Engineering, IIT Madras, co-hosted 69 th Annual Session of IICChE, CHEMCON 2016 (along with Anna University, CLRI, FICCI). The concluding day's programme was held at IIT Madras on 30 December 2016. IICChE-Avon Padmashri Dr. G. S. Sidhu CHEMCON Distinguished Speaker Award Dr. K. Vijayamohan, Director, CECRI, Karaikudi gave the plenary lecture in the morning. Papers were presented in the technical sessions. Prof. Bhaskar Ramamurthi, Director, IIT Madras presided over the Valedictory Function in the evening and delivered the Presidential Address (Getting Value Out of Industrial Waste, Energy Consumption in Processes and Lifecycle Management).
2.	The research scholars of Chemical Engineering Department, IIT Madras conducted Research Scholars Symposium on 26 February 2017 at IC&SR Auditorium. The scholars presented their research publications and had discussions on research.
3.	CHEMCLAVE '17 was conducted by Chemical Engineering Society (ChES), Department of Chemical Engineering, IIT Madras during 3-5 March 2017, where various interesting events were held.
4.	AIChE IITM Reception in San Francisco, California (15 November, Continental 7, 19:00) v The main aim was to project the department and attract good faculty. v Over 120 guests attended the reception (young graduate students and graduated students, IIT and IISc faculty, senior alumni and others). v Around 10-12 closer to finishing Ph.D. and post doctorates inquired about the process, start-up grant and funding situation. Their other questions were on whether their area of research is what we are looking for. Several had an ID background and wanted to know if they had a chance. Lot of questions were answered and fears allayed by this direct contact. The assistance from IAR Office and IITM Foundation Office in USA for the event is gratefully acknowledged.

Sl. No.	Description
5.	A brainstorming session was conducted on 24 February 2017 at IIT Alumni Industry Interaction Centre. The topics discussed included faculty hiring, promoting interfacing with alumni, promoting faculty research scholars interaction, quarterly research e-newsletter, Open House, and collaborative effort on water and sanitation.

Socially relevant activities carried out by the department

Sl. No.	Description
1.	Ms. M. Saraswathi, Senior Assistant, received the following prizes in the Women Staff Sports Meet held during 25 November-5 December 2016, the prize was distributed on 30 March 2016: First prize in badminton doubles and Team Game - Winners in Tug of War.
2.	Ms. P. Ranjani, Junior Technician, participated in various events conducted In Intra Sports held at IIT Madras on 25 November 2016 and won the following prizes: Slow cycling - Individual event - First prize; 100 m running - Individual event - First prize; and 4x100 m relay - Team event - Second prize
3.	70 th Anniversary of India's Independence: Azadi 70 - Yaad Karo Kurban (Freedom Fortnight) celebrated from 9-23 August 2016.
4.	Mass singing of National Anthem performed by students of the department at 11 a.m. on 23 August 2016 in MSB241 Chemical Auditorium

Results obtained in research work

Sl. No.	Scholar/Faculty Member
Ph.D.	
1.	Dipin S. Pillai, S. Pushpavanam and T. S. Sundararajan: Instability of Jets: Effects of Curvature, Heat Transfer and External Flow Fields
2.	Fathima Fasmin and S. Ramanathan: Characterization of Electrochemical Systems using Electrochemical Impedance Spectroscopy (EIS) and Mechanistic Analysis
3.	Seelam Narasimha Reddy and P. S. T. Sai: Studies on Segregation of Binary Mixtures of Solids by Continuous Liquid Fluidization
4.	Dugyala Venkateshwar Rao and M. G. Basavaraja: Controlled Evaporation Driven Self-Assembly of Anisotropic Particles
5.	K. Nagarajan, K. Krishnaiah and T. Renganathan: Continuous Countercurrent Liquid-Solid System: Hydrodynamics and Mass Transfer
6.	K. Deepa and T. Panda: Synthesis and Characterization of Gold Nanoparticles from <i>Fusarium oxysporum</i> and its Application in Fluorescence Quenching
7.	Vaishak Nair and R. Vinu: Valorization of Lignin and Bioresidues via Different Techniques including Catalytic Fast Pyrolysis, Photocatalysis, Functionalization and Thermochemical Activation.
M.S.	
1.	Rahul P. R. and A. Kannan: Effect of Ultrasound on Adsorption Process
2.	Pooja Bansal, M. G. Basavaraja and Abhijit P. Deshpande: Heteroaggregation of Oppositely Charged Nanoparticles
3.	Akankshya Majhi and Abhijit P. Deshpande: Squeeze Flow Analysis for Improved Permeability Description in Composite Process Simulation
4.	Vinodh Kumar and P. Sesha Talpa Sai: A Study on Petroleum Coke De-volatilization and Combustion Characteristics of Petroleum Coke Char in an Oxy-steam Atmosphere
5.	D. Anand and R. Vinu: Resource Recovery from Algae Species (<i>Anthrospira Platensis</i> and <i>Schizochytrium</i>) via Non-catalytic and Catalytic Fast Pyrolysis

International collaboration achievements

Sl. No.	Description
1.	Joint IIT Madras - University of Manchester Catalysis Workshop Participation from v School of Chemical Engineering and Analytical Science, University of Manchester v NCCR v Departments of Chemistry and Chemical Engineering Chemical Engineering Faculty Prof. Preeti Aghalayam, Dr. Niket Kaisare and Dr. R. Vinu gave talks in this workshop.
2.	On March 2017, an educational programme proposal from Yokohama National University on development of education programme for sustainable energy and water infrastructure technologies by industry--academic--government cooperation in CBIC (Chennai--Bengaluru Industrial Corridor) and Yokohama was discussed.

Student visit

Sl. No.	Student	Purpose of Visit	Date and Venue	Financial Assistance
1.	Devyani Sharma	Awarded DAAD IIT Master Sandwich Programme 2016-17, Technical University Munich	1 September 2016-31 March 2017, Germany	DAAD

Sl. No.	Student	Purpose of Visit	Date and Venue	Financial Assistance
2.	C. Srinesh	Research Internship at Ecole Polytechnique Federal de Lausanne (EPFL)	1 October-20 November 2016, Switzerland	No
3.	R. Srikanth	Student observer at Dr Rajan's Lab, University of Michigan, Ann Arbor	1 October-31 December 2016, USA	No
4.	Babita Kumari Verma	Visiting Scholar, Jefferson University (the work is on interaction between agriculturists and industrialists)	1 March 2017-28 February 2018, Thomas Jefferson University, USA	No

Major infrastructure development in the department

1. Faculty rooms were built for the newly joined faculty members