

Dr.(Mrs).S.Shanmuga Priya

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Department of Chemical Engineering
Manipal Institute of Technology,
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Qualifications

Ph.D. (Chemical Engineering), NIT, Trichy, 2010.

M.Tech. (Energy Engineering), NIT, Trichy – First class with Distinction, 2005.

B.Tech. (Chemical Engineering), AAMEC, Bharathidasan University, Trichy – First Class with Distinction, 2003.

Visiting Faculty: Universiti Malaysia Pahang, Pekan, Pahang, Malaysia, 2019.

Subjects Taught

Energy Engineering, Heat Transfer, Introduction to Chemical Engineering, Chemical Process Industries, Advanced Transport Phenomena, Environmental Studies, Safety in Chemical Industries, Cryogenic Engineering, Bioenergy engineering, Industrial waste water engineering, Water treatment technology

Area of Specialization

Photocatalytic reduction of carbon dioxide, Hydrogen storage, Solar Photocatalysis, Solar desiccant cooling, Renewable fuels, Solar thermal energy systems

Teaching/Research Experience

Research/Teaching Associate –NIT, Trichy (July 2005 - Jan 2007) Assistant Professor, Chemical Engineering – MIT,Manipal(Jan 2009 - Feb 2011) Associate Professor, Chemical Engineering– MIT, Manipal(Feb2011 - July 2019) Associate Professor-Senior,Chemical Engg.–MIT,Manipal(Aug 2019 -Dec 2022)

Additional Professor - MIT,Manipal (Jan 2023 – Till date)

Professional Membership

- Life member in Indian Institute of Chemical Engineers - LM-62556
- Senior member of IEEE - 97203282
- Life Member in Solar Energy Society of India - LM/1360/2009
- Associate Member in The Institution of Engineers - AM096909- 8
- Life member in Indian Society of Systems for Science and Engineering (ISSE) - LM 00360
- Member in ASHRAE India Chapter

Journal Publications

1. Pushpendu Dwivedi, Sujay Ashwinraj Ganesh, **Kumarasamy Sudhakar**, Archana Soni, **S. Shanmuga Priya** “Thermal and Electrical Performance of Uncooled, Nature-Cooled, and Photovoltaic Thermal Module” International Journal of Photoenergy Volume 2023, Article ID 4720545, 12 <https://doi.org/10.1155/2023/4720545> IF 2.113 [Q2]
2. Angel Francis, Ramyashree MS, **S. Shanmuga Priya**, S. Harish Kumar, K. Sudhakar, Wei Keen Fan, Muhammad Tahir “**Carbon dioxide hydrogenation to methanol: Process simulation and optimization studies**”, International Journal of Hydrogen Energy, 2022, 47 (86), October 2022, 36418-36432, IF 7.139 [Q1]
3. Shaswat Shrivastava, Sachin Shet, **S. Shanmuga Priya**, K. Sudhakar, Muhammad Tahir “**Molecular simulation of copper based metal organic frameworks for hydrogen adsorption**”, International Journal of Hydrogen Energy, 2022 47(35) IF 7.139 [Q1]
4. Erdem Cuce, Abhishek Saxena, Pinar Mert Cuce, Harun Sen, Hasan Eroglu, Shanmuga Priya S, Kumarasamy Sudhakar, Md Hasanuzzaman “**Performance assessment of solar chimney power plants with natural thermal energy storage materials on ground: CFD analysis with experimental validation**” International Journal of Low carbon technologies 17, 2022, 752–759. IF 3.071 [Q1]
5. Kirpichnikova, I.M., Sudhakar, K., Makhsumov, I.B., Martyanov, A.S., S. Shanmuga Priya “**Thermal model of a photovoltaic module with heat-protective film**”, Case Studies in Thermal Engineering, 2022, 30, 101744. IF 6.268 [Q1]
6. Ramyashree MS, Kshitij Kumar, **S. Shanmuga Priya**, K. Sudhakar “**Synthesis and Characterization of Indium Tin Oxide thin films for Dye-Sensitized solar cells using natural fruit extracts**”, International Journal of Automotive and Mechanical Engineering, 18 (4) 9284 – 9291 [Q2]

7. Enyonam Ahadzi, Ramyashree M.S, **S. Shanmuga Priya**, K.Sudhakar, Muhammad Tahir, **“CO₂ to Green Fuel: Photocatalytic process optimization study”**, Sustainable Chemistry and Pharmacy, Vol. 24, 2021, 100533 IF 4.508 [Q2]
8. Evgeny Solomin, S.Shanmuga Priya, Sudhakar Kumarasamy, Ramyashree M.S, **“The Comparison of Solar Powered Hydrogen Closed Cycle System Capacities for Selected Locations”**, Energies, MDPI Publications, Vol.14, 2722, 2021 IF 3.004 [Q1]
9. Evgeny Solomin, Sudhakar K , , Evgeny Sirotkin , S.Shanmuga Priya, Erdem Cuce, **“Hybrid Floating Solar Plant Designs: A Review”** Energies, MDPI Publications, Vol.14, 2751, 2021 IF 3.004 [Q1]
10. Ramyashree MS, **S.Shanmuga Priya**, Norman Carl Freduenberg, K.Sudhakar, Muhammad Tahir **“Metal–organic framework based photocatalysts for carbon dioxide reduction to methanol : A review on progress and application”**, Journal of CO₂ utilization, Vol:43, 101374, 2021, IF 5.993 [Q1]
11. Sachin P Shet, **S.Shanmuga Priya**, K.Sudhakar, Muhammad Tahir **“A review on current trends in potential use of metal-organic framework storage”**, International Journal of Hydrogen Energy, 46(21), 2021, 11782 – 11803 IF4.939 [Q1]
12. Angel Francis, **S.Shanmuga Priya**, S.Harish Kumar, K.Sudhakar, Muhammad Tahir **“A review on recent developments in Solar photoreactors for carbon dioxide conversion to fuel production”**, Journal of CO₂ utilization, Vol. 47, 2021, 101515. IF 5.993 [Q1]
13. Akhil Variar, Ramyashree MS, **S.Shanmuga Priya**, Veekshit Udayakumar Ail, K.Sudhakar, Muhammad Tahir **“Influence of various operational parameters in enhancing photocatalytic reduction efficiency of carbondioxide in a photoreactor : A review”**, Journal of Industrial and Engineering Chemistry, Vol. 99, 25 July 2021, 19-47 IF 5.278 [Q1]
14. Gopi, A., Sudhakar, K., Keng, N.W., Krishnan, A.R., **Priya, S.S.** **“Performance Modeling of the Weather Impact on a Utility-Scale PV Power Plant in a Tropical Region”** International Journal of Photoenergy, 2021, 2021, 5551014 June 2021 IF 2.113 [Q2]
15. **Priya S.S**, Cuce E, Sudhakar K. **“A perspective of COVID 19 impact on global economy, energy and environment”**, International Journal of Sustainable Engineering, 14 (6), 1290 – 1305, 2021 [Q1]
16. Yadav E.S, Indiran T, **Priya S.S.** **“Optimal Energy Consumption of the Distillation Process and Its Product Purity Analysis Using Ultraviolet Spectroscopy”**, ACS Omega, Vol:6, Issue

17. Mohammad Salikandi, Benyamin Ranjbar Dizaj, **S.Shanmuga Priya**, I.Thirunavukkarasu, K.Sudhakar **“Recent trends in liquid desiccant materials and cooling systems: application, performance and regeneration characteristics**, Journal of Building Engineering, Vol : 33, Jan 2021, 101579 IF 3.379 [Q1]
18. Bharosh Kumar Yadav, Pankaj Kumar Rauniyar , K. Sudhakar, Tri Ratna Bajracharya , S. Shanmuga Priya **“Sustainable green campus in Nepal: 3E analysis”**, International Journal of Low- Carbon Technologies, 2021, 16(2) 531–542 IF 1.622 [Q1]
19. Reddy, S. **Shanmuga Priya**,S,Carollo, A.J.,Kumar, S.H. **“TRNSYS simulation for solar-assisted liquid desiccant evaporative cooling”**, International Journal of Ambient Energy, Vol: 41, Issue:1, pp.105- 111, 2020, IF 0.830 [Q2]
20. K.Sudhakar,Matthew S.Jenkins, Shivy Mangal,**S.Shanmuga Priya** **“Modelling of a solar desiccant cooling system using a TRNSYS-MATLAB co-simulator: A review”**, Journal of Building Engineering, Vol: 24, July 2019, 100749.IF 3.379[Q1]
21. K.Sudhakar, Maximilian Winderla, **S.Shanmuga Priya** **“Net-zero building designs in hot and humid climates: A state-of-art”**, Case Studies in Thermal Engineering, Vol: 13, March 2019.100400.IF 1.554 [Q1]
22. Edala Sarath Yadav, Thirunavukkarasu I, S.Shanmuga Priya **“ Parameter Estimation and an Extended Predictive- Based Tuning Method for a Lab- Scale Distillation Column”**, ACS Omega, *ACS Omega* 2019, 4, 25, 21230–21241 IF 2.584 [Q1]
23. **Shanmuga Priya**, S., Balachandar, P., Wadhwanian, S. **“Comparison of liquid desiccants for air cooling systems using wetted wall column”**, International Journal of Mechanical and Production Engineering Research and Development, 2019, 9(2), 677–684.
24. **Priya**, S.S., Ubbenjans, L.M., Thirunavukkarasu, I. **“Artificial neural network and neuro fuzzy inference modelling of global solar radiation data using bayesian algorithm for design of solar energy conversion system”**, International Journal of Engineering and Technology(UAE), 2018, 7(2), 88–93.
25. **Shanmuga Priya**, S., Premalatha, M., Thirunavukkarasu, I. **“Indoor air quality optimization by thermal displacement air-conditioning methods”**, Indian Journal of Science and Technology, 2016, 9(36), 100984
26. **Shanmuga Priya**, S., Rao, A., Thirunavukkarasu, I., Nayak, V. **“Solar pebble bed reactor for treatment of textile and petrochemical industrial wastewater”**, International Journal of

ChemTech Research, **2016**, 9(11), pp. 261–270.

27. **Shanmuga Priya, S.**, Ratna, M., Shrivastava, R., Thirunavukkarasu, I. “**Design and performance evaluation of solar trickle down reactor for cypermethrin effluent treatment**”, International Journal of ChemTech Research, **2013**, 5(2), pp. 629–633
28. V.Kirubakaran, V.Sivaramakrishnan, S.Shanmuga Priya, M.Premalatha, P.Subramanian, “**Autocatalytic kinetics and mechanism of Biogas generation**”, International Journal of Energy Sources, Part-A Recovery, Utilization, and Environmental Effects, Vol: 31, Issue 19, January 2009, pp. 1700 – 1707.
29. **S.Shanmuga Priya**, M.Premalatha, P.Subramanian “**Elucidation of kinetics of photolysis of phenol**” Journal of The Institution of Engineers (Chemical Engineering division), Vol: 90, September 2009, pp.10-16.
30. **S.Shanmuga Priya**, M.Premalatha, I.Thirunavukkarasu, “**Solar Photocatalytic treatment of phenol wastewater**”, Journal of Institution of Engineers (Chemical Engineering division), Vol : 89, March 2009, pp.31-35.
31. M.Premalatha, S.Shanmuga Priya, V.Sivamakrishnan, “**Efficient cogeneration scheme for sugar industry**”, Journal of Scientific & Industrial Research/ S & T and Industrial Research, ISSN Print): 0022-4456, Vol: 67, No: 3, March 2008, pp.239-242.

Reviewer

- Applied Energy
- International Journal of Hydrogen Energy
- Journal of Building Engineering
- Journal of Cleaner Production
- Desalination Journal
- Environmental Progress and Sustainable Energy Journal
- Progress in Photovoltaics : Research and Applications
- Environmental science and Pollution research
- International Journal of Ambient Energy

Foreign Universities visited

- University Technology of MARA, Pulau Penang, Malaysia – 2008.
- Nanyang Technological University, Singapore - 2010.
- San Antonio, USA – 2013.
- Manipal University, Dubai – 2014.

- Saarbrucken University, Germany- 2015.
- University of Palermo,Italy- 2015.
- Chulalongkorn University, Thailand - 2016.
- University of Malaya, Malaysia - 2017.
- Universiti Malaysia Pahang, Malaysia – 2019.

Ph.D Guide/Co-Guide

1. Mrs.Vinayambika.S.Bhat - “Design and Validation of Robust Controller for a Binary Distillation Column”, Ph.D completed under MAHE,Manipal, 25 Aug 2018.(Co-Guide) - Completed
2. Mr.Edala Sarath Yadav - “Design,Implementation and Validation on control schemes on the Batch Distillation Column”, Ph.D completed under MAHE, Manipal, 5 Aug 2020.(Co-Guide) - Completed
3. Ms.Ramyashree MS - Full time under TMA Pai Scholarship Reg No : 200900157 “Development of metal organic framework based ternary nanocomposite for solar photocatalytic reduction of carbon dioxide to fuels” Date of registration : 22 Feb 2021(Guide) - Ongoing

Other Activities

- Honorary Treasurer in Indian Institute of Chemical Engineers, Mangalore Regional Centre – 2019 to 2021
- Honorary Secretary in Indian Institute of Chemical Engineers, Mangalore Regional Centre – 2021 to till date

Guest Lectures Delivered

1. Delivered an invited lecture on “**Recycling of Carbon Dioxide through synthetic fuel pathways**” in Two days Faculty development programme on Carbon capture and sequestration” organized by Department of Applied Sciences,CUIET, Chitkara University, Punjab held during 23rd – 24th May 2022.
2. Delivered an invited lecture on “**Sustainable Electric mobility : Opportunities and Challenges**”, organized by School of Engineering and Technology, Adamas University, West Bengal on 24th Jan 2022.
3. Delivered an invited talk on “**Design of solar photocatalytic biological process**” in HEAM Scientist 2014, National level Seminar on Hydrogen Energy and other Renewable Energy Sources organised by University of Kerala in association with MANIT Bhopal and IAHEAM on 17th – 18th Nov 2014.

4. Delivered a keynote lecture on “**Integrated Solar Bioprocess for environmental remediation**” International Conference on Agricultural, Biological and Environmental Sciences, Dubai, 15th – 16th Oct 2014.
5. Delivered an invited lecture on “**Computational Fluid Dynamics for Non –linear analysis**” in TEQIP sponsored one week Short term training programme on Applications of Fixed Point theory and Nonlinear Analysis for Engineering and Sciences organized by NIT Surat held during 30th June – 4th July 2014.
6. Delivered a keynote lecture on “**Energy conservation in Buildings**” in the National Workshop on Energy Efficiency and Environmental Impact EEEI2011 organised by MIT, Manipal held during 14th – 15th Oct 2011.

Conference Session Chaired

1. Chaired Session in “**International Conference in Mechanical and Mechatronics Engineering**” Malaysia, 28th – 30th Nov 2017.
2. Chaired session in “**International Conference on Engineering, Technology and Applied Sciences**”, Germany, 13th June 2015.
3. Chaired session in “**International Conference on Agricultural, Biological and Environmental Sciences**”, Dubai, 15th – 16th Oct 2014.
4. Chaired a session in Energy Engineering in “**National Conference on Power, Instrumentation, Energy and Control**” (PICON2011), Aligarh Muslim University, Aligarh, 12th -13th Feb 2011
5. Chaired a session in Energy Engineering in “**International Conference on System Dynamics and Control**”, organized by MIT, Manipal, 19th – 22nd August 2012.

International Conferences

1. Ramyashree MS, S.Shanmuga Priya, Veekshit Udayakumar Ail “**Synthesis and characterization of TiO₂-Cu₃(BTC)₂ metal organic framework based advanced materials for photocatalytic CO₂ reduction**”, RAMMML 2023, Nagpur, Maharashtra, 2nd – 4th Feb 2023.
2. Thanmaya A, Ramyashree MS, S.Shanmuga Priya “**Synthesis, characterization and testing of ZIF-8 and Cu@ZIF-8 metal-organic frameworks for anti-bacterial properties**”, ETBCT 2022, SMVDU Katra, Jammu, 3rd – 5th Dec 2022.
3. Kshitij Kumar, Ramyashree MS, S.Shanmuga Priya, K.Sudhakar “**Synthesis and characterization of indium tin oxide thin films supported by glass substrates for the design of dye sensitized solar cells using natural fruit extracts**”, AIGEV 2020, Malaysia, 10th – 11th

Nov 2020.

4. Edala Sarath Yadav, I.Thirunavukkarasu, S.Shanmuga Priya “**Online Implementation of Cascade predictive PI control for Nonlinear processes**”, ICCDN-2019, SMIT, Sikkim, 9th – 10th Dec 2019.
5. S.Shanmuga Priya, K.S.Sivaraman, Shivy Mangal “**Synthesis, characterization and testing of low cost adsorbents for carbon dioxide capture**”, International Conference and Electron Microscopy and Allied Analytical Techniques EMAAT 2019, Himachal Pradesh, 7th – 9th June 2019.
6. **S.Shannuga Priya**, Stijn Ruts, SVSR Krishna Bandaru “**Organic solar photovoltaic cells: Synthesis of Indium Tin oxide using Sol-gel method**”, International Conference on Electrical,Electronics,Instrumentation and Computer communication,Coimbatore, 24th – 25th Jan 2019.
7. **S.Shanmuga Priya**,Karan Ahuja “**Performance Enhancement of solar still using Phase Change Materials**”, 2nd International Conference on Sustainable Energy Electronics & Computing Systems SEEMS-2018 technically sponsored by IEEE UP Section,Greater Noida, UP. 26th – 27th Oct 2018.
8. **S.Shanmuga Priya**, Sneha Reddy, S.Harish Kumar “**Performance evaluation of a solar aided liquid desiccant evaporative cooling system**” International Conference on Sustainable Engineering and Technology (IconSET 2018), ACS College of Engineering, Bengaluru, 19th – 20th April 2018.
9. **Priya, S.S**, Reddy, S.,Balachandar, P.,Wadhwanian, S. “**Solar assisted liquid desiccant cooling using clay based membranes**”, International Conference on Research in Mechanical Engineering Sciences (RiMES 2017),MIT,Manipal, 21st – 23rd Dec 2017, MATEC Web of Conferences **144**, 04011 (2018)
10. **Priya, S.S**,Borkataky, A. ,Reddy, S. ,Thirunavukkarasu, I. “**Measurement of Global Solar Radiation data using Raspberry Pi and its estimation using Genetic Algorithm**”, 4th International Conference on Mechatronics and Mechanical Engineering (ICMME 2017) University of Malaya,Kualalumpur, Malaysia 28th – 30th Nov 2017, MATEC Web of Conferences **153**, 07004 (2018)
11. Shreesha, C. Bhat, V.S,Thirunavukkarasu, I, **S.Shanmuga Priya** “**Predictive Control Algorithm Based on Integral Action-Design and Implementation on a Conical Tank System**”, 4th International Conference on Mechatronics and Mechanical Engineering (ICMME 2017), University of Malaya,Kualalumpur, Malaysia 28th – 30th Nov 2017, MATEC Web of

Conferences 153, 06010 (2018)

12. **S.Shanmuga Priya**, Sneha Reddy, S.Harish Kumar “**Simulation of solar aided liquid desiccant cooling system in recirculation mode using TRSNYS**”, 4th International Conference on Computational Methods in Engineering and Health Sciences (ICCMEH 2017), MIT, Manipal, 19th – 20th Dec 2017.
13. Janani, Vinayambika S.Bhat, S.Shanmuga Priya, I.Thirunavukkarasu “**Design of Robust PI controller with Loop shaping for a pilot plant binary distillation column**” IEEE International Conference on Intelligent Computing, Instrumentation and Control Technologies ICICICT 2017, Vimal Jyothi Engineering College, Kerala 6 – 7 July 2017.
14. K.Sivaraman, S.Shanmuga Priya “**Synthesis of solid adsorbents for CO₂ capture using sugarcane bagasse, wood shavings and by alkali treatment of crude TiO₂**” Shri Mata Vaishno Devi University Katra Jammu 20th – 21st March 2017.
15. S.Shanmuga Priya, Shiviy Mangal “**Synthesis and characterization of Metal Organic Framework based photocatalyst for carbon dioxide conversion**” International Conference on Advanced Materials SCICON 16, Amrita Vishwa Vidyapeetham, Coimbatore 19th – 21th December 2016.
16. Vinayambika S.Bhat, S.Shanmuga Priya, I.Thirunavukkarasu “**Local Transient Model of a Pilot plant Distillation response**” 2nd International Conference on Frontiers in Automobile and Mechanical Engineering FAME 2016, Sathyabama University, Chennai 7th – 9th July 2016.
17. S.Shanmuga Priya, Norman Carl Freudenberg, Arunabh Borkataky “**Solar radiation measurement using Raspberry Pi**” International Conference on Power, Energy and Mechanical Engineering (ICPEME 2016), Bangkok, Thailand 18th – 20th June 2016.
18. S.Shanmuga Priya, M.Premalatha, I.Thirunavukkarasu “**Indoor Air quality optimization by thermal displacement Air-conditioning Methods**” 2nd International Conference on Design, Analysis, Manufacturing and Simulation ICDAMS 2016, Saveetha University, Chennai. 7th – 8th April 2016.
19. S.Shanmuga Priya, Vinayambika S.Bhat, Majaaz, I.Thirunavukkarasu “**Centralized Controller Tuning for MIMO Process with Time delay**” International Conference on Renewable Energy Research and Applications (ICRERA), Palermo, Italy, 22nd – 25th Nov 2015.
20. S.Shanmuga Priya, Joanna Migdalska “**Cooling degree day analysis as a climate impact indicator for different locations of Poland and India**” “International Conference on Engineering, Technology and Applied Sciences” Berlin, Germany, 13th June 2015.
21. S.Shanmuga Priya, Rashmi Deshpande “**Distillery Effluent Treatment Using Parabolic**

- Trough Solar Collector Coupled With Biological Process**”, International Conference on Agricultural, Biological and Environmental Sciences, Dubai, 15th – 16th Oct 2014.
22. S.Shanmuga Priya, Rashmi Deshpande “**Studies on reduction in TOC and COD level by Coupled Solar Bio Treatment Of Pharmaceutical Effluent**”, International Conference on Green Technology for Environmental Pollution Prevention and control (ICGTEPC 2014) , NIT,Trichy, 27th – 29th Sep 2014.
 23. S.Shanmuga Priya, Amit Anand “**Design of Coupled Solar Biosorption process for degradation of dairy effluent**”, International Conference on Petrochemistry and Chemical Engineering, San Antonio, Texas, USA, 18th – 20th November 2013.
 24. S.Shanmuga Priya, Manish Ratna, Rahul Shrivastava “**Design and Performance Evaluation Of Solar Trickle Down Reactor For Cypermethrin Effluent Treatment**”, International Conference on Global Scenario in Environment and Energy, NIT, Bhopal, 14th – 16th March 2013.
 25. I.Thirunavukkarasu, V.I.George, S.Shanmuga Priya “**PID Controller design for a real time ball and beam system-A double integrating process with dead time**”, ISTE sponsored Proc. of Int. Conf. on Advances in Signal Processing and Communication. Lucknow 21st June 2013. P. No. 96-99 DOI: 03.LSCS.2013.3.
 26. S.Shanmuga Priya, M.Premalatha “**Heat transfer analysis of tube tanks using CFX software**”, 6th International Conference on Advanced Computing and Communication Technologies, Panipat,Harayana, 3rd Nov 2012.
 27. I.Thirunvaukkarasu, S.Shanmuga Priya “**Enhancement of servo response of the integrating process with two degree of freedom control structure**”, 6th International Conference on Advanced Computing and Communication Technologies, Panipat,Harayana, 3rd Nov 2012.
 28. S.Shanmuga Priya, Seung Hoon Lee “**Artificial Neural network analysis of effect of path length in photolytic reactor**”, International Conference on Emerging trends in communication, Kanyakumari, 8th –9th March 2012.
 29. S.Shanmuga Priya, M.Premalatha “**Design of solar heat sheet for air heaters**”, 2nd International Conference on Methods and Models in Science and Technology organized by Institution of Engineers, Technocrats and Academician Network(IETAN), Jaipur, 1^{9th} – 2^{0th} Nov 2011.
 30. I.Thirunavukkarasu, S.Shanmuga Priya “**Design of PID controller for Non-square MIMO system**”, 2nd International Conference on Methods and Models in Science and Technology organized by Institution of Engineers, Technocrats and Academician Network(IETAN), Jaipur, 19th – 20th Nov 2011.

31. S.Shanmuga Priya, M.Premalatha “**Modeling the kinetics of photolysis of phenol by Artificial Neural Network**”, International Conference on Chemical Engineering and Applications (CCEA2010), Singapore, 26th – 28th February 2010.
32. S.Shanmuga Priya, M.Premalatha “**CFD Simulation of diluents effect on NOx emission in premixed methane flames**”, International Conference on System Dynamics and Control (ICSDC2010), MIT, Manipal, 19th – 22nd August 2010.
33. I.Thirunavukkarasu, S.Shanmuga Priya “**Determination of the Region of Fixed-order Stabilizing Controller for the Dynamically Varying Systems**”, International Conference on Applied, Materials and Manufacturing (ICAMM2011), Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Muscat, Oman. 13th – 15th Dec 2010.
34. S.Shanmuga Priya, M.Premalatha “**Studies on Photocatalytic degradation of Phenol effluent**”, International Conference on Science and Applications in Industry and Education (ICSTIE 2008), Pulau Pinang, Malaysia, 12th – 13th December 2008.
35. S.Shanmuga Priya, M.Premalatha “**Solar Photocatalytic degradation of phenol wastewater: Potential, Challenges and Opportunities - An Indian perspective**”, 17th International Conference on Photochemical Conversion and Storage of Solar Energy, Sydney, Australia Ref No: WC0357, 27th July – 1st August 2008.
36. S.Shanmuga Priya, M.Premalatha “**Application of Nanotechnology in photocatalysis for treatment of phenol**” Proceedings of International Conference on Material Science and Nanotechnology, Kodaikanal, 27th - 29th February 2008.
37. M.Premalatha, S.Shanmuga Priya “**Clean Development Mechanism and Nanotechnology: A perspective study**”, Proceedings of International Conference on Material Science and Nanotechnology, Kodaikanal, 27th - 29th February 2008.
38. V.Sivaramakrishnan, S.Shanmuga Priya, M.Premalatha “**Elucidation of Kinetics of Bagasse Gasification in nitrogen and air environment**”, International Conference on Advances in Energy Research, ICAER2007, IIT, Mumbai, 12th – 14th December 2007.
39. M.Premalatha, S.Shanmuga Priya “**Segregated Flow Modeling for Solar Flat Plate Collector**”, Proceedings of the 3rd International Conference on Solar Radiation and Day Lighting SOLARIS –2007 Conference at IIT, Delhi, P.16, Volume II, February 7th – 9th, 2007.
40. V.Kirubakaran, M.Premalatha, S.Shanmuga Priya “**Experimental Investigation of gasification characteristics of biomass and the effect of bio oxygen**”, International Conference on Modeling and Simulation CITICOMS 2007 held at CIT, Coimbatore, 27th – 29th August 2007.
41. S.Shanmuga Priya, M.Premalatha “**Coupled Solar Bio Process for Industrial Effluent**

Treatment” in the Proceedings of the International Conference on Cleaner Technologies and Environmental Management, Pondicherry Engineering College, Puducherry, India, P.308, No: 57, Allied Publishers Pvt.Ltd. 4th – 6th January 2007.

42. S.Shanmuga Priya, M.Premalatha **“Tapioca - Renewable Energy Source of Bio-Fuel for India”** - Proceedings of the International Conference on Biofuels Vision – 2015 organised by Engineering College, Bikaner, Rajasthan, P 55, No: 006, 13th - 15th October 2006.

National Conferences

1. S.Shanmuga Priya, Sneha Reddy, S.Harish Kumar **“Low cost cooling by using natural clay as desiccant and solar pebble bed as regenerator”**, CHEMCON 2017, Haldia Engineering College, Kolkata, 27th – 30th Dec 2017.
2. S.Shanmuga Priya, Lisa Marie Ubbenjans, Thirunavukkarasu.I. **“Artificial neural network and neuro fuzzy inference modelling of global solar radiation data using bayesian algorithm for design of solarenergy conversion system”**, CISCON 2017, MIT, Manipal, 3rd – 4th Nov 2017.
3. S.Shanmuga Priya, Stefan Bauregger, I.Thirunavukkarasu **“Modeling of a Single Pass Solar Air heater”** CISCON 2015, MIT, Manipal, 2nd- 4th Nov 2015.
4. Vinayambika S.Bhat, S.Shanmuga Priya, I.Thirunavukkarasu **“A Comparitive study on control techniques of Non-Square matrix distillation column”** CISCON 2015, MIT Manipal, 2nd – 4th Nov 2015.
5. S.Shanmuga Priya, Siddharth Bishnoi **“Performance improvement of solar photovoltaic panels”**, CISCON 2014, MIT, Manipal, 7th – 8th Nov 2014.
6. S.Shanmuga Priya, Rajesh Gurjar **“Experimental studies on design of efficient solar detoxification system for treatment of high turbid paper mill wastewater”** National Conference on Emerging Trends For Sustainable Development In Engineering & Technology, Udaipur, Rajasthan, 30th -31st Jan 2014.
7. S.Shanmuga Priya, M.Premalatha, Katyayani Prabhu **“Validation of photolysis of phenol and performance evaluation of photolytic reactors”**, National Conference on Environmental Pollution , Restoration and Management(NCEPRM-2011), organized by Govt. college of Engineering and Technology, Bikaner, Rajasthan, 20th Nov 2011.
8. I.Thirunavukkarasu, S.Shanmuga Priya **“Design of PID Controller based on Maclaurin series with Impulse Response as an Input”**, National Conference on Power, Instrumentation, Energy and Control (PICON2011), Aligarh Muslim University, Aligarh, 12th -13th Feb 2011.

9. I.Thirunavukkarasu, S.Shanmuga Priya “**Lower Order Controller design using GA**”, NCRCA2009, Jamia Hamdard University, New Delhi. sponsored by CSIR and DIT, Govt of India, 12th -13th August 2009.
10. I.Thirunavukkarasu, S.Shanmuga Priya “**Lower Order Controller using H-Infinity Principles for the Unstable Process with Dead Time**”, National Conference on Advances in Energy Conversion Technology(AECT 2009), Dept of EEE,MIT, Manipal University, Manipal, 2nd- 4th April 2009.
11. S.Shanmuga Priya, M.Premalatha “**Studies on Photo degradation of phenol by using solar light**”, Proceedings of the National Conference on Energy Security for Rural Development (ESRD 2009),Rural energy Centre, Gandhigram Rural University, Dindugal, 26th March 2009.
12. M.Premalatha, K.K.Vasumathi,S.Shanmuga Priya “**Growing Fuel from Algae**”, ,National Conference on Renewable Energy Through Microbes, (ADREM 2009), BITS-GOIA Campus, 12th – 15th Jan 2009.
13. S.Shanmuga Priya, M.Premalatha “**Studies on Solar Photo degradation of Phenol**”, Proceedings on 2nd National Conference on Advances in Energy Conversion Technologies (AECT 2008),Manipal Institute ofTechnology, Manipal,Karnataka, 18th – 19th April 2008.
14. M.Premalatha,S.Shanmuga Priya “**Building Energy Conservation by Cooling degree-days analysis for Tiruchirappalli**”, Proceedings on 2nd National Conference on Advances in Energy Conversion Technologies (AECT 2008),Manipal Institute of Technology, Manipal, Karnataka, 18th – 19th April 2008.
15. I.Thirunavukkarasu,S.Shanmuga Priya“**Comparison of various PID Controller tuning methods for pure integrating process**”, Proceedings on 2nd National Conference on Advances in Energy Conversion Technologies (AECT 2008),Manipal Institute of Technology, Manipal, Karnataka, 18th – 19th April 2008.
16. M.Premalatha,S.Shanmuga Priya “**Simulation of Flow distribution through a Bubble Column**”, (TPH-16/40B), ISHMT2008 (Indian Society of Heat and Mass transfer), JNTUCEH, 19th National and 8th ASME-ISHMT Conference held at JNTU Hyderabad, 3-5 Jan. 2008.
17. S.Shanmuga Priya, M.Premalatha “**Solar photocatalytic treatment of phenolic wastewaters**”, National Conference on Energy Efficiency: The Environmental Solution, CEESAT, NIT, Trichy P.171, 27th-28th December 2007.
18. M.Premalatha,S.Shanmuga Priya “**A review on CO2 sequestration techniques**”, National Conference on Energy Efficiency : The Environmental Solution, CEESAT, NIT, Trichy, P.21, 27th-28th December 2007.

19. S.Shanmuga Priya "**Solar Detoxification for treatment of industrial effluents**", Proceedings of National Conference on Recent Trends in Mechanical Engineering (RTME 2007) in Saranathan College of Engineering, Trichy, 10th February 2007.
20. S.Shanmuga Priya "**Experimental studies on effect of water injection on domestic and commercial LPG burners**", Proceedings of National Conference on Recent Trends in Mechanical Engineering (RTME 2007) in Saranathan College of Engineering, Trichy, 10th February 2007.
21. M.Premalatha, S.Shanmuga Priya "**Experimental Investigation of Inclination angle on Heat Transfer Characteristics of Wickless Solar Heat Pipes**" - Proceedings of the 1st National Conference on Advances in Energy Research (AER 2006), IIT Bombay, Mumbai, P 509, No: 85, 4th - 5th December 2006.

Workshop/training programmes/ summer/winter schools attended

1. Participated in one week high end workshop on "**Sophisticated Analytical and Testing Instruments**" organized by Department of Energy and Environment, NIT, Tiruchirappalli, 23rd – 27th Jan 2023.
2. Participated in 5 days Faculty Development Programme on "**Green Technologies towards sustainable future**" organized by GMR Institute of Technology, Rajam and NIT Warangal during 8th – 12th March 2022.
3. Participated in DST-SERB and ISSE Manipal chapter sponsored three days workshop on "**Machine learning concepts for modeling and control of non-linear systems**" organized by MIT, Manipal during 27th – 29th June 2022.
4. Participated in seven days Faculty Development Programme on "**Creativity, Problem Solving And Innovation**" organized by MIT, MAHE, Manipal during 20th – 27th July 2021.
5. Participated in Five days ATAL sponsored Faculty Development Programme on "**Novel Materials: Advances and Application**" organized by National Institute of Technology, Raipur during 24th – 28th Sep 2021.
6. Participated in One week AICTE sponsored Short term training programme on "**Synthesis, characterization and its application of nanomaterials**" organized by Centre for Nanoscience and Technology, Jawaharlal Nehru Technological University, Hyderabad during 24th – 29th Aug 2020.

7. Participated in Five days ATAL sponsored Faculty Development Programme on “**Energy Engineering**” organized by Shri Mata Vaishno Devi University, Katra, Jammu during 21st – 25th Sep 2020.
8. Participated in TEQIP Short Term Course on “**Modeling and Simulation of Micro and Macro Multiphase Systems**” organized by Department of Chemical Engineering, NIT, Surathkal during 8th – 12th Jan 2019.
9. Participated in GIAN course on “Co-Product recovery from existing and future bio-refineries” organized by Department of Civil Engineering, NIT, Surathkal during 17th – 21st Dec 2018.
10. Participated in One week Short Term Course on “**Waste Management**” organized by Department of Energy and Environment, NIT, Tiruchirappalli during 8th – 14th May 2016.
11. Participated in TEQIP Phase II sponsored Faculty Development Programme on “**Recent Developments in Measurement Science**” organized by NMAMIT, Nitte during 22nd – 23rd April 2016.
12. Participated in 1 week Short Term Training Programme on “**Applications of Fixed Point Theory and Nonlinear Analysis for Engineering and Sciences**” AFPTNAES 2014, conducted by National Institute of Technology, Surat, 30th June – 4th July 2014.
13. Participated in Two day workshop on “**ABET Accreditation and Outcome based Education**” organized by Nitte Mahalinga Adyanthaya Memorial Institute of Technology, Karkala, 11th – 12th March 2014.
14. Participated in one day workshop on “**Energy Conservation in Process Industries**” conducted by CEESAT, National Institute of Technology, Trichy, 30th Dec 2013.
15. Participated in Faculty Development Programme on “**Effective Teaching Techniques**” organized by Dept of Management Studies, National Institute of Technology, Trichy, 10th – 11th Oct 2013.
16. Participated in Three days hands on workshop on “**MATLAB and Simulink for Engineering Education**” organized by Electrical and Electronics Engineering department, MIT, Manipal, 11th – 13th September 2012.
17. Participated in the Two day short term course on “**Engineering Optimization and Approaches**” organized by National Institute of Technology, Trichy, 24th – 25th August 2012.
18. Participated in the 2 weeks ISTE workshop on “**Computational Fluid Dynamics**” conducted by Indian Institute of Technology, Mumbai from 12th – 22nd June 2012.
19. Participated in the Indo-UK workshop on “**Current Development of Wastewater Treatment in India**” (Sponsored by DST, Govt of India, The Royal Society) organized by Dept of Chemical

Engineering, NIT,Trichy, 29th-31st August 2011.

20. Participated in the **“Entrepreneurship Awareness workshop on Renewable Energy”** (Supported by DST, Govt of India) organized by MUTBI,MIT, Manipal, 30th March 2010.
21. Participated in the **“Induction Training Programme”** organized by Dept of Continuing Education,MIT,Manipal from 31st December – 2nd January 2010.
22. Participated in the **AICTE-QIP Short term Course on Lean and Agile Manufacturing** organized by N.I.T,Trichy, 7th – 11th December 2009.
23. Participated in the **UKIERI workshop on “Control of Smart Reliable and Adaptable Air Vehicles”** organized by N.I.T,Trichy, 4th – 6th December 2009.
24. Participated in the **workshop on “Rural Development: Role of Renewable Energy Services”** under TEQIP,Community Services scheme organized by NIT,Trichy, 9th June 2008.
25. Participated in the **Indo-UK Workshop on “Low Carbon Technologies for Decentralised Power Production”** held at Indian Institute of Technology, Chennai,1^{7th} – 1^{8th} March 2008.
26. Participated in the **All India Workshop on “Recent Trends in Energy Management”** held at The Institution of Engineers(India),Tiruchirappalli Local Centre, 12th – 13th October 2007.
27. Participated in Indo-German Workshop on **“Major Aspects of Energy Research in India and Germany: The Challenges for the future (IGWS-2007)”**, organized by Institute for Energy Studies, Anna University, Chennai, 20th -21st June 2007.
28. Participated in the short term course on **“Recent Advances in Environmental Engineering”** organized by Department of Civil Engineering, NIT, Trichy, 19th – 23rd February 2007.
29. Participated in the one-day **training programme on “Instrumentation methods of Thermal Analysis and Data Interpretation”** under the sponsorship of Technical Education Quality Improvement Programme (TEQIP), 25th November 2006.
30. Participated in the one day **State level seminar on “Renewable Energy & Energy Conservation for Rural Development”** organised by Rural Technology Centre, Gandhigram Rural Institute, Gandhigram under the sponsorship of UGC,NewDelhi & MNES, New Delhi on 1st November 2006.
31. Participated in **“Solar Energy for effluent / Drinking water treatment”** in **“RENET Renewable Energy Workshop”** organised by IIT, Madras, held on 27th - 28th September 2006.
32. Participated in the **Inter-Collegiate Seminar on “Renewable Energy – Today and Tomorrow”** under the sponsorship of Ministry of Non-Conventional Energy Sources(MNES), New Delhi & Thailand Energy Development Agency (TEDA),Chennai, 18th August 2006.
33. Participated in the one-day **Workshop on “Solar Passive Architecture”** under the sponsorship

of MNES, New Delhi & TEDA, Chennai, 22nd July 2006.

34. Participated in the one-day **Workshop on “Renewable Energy - Energy of the Future”** under the sponsorship of MNES, New Delhi & TEDA, Chennai, 20th August 2005.
35. Participated in one day **Workshop on “Instrumentation for Thermal Analysis”** conducted by CEESAT NIT, Trichy sponsored by M/s Perkins-Elmer (India) P Ltd., Chennai on 30th April 2005.
36. Participated in a two day **Workshop cum discussion on “Small Hydro Power Projects”** sponsored by Ministry of Non conventional Energy Sources, New Delhi, Jointly organized with Alternate Hydro Energy Centre, Indian Institute of Technology, Roorkee on 22nd - 23rd April 2005.
37. Participated in one day **Workshop on “Solar Home Appliances”** conducted by CEESAT, NIT, Trichy on 5th March 2005.
38. Participated in **Short Term Training Programme on “Emerging Energy Technologies”** Sponsored by AICTE - ISTE, New Delhi from 17th - 28th May 2004.

Workshop/training programmes/summer/winter schools/conferences organised

As a Convener /Coordinator in

1. **Five days Faculty Development Programme on “Recent advancements in sustainable energy storage and conversion”** under the sponsorship of ATAL organized by Department of Chemical Engineering, MIT, Manipal, 25th – 29th Oct 2021.
2. **Five days Faculty Development Programme on “Recent developments in Artificial Intelligence for smart and sustainable energy systems”** under the sponsorship of ATAL organized by Department of Chemical Engineering, MIT, Manipal, 7th – 11th Dec 2020.
3. **Two day National Workshop on Energy Efficiency and Environmental Impact (EEEI2011)**, under the sponsorship of CSIR, New Delhi, Oil India Limited, Duliajan, Assam and MRPL Mangalore organized by Department of Chemical Engineering, MIT, Manipal, 14th – 15th October 2011.

As an Organizing committee member in

1. **Five days Faculty Development Programme on Recent Advancements in Sustainable Energy Storage and Conversion** under the sponsorship of AICTE Training and Learning Academy (ATAL), Department of Chemical Engineering, MIT, Manipal, 25th – 29th Oct 2021.
2. **Five days Faculty Development Programme on Recent Developments in Artificial**

Intelligence for smart and sustainable energy systems under the sponsorship of AICTE Training and Learning Academy (ATAL), Department of Chemical Engineering, MIT,Manipal, 7th – 11th Dec 2020.

3. **Two day National Workshop on Energy Efficiency and Environmental Impact (EEEI2011)**, under the sponsorship of **CSIR,NewDelhi, Oil India Limited,Duliajan,Assam and MRPL Mangalore** organized by Department of Chemical Engineering, MIT,Manipal, 14th – 15th October 2011.
4. One day **Workshop** on **“Rural Development : Role of Renewable Energy Services”** under the sponsorship of TEQIP,Community Services scheme, CEESAT, NIT,Trichy, 9th June 2008.
5. **National Conference** on **“Energy Efficiency: The Environmental Solution” (EEES07)**, CEESAT, NIT, Trichy, 27th – 28th December 2007.
6. One-day **training program** on **“Instrumentation methods of Thermal Analysis and Data Interpretation”** NIT, Trichy under the sponsorship of Technical Education Quality Improvement Programme (TEQIP), 25th November 2006.
7. **Inter-Collegiate Seminar** on **“Renewable Energy – Today and Tomorrow”** NIT, Trichy under the sponsorship of MNES, New Delhi & TEDA, Chennai, 18th August 2006.
8. One day **Workshop** on **“Solar Passive Architecture”** NIT, Trichy under the sponsorship of MNES,New Delhi & TEDA, Chennai, 22nd July 2006.

Book Chapters

1. **“Bagasse power in India: meeting challenges of energy, environment and sustainable development”**, Bio-Fuels: Marketing Strategies and Impact on Rural Development, Aavishkar Pub., 2008, xviii, pp.286, \$47.ISBN 81-7910-231-2.
2. **“Tapioca – renewable energy source of biofuel”** Biodiesel Production Technologies, 1st edition, Pointer Publishers, 2007, xviii, pp.206. ISBN: 8171325177 KK-53774.
3. **“Elucidation of Kinetics of Bagasse Gasification in Nitrogen and air”**, Proceedings of the First International Conference on Advances in Energy Research, IIT, Mumbai, MacMillan Publishers, 2009, pp.874, ISBN : 023063432X.
4. **“UV Photolysis of phenol”**, Lambert Academic Publishing , ISBN : 978-3-659-34339-1, 2014.
5. **“Metal Organic Frameworks for carbon capture”**, Sustainable Agriculture Reviews, Springer Book chapter 38 , Volume 2, 2019.
6. **“Designing Metal Organic Framework for clean energy applications”**, Metal-Organic Framework Composites - Volume II, Materials Research Forum LLC, 58 (2019) 85-106.

Best Paper Awards

- **Received best paper award** for the paper titled “**Performance Enhancement of solar still using Phase Change Materials**”, 2nd International Conference on Sustainable Energy Electronics & Computing Systems SEEMS-2018 technically sponsored by IEEE UP Section, Greater Noida, UP. 26th – 27th Oct 2018.
- **Received best paper award** for the paper titled “**Simulation of solar aided liquid desiccant cooling system in recirculation mode using TRSNYS**”, 4th International Conference on Computational Methods in Engineering and Health Sciences (ICCMEH 2017), MIT, Manipal, 19th – 20th Dec 2017.
- **Received best paper award** for the paper titled “**Synthesis and characterization of Metal Organic Framework based photocatalyst for carbon dioxide conversion**” International Conference on Advanced Materials SCICON 16, Amrita Vishwa Vidyapeetham, Coimbatore 19 – 21 December 2016.
- **Received best paper award** for the paper titled “**Design of solar heat sheet for air heaters**” in 2nd International Conference on Methods and Models in Science and Technology organized by Institution of Engineers, Technocrats and Academician Network(IETAN), Jaipur, 19th – 20th Nov 2011.

Achievements

- Reviewer for Elsevier journal and reviewer for SERB, DST project grant and CSIR project grant.
- Editor for Special issue on “Recent advances in sustainable solar energy technologies” in International Journal of Photoenergy
- Editor for Special issue on “Recent advances in solar fuels” in Frontiers in Energy research
- Editor for Special issue on “Novel Materials and Technologies for CO₂ and Waste Management” in Journal of Chemistry
- Board of Studies Member for Department of Energy, Gandigram Rural Institute, Dindugal .
- PhD external examiner
- Received VGST project grant from Govt of Karnataka, India

IAESTE students guided from foreign universities

| Name | Country | Internship Duration |
|--------------------|----------------|----------------------------|
| Seung Hoon Lee | South Korea | 15/05/2011 – 15/08/2011 |
| Marte Bondo Augdal | Norway | 01/07/2012 – 17/08/2012 |
| Joanna Migdalska | Poland | 15/07/2013 - 23/08/2013 |

| | | |
|------------------------------|-------------|-------------------------|
| Filip Simjanoski | Macedonia | 05/07/2014 - 29/08/2014 |
| Stefan Baueregger | Austria | 14/07/2014 - 31/08/2014 |
| Ali Shouman | Lebanon | 08/06/2015 - 08/08/2015 |
| Norman Carl Freduenberg | Germany | 01/10/2015 - 30/12/2015 |
| Diana Marcela Santamaria | Colombia | 15/07/2015 - 15/09/2015 |
| Lisa Maria Ubbenjans | UK | 30/05/2016 – 05/08/2016 |
| Martin Dohr | Austria | 18/07/2016 – 23/09/2016 |
| Maximilian Winderla | Germany | 14/09/2016 – 14/12/2016 |
| Mohammad Vahid Dastjerdi | Germany | 01/10/2016 – 30/12/2016 |
| Nishtha Tiwari | Belgium | 01/07/2017 – 17/09/2017 |
| David De Pauw | Belgium | 01/08/2017 – 25/09/2017 |
| Andrew Carollo | USA | 19/06/2017 – 25/08/2017 |
| Stijn Ruts | Belgium | 07/02/2018 – 25/05/2018 |
| Matthew S.Jenkins | UK | 13/06/2018 – 17/08/2018 |
| Dario Cyril Mueller | Switzerland | 10/06/2019 – 17/08/2019 |
| Zainab Albadi | Oman | 01/07/2019 – 24/08/2019 |
| Emiel Ongenae | Belgium | 15/07/2019 – 17/08/2019 |
| Mohammad Salikandi | Iran | 20/08/2019 - 30/10/2019 |
| Enyonam Ahadzi | Ghana | 01/09/2020 - 30/10/2020 |
| Musaab Abdulrahman Al-maidan | Turkey | 01/08/2021 - 01/10/2021 |

Research Grant/Funding received

1. **“Development of low cost and bio-based MOF for photocatalytic reduction of carbon dioxide to solar fuels”** (Grant ID : VGST/CESEM/ VRN/000389/21-22) – Centre of Excellence in Science, Engineering and Medicine from VGST, Govt of Karnataka. (40.00 lakhs)
2. **“Carbon capture and conversion to methanol using a metal-organic framework as an adsorbent material”** (Grant ID: MAHE/00000191/2019) – Research seed money from MAHE, Manipal (0.50 lakhs).
3. **“Photocatalytic conversion of carbon dioxide to methanol using ZIF-8/BiVO₄/GO and rGO-CuO nanocomposites as an adsorbent material”** (Grant ID : VGST/RGS-F/GRD-918/2019-20/2020-21/198)– Research grant from VGST, Govt. of Karnataka.(3.00 lakhs)
4. Received ATAL – AICTE FDP grant for organization of 5 days FDP in Energy storage thrust area titled **“Recent advancements in sustainable energy storage and conversion”** (0.93 lakhs)
5. Received ATAL – AICTE FDP grant for organization of 5 days FDP in Artificial Intelligence thrust Area titled **“Recent developments in Artificial Intelligence for smart and sustainable energy systems”** (0.93 lakhs)
6. Received CSIR funding for organizing Two days Workshop on **“Solar Energy Harnessing for a low carbon future”** in 2013 (0.30 lakhs)
7. Received CSIR funding, Oil India Limited funding and MRPL funding for the organization of

“Two days National Workshop on “Energy Efficiency and Environmental Impact”,
Chemical Engineering department, MIT, Manipal. (0.65 lakhs)

8. Received Post-doctoral research fund for the project titled **“Design of Coupled Solar Biosorption process for degradation of industrial effluent”** Dec 2012 (4.25 lakhs)
9. Received research seed money from MAHE, Manipal for a project titled **“Experimental studies on coupled solar bioprocess for industrial effluent treatment”** 2010 (0.25 lakhs)