

Dr.(Mrs).S.Shanmuga Priya

Associate Professor - Senior scale
Department of Chemical Engineering
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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), Bharathidasan University, Trichy – First Class with Distinction, 2003.

Subjects Taught

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

Area of Specialization

Carbon capture and conversion, Solar Thermal Energy, Solar Photovoltaics, Photocatalytic degradation, Solar Photocatalysis, Solar desiccant cooling, Renewable fuels, Solar passive architecture

Teaching/Research Experience

Research/Teaching Associate – NIT, Trichy (July 2005 - Jan 2007)
Lecturer, Chemical Engineering – MIT, Manipal (Jan 2009 – Oct 2010)
Assistant Professor, Chemical Engineering – MIT, Manipal (Nov 2010 – Feb 2011)
Associate Professor, Chemical Engineering – MIT, Manipal (Feb 2011 – July 2019)
Associate Professor- Senior Scale, Chemical Engineering – MIT, Manipal (Aug 2019 – Till date)

Professional Membership

- Life member in Indian Institute of Chemical Engineers – LM-62556
- 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
- Member in RENET (Renewable Energy Network)

Journal Publications

International Journals

1. 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, Accepted in Press, Nov **2020** IF 5.993 [Q1]
2. 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]
3. Bharosh Kumar Yadav, Pankaj Kumar Rauniyar , K. Sudhakar, Tri Ratna Bajracharya , **S. Shanmuga Priya** “Sustainable green campus in Nepal: a feasibility study”, International Journal of Low-Carbon Technologies, Accepted in press, Oct **2020** IF 1.622 [Q1]
4. 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]
5. 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]
6. 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]
7. 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, Dec 2019, In press.IF 2.584 [Q1]
8. **S.Shanmuga Priya**, Priyadarshini B, Sanober Wadhwanian “**Comparison of liquid desiccants for air cooling systems using wetted wall column**”, International Journal of Mechanical and Production Engineering Research and Development 9(2),**2019**, pp. 677-684.

9. **S. Shanmuga Priya** , Lisa Maria Ubbenjans , I. Thirunavukkarasu “**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 & Technology, Vol: 7 (2.21) **2018**, pp. 88-93.
10. Shivy Mangal, **S. Shanmuga Priya** “**Synthesis and characterization of Metal Organic Framework based photocatalyst for carbon dioxide conversion**” Materials Today : Proc, Vol:5 **2018**, pp.16378 – 16389.
11. Vinayambika S.Bhat, I.Thirunavukkarasu, **S. Shanmuga Priya**, “**Design of centralized PI controller for a multivariable process**”, Journal of Engineering Science and Technology, 13(5), **2018**, pp. 1253-1273.
12. Bhat, V.S., **S. Shanmuga Priya**, Thirunavukkarasu, I., Rhinehart, R.R. “**Local transient model of a pilot plant distillation response**”, International Journal of Pure and Applied Mathematics. 114(11 Special Issue), **2017**, pp. 277-286.
13. Sarath Yadav, I.Thirunavukkarasu., **S. Shanmuga Priya**., “**Parameter estimation and control of a pilot plant binary distillation**”, Journal of Advanced Research in Dynamical and Control Systems, 9(Issue 15), **2017**, pp. 877-886
14. **S. Shanmuga Priya**, M.Premalatha “**Indoor air quality optimization by thermal displacement air-conditioning methods**”, Indian Journal of Science and Technology, Volume 9, Issue 36, **2016**, pp 1 – 6.
15. Vinayambika S.Bhat, **S. Shanmuga Priya**, I.Thirunavukkarasu “**An experimental study on implementation of centralized pi control techniques on pilot plant binary distillation column**” International Journal of ChemTech Research, Volume 9, Issue 11, **2016**, pp.244-251,
16. **S. Shanmuga Priya**, Anvith Rao, I.Thirunavukkarasu, Vinay Nayak “**Solar pebble bed reactor for treatment of textile and petrochemical industrial wastewater**”, International Journal of Chemtech research, Vol : 9, No : 11, **2016**, pp.261-270.
17. Vinayambika S.Bhat, **S. Shanmuga Priya**, I.Thirunavukkarasu “**An experimental study on implementation of centralized pi control techniques on pilot plant binary distillation column**” International Journal of ChemTech Research, Volume 9, Issue 11, , Pages 244-251, Nov 2016.
18. **S. Shanmuga Priya**, Stefan Bauregger “**Modeling of single pass solar air heater**” International Journal of Control Theory and Applications, ISSN:0974-5572, Vol:8, Issue :3, 1161-1170, Dec 2015.
19. Vinayambika S.Bhat, **S. Shanmuga Priya**, I.Thirunavukkarasu “**A Comparative study on control techniques of Non-Square matrix distillation column**” International Journal of Control Theory and Applications, ISSN:0974-5572, Vol:8, Issue :3, Dec 2015.
20. **S. Shanmuga Priya**, M. Premalatha, P. Subramanian, “**Role of optical density on the choice of photolytic reactor**”, International Journal of Environmental Engineering, Inderscience Publishers, Vol. 6, No. 2, June 2014, pp 136-151. DOI: 10.1504/IJEE.2014.062153

21. **S.Shanmuga Priya**, Manish Ratna, Rahul Shrivastava “**Design And Performance Evaluation Of Solar Trickle Down Reactor For Cypermethrin Effluent Treatment**”, International Journal of ChemTech Research CODEN(USA): IJCRGG ISSN : 0974-4290, Vol.5, No.2, April 2013, pp 629-633.
22. I.Thirunavukkarasu, V.I.George, Mukund Kumar Menon, **S.Shanmuga Priya**, “**Determination of the Region of Controller Parameters of Polytypic Polynomials**”, Sensors and Transducer Journal, ISSN 1726 – 5479, Vol: 119, Issue 8, August 2010, pp 174-181.
23. **S.Shanmuga Priya**, M.Premalatha, N.Anantharaman, “**Solar Photocatalytic treatment of phenolic wastewater: Potential, Challenges and Opportunities**”, Journal of Engineering and Applied Sciences, Asian Research Publishing Network, ISSN 1819-6608, Vol:3,No:6,December 2008, pp:36-41.
24. 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.
25. **S.Shanmuga Priya**, M.Premalatha, N.Anantharaman, “**Feasibility studies on solar photo degradation of phenol**”, International Journal of Applied Engineering Research, ISSN (Online) 1087 -1090, ISSN(Print) 0973-4562, Vol: 3, No:10, October 2008, pp. 1329- 1336.
26. **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.
27. **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.
28. 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 Ambient 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

Foreign Universities/Countries visited

- University Technology of MARA, Pulau Penang, Malaysia – 2008.
- Nanyang Technological University, Singapore - 2010.
- World Congress on Petrochemistry and Chemical Engineering, San Antonio, USA – 2013.
- International Institute of Chemical, Biological and Environmental Engineering, Dubai – 2014.
- Saarbrücken 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)
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)
3. Ms. Ramyashree MS - Full time under TMA Pai Scholarship from Sep 2020 (Guide)

Other Activities

- Treasurer in Indian Institute of Chemical Engineers, Mangalore Regional Centre – 2019 to Till date

Guest Lectures Delivered

1. 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.
2. Delivered a keynote lecture on “**Integrated Solar Bioprocess for environmental remediation**” International Conference on Agricultural, Biological and Environmental Sciences, Dubai, 15th – 16th Oct 2014.
3. 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.

4. 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 2010

International Conferences

1. Kshitij Kumar, 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.
2. 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.
3. 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.
4. **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.
5. **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.

6. **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.
7. **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)
8. **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)
9. 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)
10. **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 (ICMMEH 2017), MIT,Manipal, 19th – 20th Dec 2017.
11. 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.
12. 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.
13. S.Shanmuga Priya, Shivy 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.
14. 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.
15. 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.

16. 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.
17. 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.
18. 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.
19. 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,
20. 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.
21. 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.
22. 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.
23. 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..
24. S.Shanmuga Priya, M.Premalatha **“Heat transfer analysis of tube tanks using CFX software”**, 6th International Conference on Advanced Computing and Communication Technologies, Panipat,Hararyana, 3rd Nov 2012.
25. I.Thirunavukkarasu, 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,Hararyana, 3rd Nov 2012.
26. 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.

27. 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.
28. 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.
29. 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.
30. S.Shanmuga Priya, M.Premalatha “**CFD Simulation of diluents effect on NO_x emission in premixed methane flames**”, International Conference on System Dynamics and Control (ICSDC2010), MIT, Manipal, 19th – 22nd August 2010.
31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. V.Sivaramkrishnan, 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.
37. 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.

38. 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.
39. S.Shanmuga Priya,M.Premalatha **“Coupled Solar Bio Process for Industrial Effluent Treatment”** in the Proceedings of t he 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.
40. 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 Conference

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 solar energy 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-GOA Campus, 12th – 15th Jan 2009.
13. K.Sudhakar,M.Premalatha,S.Shanmuga Priya“**Opportunities For Sustainable Power Development In India**” International Seminar 50th Convention of Indian Institution of Industrial Engineering, Vishakhapatnam, 16th -18th Jan 2009.
14. 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 of Technology, Manipal,Karnataka, 18th – 19th April 2008.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.

20. 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.
21. 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.
22. 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 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.
2. Participated in Five days Faculty Development Programme on Energy Engineering organized by Shri Mata vaishno Devi University, Katra, Jammu during 21st – 25th Sep 2020.
3. Participated in TEQIP Short Term Course on "**Modeling and Simulation of Micro and Macro Mutliphase Systems**" organized by Department of Chemical Engineering, NIT, Surathkal during 8th – 12th Jan 2019.
4. 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.
5. Participated in One week Short Term Course on "**Waste Management**" organized by Department of Energy and Environment, NIT, Tiruchirappalli during 8th – 14th May 2016.
6. Participated in TEQIP Phase II sponsored Faculty Development Programme on "**Recent Developments in Measurement Science**" organized by NMAMIT, Nitte during 22nd – 23rd April 2016.
7. 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.
8. 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.
9. Participated in one day workshop on "**Energy Conservation in Process Industries**" conducted by CEESAT,National Institute of Technology,Trichy, 30th Dec 2013.

10. Participated in Faculty Development Programme on **“Effective Teaching Techniques”** organized by Dept of Management Studies, National Institute of Technology, Trichy, 10th – 11th Oct 2013.
11. Participated in Three days hands on workshop on **“MATLAB and Simulink for Engineering Education”** organised by Electrical and Electronics Engineering department, MIT, Manipal, 11th – 13th September 2012.
12. Participated in the Two day short term course on **“Engineering Optimization and Approaches”** organized by National Institute of Technology, Trichy, 24th – 25th August 2012.
13. Participated in the 2 weeks ISTE workshop on **“Computational Fluid Dynamics”** conducted by Indian Institute of Technology, Mumbai from 12th – 22nd June 2012.
14. 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.
15. Participated in the **“Entrepreneurship Awareness workshop on Renewable Energy”** (Supported by DST, Govt of India) organized by MUTBI, MIT, Manipal, 30th March 2010.
16. Participated in the **“Induction Training Programme”** organized by Dept of Continuing Education, MIT, Manipal from 31st December – 2nd January 2010.
17. Participated in the **AICTE-QIP Short term Course on Lean and Agile Manufacturing** organized by N.I.T, Trichy, 7th – 11th December 2009.
18. Participated in the **UKIERI workshop on “Control of Smart Reliable and Adaptable Air Vehicles”** organized by N.I.T, Trichy, 4th – 6th December 2009.
19. Participated in the **workshop on “Rural Development: Role of Renewable Energy Services”** under TEQIP, Community Services scheme organized by NIT, Trichy, 9th June 2008.
20. 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.
21. 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.
22. 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.
23. Participated in the short term course on **“Recent Advances in Environmental Engineering”** organized by Department of Civil Engineering, NIT, Trichy, 19th – 23rd February 2007.
24. 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.

25. 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, New Delhi & MNES, New Delhi on 1st November 2006.
26. “**Solar Energy for effluent / Drinking water treatment**” in “**RENET Renewable Energy Workshop**” organised by IIT, Madras, held on 27th - 28th September 2006.
27. 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.
28. Participated in the one-day **Workshop** on “**Solar Passive Architecture**” under the sponsorship of MNES, New Delhi & TEDA, Chennai, 22nd July 2006.
29. 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.
30. 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.
31. 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.
32. Participated in one day **Workshop** on “**Solar Home Appliances**” conducted by CEESAT, NIT, Trichy on 5th March 2005.
33. 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** /Co-ordinator in

1. **Five days Faculty Development Programme** on “**Recent developments in Artificial Intelligence for smart and sustainable energy systems**” under the sponsorship of **AICTE-ATAL FDP** organized by Department of Chemical Engineering, MIT, Manipal, 7th – 11th Dec 2020.
2. **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. 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.
2. **National Conference** on “**Energy Efficiency: The Environmental Solution**” (**EEES07**), CEESAT, NIT, Trichy, 27th – 28th December 2007.
3. 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.
4. **Inter-Collegiate Seminar** on “**Renewable Energy – Today and Tomorrow**” NIT, Trichy under the sponsorship of MNES, New Delhi & TEDA, Chennai, 18th August 2006.
5. One day **Workshop** on “**Solar Passive Architecture**” NIT, Trichy under the sponsorship of MNES, New Delhi & TEDA, Chennai, 22nd July 2006.

Book/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 (ICMEH 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.
- Board of Studies Member for Department of Energy, Gandigram Rural Institute, Dindugal .
- PhD external examiner for a thesis titled “Techno-economic viability assessment of solar thermal air-conditioning in India” on 3rd April 2017 held in Department of Energy, Gandigram Rural Institute, Dindugal.
- Invited for project presentation in DST-IDP project on Low cost cooling techniques for a project titled “Performance Investigation on Solar Assisted Desiccant Evaporative Cooling for maintaining thermal comfort in hot and humid region” for which collaboration was established with Industry M/s Desiccant Rotor Internationals Pvt.Ltd, Harayana held on 9th Jan 2017.
- PhD external examiner for a thesis titled “Energy Planning for India using Optimization Techniques” held in Vinaya Mission Research Foundation, Salem in Oct 2018.
- Invited for project presentation in Mission Innovation on Carbon capture by DBT for a project on Carbon dioxide conversion to methanol using MOF for which foreign collaboration was established with University of Sydney and ONGC, Mumbai held on 5th March 2019.
- UK India Innovation Challenge Fund concept note titled “Artificial Intelligence based Model Predictive control of solar liquid desiccant cooling system using Metal Organic Framework” got accepted in Sep 2020 as one of the consortia member.
- Submitted BIRAC project grant as co-investigator on Development of Reusable and Transparent Face mask in Aug 2020 (under consideration)

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

Research Grant/Funding received

- **“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)
- **“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)
- Received ATAL – AICTE FDP grant for organization of 5 days FDP on Artificial Intelligence Thrust Area titled **“Recent developments in Artificial Intelligence for smart and sustainable energy systems”** (0.93 lakhs)
- Received CSIR funding for organizing Two days Workshop on “Solar Energy Harnessing for a low carbon future” in 2013.
- 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 held on 14th – 15th October 2011
- Received Post-doctoral research fund for the project titled “Design of Coupled Solar Bio sorption process for degradation of industrial effluent”, 4.25 lakhs Dec 2012.
- Received research seed money from MAHE, Manipal for a project titled “Experimental studies on coupled solar bioprocess for industrial effluent treatment”.Rs 25000, 2010.

UG/PG/ICAS projects guided

1. Preparation and Characterization of $\text{Cu}_2(\text{C}_9\text{H}_3\text{O}_6)_{4/3}$ and $\text{Zn}_4\text{O}(\text{BDC})_3$ MOF for the conversion of CO_2 into value added chemicals Nithish Anchan (2020) [UG]
2. $\text{BiVO}_4/\text{ZIF-8}/\text{GO}$ and $\text{Cu}_3(\text{BTC})_2 \cdot \text{TiO}_2$ nanocomposites for conversion of carbon dioxide to value added fuels Veekshit U Ail (2020)[UG]
3. Synthesis and Characterization of Graphene and Copper based nanocomposites for the conversion of Carbon Dioxide to Methanol, Ritam Mediratta (2019) [ICAS]
4. Preparation and characterization of Indium Tin Oxide as a thin film material for Organic Solar Photovoltaic cells , Kshitij Kumar (2019) [UG]
5. Experimental and simulation studies on solar aided desiccant evaporative cooling systems Sneha Reddy (2018) [PG]
6. Performance enhancement of solar still using phase change material, Karan Ahuja (2017) [UG]
7. Performance evaluation of membrane aided solar liquid desiccant evaporative air cooling system Priyadarshini B, Sanober Wadhwanian (2017) [UG]
8. Measurement of daily global solar radiation data using Raspberry Pi and its estimation by Artificial Intelligent methods Arunabh Borkataky (2016) [UG]
9. Studies on the conversion of carbon dioxide to methanol by Photocatalytic Reduction Souvik Kumar Maiti, Yash Matange (2016) [UG]
10. Synthesis and Characterization of Metal Organic Framework based Photo-catalyst/ Membrane for Carbon Dioxide Conversion Shivy Mangal (2016) [UG]
11. CO_2 sequestration using synthesized adsorbents and feasibility studies on conversion of the captured CO_2 into a renewable fuel K.S.Sivaraman (2015) [UG]
12. Solar pebble bed reactor for treatment of textile and petrochemical effluents Anvith Rao, Vinay Nayak (2015) [UG]
13. Visible Solar Photocatalytic degradation of Industrial Waste Water Aniruddha Dehpande,Ruthu (2015) [UG]
14. Solar radiation modeling and analysis for south india Mohammad Hashif Iqbal (2014) [PG]
15. Carbon dioxide sequestration using a solar bio reactor Chandrima Chanda (2014) [UG]
16. Bio-treatment of paper & pulp and textile industrial effluent Ashwin Mathur, Sagar Sharma (2014) [UG]
17. Comparison of different geometries of solar reactors for petrochemical wastewater treatment Harshit Davra, Avinash Mahapatra (2014) [UG]
18. Detoxification of pharmaceutical and distillery wastewater using parabolic trough solar collector coupled with bioremediation method Rashmi Deshpande (2014) [PG]
19. Design of coupled solar biosorption process for degradation of dairy effluent Amit Anand (2013) [PG]
20. Experimental Studies on Solar distillation Umair Iqbal Mahadi (2013) [PG]
21. Studies on Solar Radiation Estimation, Modeling and Analysis for Manipal Shoham Das,Ayush Lodha (2013) [UG]
22. Design and optimization of solar photocatalytic detoxification of paper mill effluent Rajesh Kumar Gurjar,Khan Ismail Abdullah (2013) [UG]
23. Carbon dioxide sequestration by photocatalysis Bhavish Naik, MD Danish Samad (2012) [UG]
24. Design and performance evaluation of solar non-concentrating collector for waste water treatment Manish Ratna,Sagar Sharma (2012) [UG]

25. Solar detoxification of wastewater using Compound Parabolic Concentrator Yashica Shetty, Amit Singh Tomar (2012) [UG]
26. Design and performance evaluation of solar non-concentrating collector for waste water treatment Manish Ratna,Rahul Srivastava (2012) [UG]
27. Design of solar photocatalytic reactor for degradation of phenol in wastewater Katayayani Prabhu (2012) [PG]