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Professor & Head
Centre for Waste Management
Sathyabama Institute of Science and Technology

Chemical Engineer with 19 years of academic and research experience, looking forward for a challenging position to utilize my skills and abilities in area of research that offers a professional growth while being resourceful and innovative.

Educational Summary

- Doctor of Philosophy in Chemical Engineering, Sathyabama Institute of Science and Technology, Chennai, India (2010)
- M.Tech in Petroleum Refining & Petrochemicals, Anna University, Chennai, India (2001)
- B.Tech in Chemical Engineering, Madras University, Chennai, India (1999)

Experience Summary

- Professor / Scientist E and Head, Centre for Waste Management, Centre of Excellence Energy Research, Sathyabama Institute of Science and Technology (June 2012 till date)
- Associate Professor, Centre for Waste Management, Sathyabama Institute of Science and Technology (June 2011 – May 2012)
- Associate Professor, Department of Chemical Engineering, Sathyabama Institute of Science and Technology (June 2010 – June 2011)
- Assistant Professor, Department of Chemical Engineering, Sathyabama Institute of Science and Technology (June 2007 – June 2010)
- Lecturer, Department of Chemical Engineering, Sathyabama Institute of Science and Technology (June 2001 – June 2007)

Roles and Responsibilities

Research

- Operated Research Agencies and Government of India funded projects.
- Operation of Pilot Scale Biodiesel Production Unit with focus on process optimization and biodiesel properties enhancement.

- Characterization of Biodiesel for its properties including cold flow and energy content estimation as per ASTM standards.
- Fuel Composition studies with GC-TCD-FID
- Algal reject characterization for Bioethanol production.
- Food waste characterization for bio hydrogen production.
- Food waste characterization and modification for adsorbent synthesis for biodiesel wash water treatment.
- Sensors development for greenhouse gas monitoring and Waste segregation
- Antifouling coatings for biofuel carrying pipelines
- Ritual Waste utilization for incense sticks making for rural women livelihood

Academics

- Handled undergraduate Chemical Engineering course since 2001. Holding expertise in subjects including Unit operations, Process Equipment Design and Transport Phenomena.
- Handled Postgraduate Environmental Engineering course and have experience in handling Environmental Impact Assessment, Air and Water Quality Modelling.
- Research Supervisor for undergraduate students, postgraduate researchers and Ph.D. scholars in areas including catalysis, biofuel (biodiesel, bioethanol, bio hydrogen) production, waste to value added materials, waste water treatment etc.,

Internships/Seminars/Workshops/Training Programmes/Conferences conducted since 2011

- Conducted Internship on 'Waste to Wealth' and 'Zero Waste Zero Warming' for the Undergraduate students from the United States of America in 2011 and 2012 in association with Sustainable Development & Social Change SIT Study abroad/World Learning India
- Organized Conferences, Seminars, Workshops, Training and Awareness Programmes at both National and International level since 2011.
- International Seminar on Waste Management – 7th June, 2011
- An Internship on Zero wastes Zero warming – 17th to 21st of October 2011
- International Conference on Green Technology and Environmental Conservation (GTEC) – 15th to 17th – Dec, 2011
- One Day Awareness Programme on Atomic Energy "VIZHITHIDU"-31st March, 2012
- An Awareness Programme on "ATOMIC ENERGY – A KEY TO MEET THE ENERGY CHALLENGE" - AWAKE-21st FEB, 2012.

- An Internship on Waste to Wealth – 19th to 23rd March, 2012.
- National Convention on Challenges, Innovation & Opportunities in Solar Energy to Enact Kyoto protocol (SEEK-2013) - 28th Feb & 1st March, 2013
- International Conference on Impact of Climate Change on Food Energy and Environment (ICCFEE-2013), July 2013
- START- 2014 ("Safety Training – A Requirement for Technology Developers")
- RENEW Mini Projects 2014 (Research Exploration for Novel and Ecofriendly Waste Management)
- Awareness Programme to highlight the importance of Domestic Waste Recycling, August 2015
- AN AWARENESS WORKSHOP ON WASTE - A RESOURCEFUL
- NEGLECT (WARN-15)
- RENEW Mini Projects 2015, 2016,2017 (Research Exploration for Novel and Ecofriendly Waste Management)
- **Details of Training Programmes conducted on regular basis since April 2015**

Two Days Training on Pilot Scale Biodiesel Production, Wastewater Analysis and Treatment

Monthly Training on Fatty Acid Methyl Ester Composition Analysis – GC – FID

One Day Hands- on Training on Bio-fuel Production & Characterization

Hands- on Training on Algae extraction for Bio-fuel Production Technologies (ABT – 2019)

Two Days Hands – on Training on Microbiology Techniques

- **Details of Workshops conducted in 2019-2020**

Workshop on Social Entrepreneurship, 8th January 2020

Workshop on Solid Waste Management Challenges for Healthier Environment, 9th January 2020

One day Workshop on Data science for Environmental Applications, 22nd January 2020

Two Days Workshop on Biofilm Controlling Nanomaterials (BIOCON 2020) 17th and 18th February 2020

List of Completed and Ongoing Projects

- **(2019– 2021)** Development of Nanostructured Polymetallic Antifouling Coatings in Oil and Gas/Biofuel Pipelines, funded by SPARC, MHRD, New Delhi **(42.60 lakhs)**
- **(2018 –2019)** Recycle of Ritual Waste Materials to Incense Sticks- an Eco-Friendly Approach for Rural Industrialization and Entrepreneurship Development,

funded by Unnat Bharat Abhiyan, Centre for Rural Development and Technology, Indian Institute of Technology, New Delhi, **(Rs.50,000/-)**

- **(2017-2019)** Pharmaceuticals and personal care products (PPCPs) in biological wastewater treatment plants: Investigating biological nutrient removal, microbial phylogeny and PPCP removal, Funded by “Science and Engineering Research Board – Govt. of India”; **(19.2 Lakhs)**
- **(2014-2018)** Centre of Excellence for Energy Research (CEER) under the scheme establishment of Centre of Excellence in frontier areas of Science and Technology (FAST) Bio- Energy, Funded by “Ministry of Human Resource Development – Govt. of India”; **(4 Crores)**
- **(2015-2016)** A study on the monitoring & measurement of greenhouse gas emissions at dump yards using GIS & sensor web, funded by “Department of Science and Technology – Govt. of India”; **(13.44 lakhs)**
- **(2013 - 2015)** Synthesis, Characterization and application of a novel metal complex photo catalyst system for carbon dioxide splitting, Funded by “Vikram Sarabhai Space Centre – Govt. of India”; **(14.508lakhs)**

Patents Filed

- IPR details- Analysis and Development of Bio Plastic from Algal Biomass for Composites 201641037330 (First Examination Report submitted)
- IPR details- Compact Sensor System for Train Compartment Washbasin Water Recovery 201641037331
- IPR details- Automatic Smart Segregator 201641037332 (First Examination Report submitted)

Publications

Journal Publications

Dawn.S.S and A .Anitha 'Solid acid catalysts synthesis and Applications', Indo German Conference on Catalysis at Hyderabad, Feb 6th - 8th, 2003.

Dawn.S.S, Anitha.A,Vikash Kumar,Rajat Jain,Vivek Kumar, Synthesis of SBA-15 and CsHPW for trans – esterification for bio diesel production, International journal on Applied Bioengineering, Vol 1 No 1, 2007

Ramasubramaniam.K, Pugazhendi.V,Anitha.A,**Dawn SS** 'Estimation of Surface Runoff using Geospatial Technology Kombai Micro Watershed – A case study', International journal on Applied Bio engineering, Vol 2 No 1, 2008

Anitha A, Abbas Mohaideen J, **Dawn S S**, Revathy 'Optimization of 35-35 internally and externally loaded Cs- TPA on SBA 15 catalyst system for the production of Biodiesel from waste cooking oil', International journal on Applied Bioengineering, Vol 3 No 1, 2009

Dawn S S, Abbas Mohideen, Anitha.A, Preethi.V ,'Comparision of catalytic performance of TPA and MPA for the production of biodiesel from waste cooking oil', National Journal on Chembiosis Mar 2010, Vol 1, No 1.

Anitha A, **Dawn S S**, Kumaravel S and Venkatesan D 'Supported Cesium Tungstophosphoric acid catalyst system for Biodiesel production from Groundnut oil ' Chemcon 2010.

Anitha, **Dawn S S**, 'Performance characteristics of biodiesel produced from waste groundnut oil using supported heteropolyacids' International Journal of Chemical Engineering and Applications (IJCEA), Vol. 1, No. 3, October 2010 ISSN: 2010-0221.

Rashmi Kumari, Nirmala.N, Caroline Joshi.C, **Dawn S S** 'Calorific value Measurements and Optimization of Waste Cooking Oil Bio-Diesel, Crude Plastic Oil and their blends for the synthesis of low cost High Energy Fuels', International Journal on Applied Bioengineering.

Dawn S S, Nirmala.N, Rashmi Kumari, Comparison of Food waste, Pongamia seed coats and Commercial Activated Carbon as effective adsorbents in Dairy Effluent Treatment", Asian Journal of Pharmaceutical and Clinical Research, Vol,8 , Issue 2, 2015.

Dawn S S , Meenu Priya , Tephlin Shilpa, Nirmala.N' Phytoremediation of Mercury from CFL Lamps', Asian Journal of Pharmaceutical and Clinical research, Vol 2, Issue 4, 2014

Nirmala.N, **Dawn S S**, “Environmental Stress Control to enhance lipid content in Oleaginous Microalgae for Biodiesel production”, International Journal of ChemTech Research, Vol. 9.,Number 2, 2016

Senthilkumar P, **Dawn S S**, Antony V Samrot, Narendra Kumar G, Aashrit Raj D, “Production, Optimization and Characterization of Poly [R] Hydroxyalkanoate from Enterobacter sp SU 16”, Indian Journal of Science and Technology, Vol. 9 (45), 2016

Alok Ranjan, **Dawn S S**, Nirmala. N, “Analytical studies on the Impact of Bio-Medical Waste on garden and landfill soil”, International Journal of ChemTech Research, vol. 10, No. 3, 2017.

Arul Jayan, **Dawn S S**, Kaushik Anand, Joel Stephen, “An Overview of Ferrous and Cobalt Catalyst used in the conversion of Synthetic Gas to Fuels”, International Journal of Chem tech Research, vol. 10 No.4, pp. 494-505, 2017.

Nirmala. N, **Dawn S S**, Rengith, “Quantitative and Qualitative Analysis of lipid derived via cell disruption techniques from Chlorella vulgaris for Biodiesel production”, In: Anand G., Pandey J., Rana S. (eds) Nanotechnology for Energy and Water. ICNEW 2017. Springer Proceedings in Energy. Springer, Cham, DOI: 10.1007/978-3-319-63085-4_18.

Senthil Kumar Pachaiyappan, **Dawn S S**, Antony V Samrot, “Optimization and characterization of poly [R] hydroxyalkanoate of Pseudomonas aeruginosa SU-1 to utilize in nanoparticle synthesis for curcumin delivery”, Biocatalysis and Agricultural Biotechnology, 12C(2017) pp. 292- 298.

Alok Ranjan, S. S. Dawn, J. Jayaprabakar, N. Nirmala, K. Saikiran, S. Sai Sriram, Experimental investigation on effect of MgO nanoparticles on cold flow properties, performance, emission and combustion characteristics of waste cooking oil biodiesel, Fuel, <https://doi.org/10.1016/j.fuel.2018.02.057> [I.F:4.908]

M. Arul Jayan , S.S. Dawn, G.G. Vinoth Kumar d, “Nano-structured manganese promoted ferrous catalyst synthesized by incipient wetness impregnation method: Synthesis and characterization”, Materials Letters, ISSN: 0167-577X [I.F: 2.687]

J. Jayaprabakar , S.S., Dawn SS, a. Ranjan, P. Priyadharshini, R.J. George, S. Sadaf, C. Rajeswara Rajha, “Process optimization for biodiesel production from

sheep skin and its performance, emission and combustion characterization in CI engine”, Energy, ISSN: 0360-5442 [I.F: 4.968]

Senthilkumar P., Dawn S S, Sree Samanvitha K., Saipriya C., Antony V. Samrot., “Surfactant-mediated synthesis of polyhydroxybutyrate (PHB) nanoparticles for sustained drug delivery”, IET Nanobiotechnology 1751-8741 [I.F: 0.81]

Nirmala N, Dawn S S, C. Harindra “Analysis of Performance and Emission characteristics of Waste cooking oil and Chlorella variabilis MK039712.1 biodiesel blends in a Single cylinder, four strokes Diesel”, Renewable Energy Volume 147, Part 1, March 2020, Pages 284-292 [IF: 5.439]

Nirmala.N and Dawn S S “Phylogenetic analysis for identification of lipid enriched microalgae and optimization of extraction conditions for biodiesel production using Response Surface Methodology Tool” **Biocatalysis and Agricultural Biotechnology (Accepted)**

Conference Publications

Anitha A, **Dawn.S.S** and Abbas Mohaideen (2005), ‘Heteropoly acid supported catalyst for corrosion free environment’, International conference on Corrosion, CORCON 2005

Dawn.S.S, Anitha A, Vikash Kumar, Rajat Jain, Vivek Kumar (2007) , ‘Synthesis of SBA-15 and Cs-HPW for transesterification reaction for Bio-Diesel production’, International conference on Applied Bioengineering, iCAB, Chennai, India

Anitha A, **Dawn S S**, Kumaravel S and Venkatesan D ‘Supported Cesium Tungstophosphoric acid catalyst system for Biodiesel production from Groundnut oil ’ Chemcon 2010.

Dawn S S, A.Anitha, Arvinth Kumar J ‘Synthesis Of An Alternate Fuel From Used Sunflower Oil Using Do-Deca Molybdophosphoric Acid Catalyst’ Chemcon 2010

Anitha, **Dawn S S**, ‘Spent groundnut oil for biodiesel production using supported heteropolyacids’, 2nd International conference on Chemical, Biological and Environmental Engineering (ICBEE), 2010, Issue Date 2-4 Nov.2010, 317-321, ISBN: 978-1-4244-8748-6.

Harjeeth Nath , **Dawn S S**, Raajasekhar , ‘Design And Fabrication Of A Cost Effective Portable Mini Heat Exchange Gadget For Instant Beverage Making’, VISAI, Veltech University, 2011

Dawn S S, Silky Das, Anitha A S ‘A Comparison on Tensile Strength Values of Different Grades of Stainless Steel Alloys when subjected to Hydrogen Environment- A Review’ accepted for publication in the International Journal on Agricultural, Food and Biological Engineering (ICAFBE-2012)

Anitha A S , **Dawn S S** ‘Bio-Remediation Of Dairy Effluent –A Review’ ,National Conference on Environmental Challenges towards Sustainability (ECS-2012)

Dawn S S, Silky Das ‘Selection of alloys for fabrication of equipments used in hydrogen production based on their tensile strength –a review’ National Conference on Environmental Challenges towards Sustainability (ECS-2012)

A.S. Anitha, **S.S. Dawn** and Ayush Patodia ‘Odour Abatement Technology in Dairy Waste Water – A Review ’, International Conference on Recent Advancement in Chemical, Environmental, Energy Engineering (RACEEE-2014)

Ayush Patodia, A.S.Anitha and **S.S.Dawn** ‘Synthesis and Characterization of Activated Carbon for Dairy Waste Treatment’, International Conference on Recent Advancements in Chemical, Environmental and Energy Engineering (RACEEE-2014)

A.S.Anitha, **Dawn.S.S**, Litty Mary Abraham,Sneha Raphael ‘ Recent Trends In Odor Abatement From Dairy Effluent -A Review’, Proceedings of National Conference on Emerging Interdisciplinary Trends of Chemical Technology (EITCT-2014)

Senthil Kumar.P, Narendrakumar, **Dawn S S**, ‘Mathematical Modelling on Accumulation of Polyhydroxydecanoates as Primary Polyhydroxyalkonates by Agrobacterium tumefaciens SU-11 in Glucose Containing Medium’, International Conference on Mathematical Sciences’, July 2014.

Dawn S S, J.Meenupriya, Tephilin Shilpa, Nirmala.N, ‘Quantification, Analytical Characterisation and Cytotoxic studies of Mercury from Compact Fluorescence Lamps (CFLs)’, 5th International Conference on Advances in Biotechnology (Bio Tech 2015)’, 13th – 15th March, IIT Kanpur.

Nirmala. N, Dawn S S, Rengith, “Quantitative and Qualitative Analysis of lipid derived via cell disruption techniques from *Chlorella vulgaris* for Biodiesel production”, In: Anand G., Pandey J., Rana S. (eds) Nanotechnology for Energy and Water. ICNEW 2017. Springer Proceedings in Energy. Springer, Cham, DOI: 10.1007/978-3-319-63085-4_18.

Arun Govind M, Dawn S S , “Investigation of Effective Food waste composition for Bio-Hydrogen Production” ,International Conference on Recent Advancements in Chemical, Environmental and Energy Engineering (RACEEE 2019), 31-37

A.Santosh, Dawn S S “Simultaneous thermal analysis for the selection of mixed food waste as precursors for activated carbon synthesis”, International Conference on Recent Advancements in Chemical, Environmental and Energy Engineering (RACEEE 2019), 42-44

Sandeep Reddy V, Dawn S S, Dinesh Venkat V, Barani S, Poornapushpakala S, Santosh A, “pH evaluation and analysis using Embedded Systems for Establishment of a Zero Liquid Discharge Biodiesel Unit”, WEECON'19: Science, Technology and Innovation for Sustainable Development, Special Issue - “World Review of Science, Technology and Sustainable Development”

Dinesh Venkat V , Poornapushpakala S, Sandeep Reddy V, Barani S, Dawn S S , Santosh A, “Embedded System based Turbidity monitoring module for biodiesel wastewater assessment and recycle using activated carbon”, WEECON'19: Science, Technology and Innovation for Sustainable Development, Special Issue - “World Review of Science, Technology and Sustainable Development”

Aratna Srikar, A V Jaswant Reddy , Arun Govind M , Dawn S S, , Poornapushpakala S, Nirmala M , Nirmala N, “Biodiesel wash water Recovery and its properties evaluation for recycle and reuse using Image Processing techniques”WEECON'19: Science, Technology and Innovation for Sustainable Development, Special Issue - “World Review of Science, Technology and Sustainable Development”

Book Published

ISBN-8188429317 - Bio & Enzyme Engineering, P. Manjula, S S Dawn, Scitech Publications (India) Pvt. Ltd

Reviewer - Journals

Fuel
Chemical Industry & Chemical Engineering Quarterly
(Chem Ind. Chem. Eng. Q.)
Inderscience Publications

Editorial Affiliation

- Member, Editorial Board International Journal on Applied Bioengineering, and National Journal on Chembiosis published by Sathyabama Institute of Science and Technology
- Member, Editorial Board, Proceedings of the International Conference on Green Technology and Environmental Conservation (GTEC-2011)
- Member, Editorial Board, Proceedings of the International Conference on Food, Energy and Environment (ICFEE - 2013)
- Member, Editorial Board, Book of Abstracts, International Conference on Waste Energy and Environment (ICWEE-2018)
-

Awards Competed:

Represented Institution for the receipt of UTSAV 19 on 28th December 2019 and 10th January 2020 , UTKRISHT SANSTHAN VISHWAKARMA AWARDS 2019, All India Council for Technical Education

Unique Initiatives:

Establishment of Microenterprise-POOMANAM for the Upliftment of Self Help Group Women in Kumizhi Village

Honours and Achievements:

Delivery of Feasibility studies Report for the Production of Biodiesel from Sathyabama Institute of Science and Technology Mess Waste Cooking Oil

Established 50 litres capacity Biodiesel Production Pilot Scale unit and successfully operated Sathyabama Institute of Science and Technology Buses with Biodiesel and blends

Best teacher Award - Department of Chemical Engineering in the year 2004,2007,2009,2010 .

Personal Details

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