



Green Processing and Synthesis

Overview

Growing concern for the environment, increasing stringent standards for the release of chemicals into the environment and economic competitiveness have led to more environmentally friendly approaches that have resulted in greater pollution prevention via waste reduction and efficiency maximization. So Green process engineering and synthesis is an important tool that could make significant contributions in the drive toward making hazardous and wasteful processes more sustainable for the benefit of the economy, environment and society. The guidelines that could be used by scientists and engineers for designing new materials, products, processes and systems. These developments share a common focus on **“Green Processing and Synthesis”** an approach that has been around for quite some time but has truly emerged only in the past few years as a special and interesting discipline of chemical engineering.

This short course is primarily targeted toward graduate students and researchers who do not have prior knowledge in green process synthesis but are interested in expanding their research topics to this field. The course will be organized into three modules including the introduction and application of Green Chemistry, Design and Novel Approach to green process synthesis, Microfluidic and Nano-fluidic technologies in green processes. We will study in-depth the fundamental principles of green process synthesis with some latest research results and trends.

Modules	Introduction (Review of pre-requisites)	01-05-2022 (Optional)
	Module 1: Introduction and application of Green Chemistry	02-05-2022 to 03-05-2022
	Module 2: Design and Novel Approaches to green process synthesis	04-05-2022 to 05-05-2022
	Module 3: Microfluidic and Nano-fluidic technologies in green processes	06-05-2022
You Should Attend If...	<ul style="list-style-type: none"> You are a student (B.Tech. /M.Sc./M.Tech./Ph.D.) and aspiring researcher within a broad domain of chemical engineering. You are an Executive/engineer or researcher from manufacturing, service and government organizations including R&D laboratories. You are Faculty and staff from reputed academic institutions and technical institutions. 	
Fees	<p>The participation fees per person for attending the course is as follows:</p> <p>Participants from abroad: US \$200</p> <p>Industry/ Research Organizations: Rs. 4,800/- Academic Institutions: Rs. 2,360/-</p> <p>Students: Rs. 2,360/- Non-Students: Rs. 4800/-</p> <p>The above fees include all instructional materials, computer use for tutorials, free internet facility, tea and snacks. The course fee is inclusive of 18% GST as per institute norm. The participants may avail single bedded shared accommodation and food (breakfast, lunch and dinner) if requested on an additional payment basis.</p>	

The Faculty



Professor Muthupandian Ashokkumar (Ashok) is a Physical Chemist who specializes in Sonochemistry, teaches undergraduate and postgraduate Chemistry and is a senior academic staff member of the School of Chemistry, University of Melbourne.

He is currently the Assistant Deputy Vice-Chancellor International at the University of Melbourne. Prof. Ashok is a renowned sonochemist, with more than 20 years of experience in this field, has developed several novel techniques to characterize acoustic cavitation bubbles and has made major contributions of applied sonochemistry to the Materials, Food and Dairy industry.

His research team has developed a novel ultrasonic processing technology for improving the functional properties of dairy ingredients. Recent research also involves the ultrasonic synthesis of functional nano- and biomaterials that can be used in energy production, environmental remediation and diagnostic and therapeutic medicine. He is the Deputy Director of an Australian Research Council Funded Industry Transformation Research Hub (ITRH; <http://foodvaluechain.unimelb.edu.au/#research>; Industry Partner: Mondelez International) and leading the Encapsulation project (<http://foodvaluechain.unimelb.edu.au/research/ultrasonic-encapsulation>).

He has received about \$ 15 million in research grants to support his research work that including several industry projects. He is the Editor-in-Chief of *Ultrasonic Sonochemistry*, an international journal devoted to sonochemistry research with a Journal Impact Factor of 7.3). He has edited/co-edited several books and special issues for journals; published ~410 refereed papers and received 18,630 citations (**H-Index: 73**) in high-impact international journals and books; and delivered over 200 invited/keynote/plenary lectures at international conferences and academic institutions. Ashok has successfully organized 10 national/international scientific conferences/workshops and managed several national and international competitive research grants. He has served on several University of Melbourne management committees and scientific advisory boards of external scientific organizations. Ashok is the recipient of several prizes, awards and fellowships, including the Grimwade Prize in Industrial Chemistry. He is a Fellow of the RACI since 2007.



Dr. Aniruddha B. Pandit was born on 7th December 1957 in Mumbai, Maharashtra. He earned his B. Tech (Chem) degree from the Indian Institute of Technology(IIT), Banaras Hindu University in 1980 and earned his Ph.D. (Tech) degree from the University Department of Chemical Technology (now ICT), in 1984.

He is a president of an NGO named Land Research Institute dealing with the

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Energy and Town planning sector. From 1984 till 1990 he worked in the Department of Chemical Engineering, the University of Cambridge, the United Kingdom as a Research Assistant & then as a Research Associate with Prof. J. F. Davidson, working in the area of bubble break-up and design of multiphase reactors. He developed many novel designs of gas-liquid contractors and also developed new impeller designs. Physical and Chemical Processing applications of Cavitation phenomena, Sonochemistry, Ballast Water Treatment, Mixing in Mechanically agitated contactors: Experimental and CFD Investigations, Modeling of Stoves, Use of non-conventional energy sources, Biotechnology: Protein modification, Cell disruption, Synthesis of Nanomaterials, Microbial Fuel Cell, Research Students: Ph.D.: Completed - 36, Ongoing - 21 Masters: Completed - 64, Ongoing - 6 Research Publications: 315 Citations: 20,903 h-index: 77 (as per Scopus) Patents: 16 Conferences: 160 Seminars: 190.



Dr. Shriram Sonawane is an Associate Professor in the Department of Chemical Engineering, Visvesvaraya National Institute of Technology, Nagpur (India). He has authored more than 150 research papers in the journals and conferences of international repute. He has published 7 patents and 3 patent is granted to him.

He is guest editor of several high-impact factor journals like Sustainable energy technology and assessment (Impact Factor 5.3) and Current Pharmaceutical Biotechnology (impact Factor 2.4.) He has received the fellow award from the prestigious Maharashtra Academy of Science, Pune. He received more than 2 crores rupees as research funding from the Government of India. He has received more than 2500 citations to his research work. His research interests include Nanofluids, Nano-composites, Nano-separation, nano-biotechnology processes and modeling and Simulation.. He has published 2 books and more than 25 book chapters in reputed publication houses like ELSEVIER. 7 students completed their Ph.D. under his guidance. Currently, 2 Ph.D. students are working under his guidance.



Prof. Shirish Sonawane is currently working as Professor and Head. He worked in the Process Control Laboratory, University of Dortmund, Germany in 2002. He visited and worked in the Particle Fluid Processing Center, University of Melbourne, Australia. He received the Heritage Fellowship (2013).

He worked in the Chemical engineering department of Instituto Superior Tecnico, Lisbon, Portugal. He has conducted an International Conference on Chemical and Bioprocess Engineering and New Frontiers in Chemical, Energy, and Environmental Engineering at NIT Warangal. He has published More than

150 SCI journals. He has more than 6800 citations and 36 book chapters and 3 books. He has filed 19 patents out of these, 4 patents he has been granted. Presently 8 Ph.D., 1 M.Tech student are working and 13 Ph.Ds. are awarded. Sono-process engineering, cavitation based Nanotechnology, Wastewater treatment, process Development for nanoparticle synthesis, polymer nanocomposite, etc. are some of the fields.

