

on
**Renewable and Sustainable Technologies for Fuels,
Chemicals and Power Production**
September 24-28, 2018

Organized by
Department of Chemical Engineering
Motilal Nehru National Institute of Technology Allahabad - 211004, India

Overview

Solving environmental problems that we face today around the globe requires long-term commitment and actions towards development of sustainable world. In this regard, renewable energy resources appear to be the one of the most efficient and effective solutions for development of a sustainable world because energy is needed worldwide and sustainable sources are available worldwide but, currently are not effectively utilized. One of the keys to solving this problem is providing knowledge of the best renewable technologies available and best practices to the mass population. However, such initiatives are needed to address the big challenges of the 21st century: energy demand, resource allocation, water and pollution. Reducing consumption of energy and resources will help to protect the environment and to re-use/recycle resources. Today, 80% of energy usage comes from fossil fuels: petroleum, coal and natural gas. Although there is no consensus on how long these natural resources will last, there is complete agreement that to avoid complete depletion of fossil fuels, renewable resources must be used. Biomass and carbonaceous wastes are readily available renewable energy source that can be converted into fuels, chemicals and power and simultaneously reduce sulfur dioxide and carbon dioxide emissions. The course focuses on the production of synthetic fuels and chemicals via thermo-catalytic routes, mainly biomass and waste-to-fuel routes. One of the main thermo-catalytic routes is pyrolysis, a potential value-added technology for the treatment of biomass/organic waste, with the possibility of producing gases with appreciable fuel value, useful liquid oils and agriculturally applicable bio-char. A number of newly-developed technically processes which support our objectives to protect the environment and renewable resources will be discussed. The relations between renewable energy and sustainable development are described with practical cases, and an illustrative example is presented. Throughout the course several issues relating to renewable energy, environment and sustainable development are discussed from both current and future perspectives. It is essential that peoples from industries across India, many organizations and academic Institutions are exposed to renewable energy resources and sustainable development for producing fuels, chemicals and power production and their recovery.

All participants will gain knowledge of these topics through lectures and case studies. There will be some assignments to stimulate research motivation of participants. At the end of the course, an examination will be conducted.

Objectives

The primary objectives of the course are as follows:

- i) To expose participants to worldwide perspective on state-of-the-art development on renewable and sustainable technologies for production of fuels, chemicals and power
- ii) To introduce fundamentals and software tools available for process engineering, life cycle analysis and techno-economic analysis to facilitate successful scale-up and commercialization of these technologies,
- iii) To provide hand-on skills on using experimental and mathematical methods on catalysis, reaction kinetics and process simulations for development and commercialization,
- iv) To demonstrate characterization methods available for biomass and carbonaceous waste resources and show how the properties are relevant for the conversions into fuels and chemicals,
- v) To present the experimental and theoretical approaches on novel pyrolysis-based technology for hydrocarbon fuels production, and reactive extraction for maximal recovery of chemicals from the aqueous phase of bio-oil produced by biomass.

Modules	September 24 – September 28, 2017 (5 days) 10 lectures of 01 hr each and 05 tutorials of 02 hrs each
You Should Attend If...	You are interested in learning state-of-the-art renewable and sustainable technologies and methods to produce fuels, chemicals and power: <ul style="list-style-type: none"> • Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. • Faculty from reputed academic Institutions and technical Institutions • Student at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) <p>Number of participants for the course will be limited to sixty.</p>
Fees	The participation fees for attending the course is as follows: Participants from abroad : US \$300 Industry/ Research Organizations: Rs. 5000 Academic Institutions Faculty: Rs. 3000 PG Students: Rs. 1000 UG Students: Rs. 500 The above fee includes all instructional materials, computer use for tutorials, internet facility. The participants may be provided the accommodation on payment basis subject to availability in the Institute Executive Centre/ Guest Rooms of Hostels on request on first come first serve basis.
Registration	All course registrations will be processed via the national GIAN portal (www.gian.iitkgp.ac.in), where Rs. 500/-one-time fee is payable in addition to the above amount. Registration fee can be directly deposited by Demand Draft/Cheque, in favour of " GIAN-RST-2018 " payable at Allahabad OR National Electronic Funds Transfer (NEFT) to the account " GIAN-RST-2018 " (Account Number: 718400301000322) Bank: VIJAYA Bank, MNNIT Branch, Allahabad-211004, UP, INDIA; IFSC Code: VIJB0007184 Last Date of Registration: September 14, 2018

Brief Profile of Experts/Faculty



Dr. Ajay Kumar is an Associate Professor, Department of Biosystems and Agricultural Engineering (BAE), Oklahoma State University (OSU), USA. He is Associate Editor of ASABE journals (Food and Process Engineering Division): "Transactions of the ASABE", "Applied Engineering in Agriculture", "Journal of Agricultural Safety and Health" and "Biological Engineering Transactions". His research interests are in the areas of renewable energy, biofuels, biomass gasification and pyrolysis. He is having more than 130 research publications to his credit.



Dr. Sushil Kumar is an Associate Professor, Department of Chemical Engineering at Motilal Nehru National Institute of Technology Allahabad, India. His current research interests include Process Intensification, Nano Biomaterials, Renewable Energy Sources, Waste Water Treatment and Biochemical Engineering. He is having more than 100 research publications (Journals, conferences and book chapters) to his credit.

Contact Details

Principal Course Coordinator

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