Modern Perspectives on Renewable Energy and Biorefinery

Overview

The course will cover modern perspectives on the provision of energy in developed economies, from fossil sources to all aspects of renewables. The narrative will then turn to materials classically derived from petroleum, including liquid fuels, polymers, and specialty chemicals, and how these can be competitively accessed from the integrated biorefinery. The usefulness of this course in training students and researchers in India consists in the vast biomass reserves available nationally and the advantages of approaching energy independence for a developing economy. The chemical composition of various biomass feedstocks will be discussed and the chemical processes for transforming them into commodity chemicals and materials will be elaborated. The technical and economical obstacles in the biorefinery and the renewable chemistry space in general will be explained with examples. Students will be taught a step-by-step guide to solve challenges in renewable chemistry with a special focus on the synthetic and technical aspects. Students and researchers will be exposed to the enormous commercial potential of this chemistry and encouraged to develop new ideas and establish start-ups around the principles of green chemistry and sustainability.

Course Duration	**6th November, 2017 to 10th November, 2017**
Modules	The course will cover following topics: • Energy: economics, modalities, and conservation (overview) • Carbon energy and materials sources and their development • The integrated biorefinery: Biomass conversion (carbohydrates, lignin, lipids, proteins and extractives) • Solving problems in the renewable products space • Prospects and opportunities in renewable chemistry research including ideas for start-up
Host Institute	**National Institute of Technology Karnataka (NITK), Surathkal**
No. of Credits	**01**
Maximum No. of Participants	**50**
Who Should Attend	• Executives/Engineers/Researchers from private and government organizations including R&D laboratories • MSc/MTech/PhD students in Chemistry, Chemical Engineering, and Materials Science • Faculties from academic and technical institutions
Course Registration Fees	The participation fees for taking the course is as follows: **Professionals from industry/Research Organizations: Rs. 5000/-** **Faculties from College/University: Rs. 3000/-** **Students from Academic Institutions: Rs. 1000/-** **Students & Faculties of NITK, Surathkal: Free** The above fees include all instructional materials, 24 hr free internet facility, food and refreshments.
Accommodation	The participants will be provided in the institute guest house/hostels on payment and with advance request.

Teaching Faculty

Prof. Mark Mascal is Professor in the Department of Chemistry, University of California Davis, California, USA. His research interests include organic synthesis, molecular assemblies, medicinal chemistry, and green chemistry.

He was the recipient of NSF career award, Fulbright Distinguished Chair in Alternative Energy Technology, and industrial awards from ConocoPhillips and AkzoNobel. He has about 100 publications in prestigious international journals and 8 international patents to his credit. Some of his patents have been licensed for commercialization. He has over 4600 citations with an h-index of 33. He has presented his research as invited speaker in academic institutions around the world. He is on the editorial board of the prestigious sustainable chemistry journal *ChemSusChem* (ISSN 1864-5631; I.F. 7.22), and has supervised 33 postdoctoral research associate and >30 PhD students.

Course Coordinator

Dr. Saikat Dutta is an Assistant Professor at the Department of Chemistry, NITK Surathkal. His research interests include organic synthesis, catalysis, green chemistry, and crystallography.

After completing his doctoral studies from the Department of Chemistry, University of Iowa, Iowa City, USA, he worked as a postdoctoral researcher at the Department of Chemistry, University of California Davis, USA for four years. He has several publications in reputed international journals and five international patents to his credit. He has also published book chapters and presented his research at international conferences.

Contact Details

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