Advanced Organic Synthesis and Catalysis for a Sustainable Future

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Overview

Society faces tremendous challenges to maintain and improve the life for everyone in the world with respect to health, environment, energy, food, water and last but not least peace. Despite many aspects that play a role to meet these goals, the availability of resources and their sustainable use is at the forefront to guarantee a society's well-being. Chemistry will be a major force to provide solutions, and already now the world could not be maintained without the contributions Chemistry is making in the area of synthesis and catalysis.

Despite great advances chemistry has brought to society, with the growing world's population and the dwindling fossil feedstock, for a change to renewable resources as a basis for chemical production, new synthetic methods and technologies need to be developed. Catalysis is playing a major role to drive chemical processes, however, catalysts are by and large based on precious metals generally scarcer than gold, making their replacement by earth abundant metals a great need for the future. In combination with emerging technologies like photocatalysis and flow chemistry, the catalytic conversion of renewable feedstock with 3d-based metal catalysts, is one of the greatest challenges, but also one of the biggest hopes to arrive at a sustainable future for generations to come. This course will give an overview on the current state of the art in synthesis and catalysis in the context of the conversion of renewable resources with special focus on replacing precious metal catalysts like gold, iridium, palladium, rhodium or ruthenium with 3d-metal based catalysts like iron, cobalt, nickel and copper.

Modules	**A: Lectures : March 31 - April 04, 2020** **B: Tutorials : March 31 - April 04, 2020** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	This course is important and intended for (i) Undergraduate students, (ii) Graduate Students (iii) Research Scholars and Postdoctoral Research Fellows, and also (iv) Scientific staff working in the chemical and pharmaceutical industry, and professional labs working in these areas in the public and private sectors. To obtain maximum benefit from this course, a fundamental background in organic and inorganic chemistry will be beneficial. Basic understanding of organic reactions is assumed, although a lack of experience in this area can be remedied during the course by diligently reviewing the relevant materials.
Fees	The participation fees for taking the course is as follows: **Participants from abroad: US $500** **Industry/ Research Organizations: Rs. 5000** **Academic Institutions: Rs. 2500** The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. Dr. Oliver Reiser is in Professor of Organic Chemistry, University of Regensburg, Germany. His research interests include (Asymmetric) Catalysis with focus on photoredox catalysis, Immobilized catalysts, in particular on magnetic nanoparticles, Catalytic conversion of furans and pyrrols to natural products and drugs, and Foldamers with constrained □-amino acids and their application in the design of biologically relevant ligands.

Dr. Palani Natarajan is an Assistant Professor in Chemistry Department of Panjab University, Chandigarh. His research interests include organic synthesis through conventional and photochemical methodologies.

Dr. Ramesh Kataria is an Assistant Professor in Chemistry Department of Panjab University, Chandigarh. His research interests include metal sensing and development of novel metal organic frameworks for catalysis and other applications.

Course Co-ordinators

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