Advanced Organic Synthesis and Catalysis for a Sustainable Future

Overview

Society faces tremendous challenges to maintain and improve the lives of everyone in the world concerning health, environment, energy, food, water, and last but not least, peace. Despite many aspects that play a role in meeting these goals, the availability of resources and their sustainable use are at the forefront of guaranteeing a society's well-being. Chemistry will be a major force in providing solutions, and already now, the world could not be maintained without the contributions Chemistry makes in synthesis and catalysis. Despite the great advances chemistry has brought to society, with the growing world's population and the dwindling fossil feedstock, new synthetic methods and technologies need to be developed to achieve the transformation to renewable resources as a basis for chemical production. Catalysis is playing a major role in driving chemical processes. However, catalysts are by and large based on precious metals that are 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 of the current state of the art in synthesis and catalysis in the context of the conversion of renewable resources with a 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) The primary objectives of the course are as follows:** **1. Catalytic conversion of renewable resources – state of the art and challenges** **2. Emerging technologies: Photocatalysis and Flow Chemistry** **3. Basics of Natural Product Synthesis and Asymmetric synthesis** **4. Fundamentals of Various Spectroscopic Techniques** **b) March 24 – March 28, 2025** **c) Number of participants for the course will be limited to 200.**
You Should Attend If…	▪ You are an Organic Chemist, Physical – organic chemist, Chemical Engineer or research scientist interested in working on Photocatalysis and Flow Chemistry ▪ You are a student or faculty from an academic institution interested in learning about the utilization of renewable resources in combination with Photocatalysis and Flow Chemistry
Fees	The participation fees for taking the course are as follows: **Participants from abroad: US $500** **Industry/ Research Organizations: INR 30000** **Academic Institutions: INR 10,000** **Students: INR 1,000** The above fee includes all instructional materials, computer use for tutorials and assignments, 24 hr free internet facility including Snacks. The participants will be provided with accommodation on payment basis. For accommodation at IIT Indore hostel, please contact hostel@iiti.ac.in by marking a CC to chemistryoffice@iiti.ac.in; Ph.: 0731-660-3468/3149/3454 **Accommodation and Food charges are not included in the Registration fees **Note:** There is no central registration on the GIAN portal (gian.iith.ac.in); registration will be managed directly by the hosting institute.

The Faculty

Course Coordinator

Dr. Debayan Sarkar,
Fellow-Indian Chemical Society
Associate Professor,
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***Professor -in- Charge**, Centre for Rural Development and Technology (CRDT) (https://crdt.iiti.ac.in/)*
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<registeration link>
https://docs.google.com/forms/d/1D8NVTQuESSJwsP_aPb5cOseB7QZBQozm_jFR4JMtsyA/edit#settings

Oliver Reiser is a Professor of Organic Chemistry at the University of Regensburg, Germany. His group's research interests focus on developing sustainable methodologies for converting renewable resources towards value-added compounds such as fine chemicals, natural products, and medicinally relevant compounds. Together with his group, he has published more than 300 papers (H-index 77) in these areas.

Debayan Sarkar is an Associate Professor at the Indian Institute of Technology Indore. His research interest lies in the field of Halide Catalysis, Total Synthesis of Natural products and important Biomolecules, Visible Light Catalysis, and Atom economic Sustainable Transformations.

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