

## IGCW 2017: 180° Seminars

The 5th IGCW on the theme 'Profitability from Industrial Green Chemistry and Engineering' will span two days – 5th and 6th Oct 2017 – at Ramada Powai Hotel and Convention Centre, Mumbai.

Since 2009, biennially, the Industrial Green Chemistry World (IGCW) attempts to facilitate an ecosystem for the Indian chemical industry to reduce their 'technology need gap' through the means of Green Chemistry and Engineering (GCE). It is India's first and largest industrial convention dedicated to GCE.

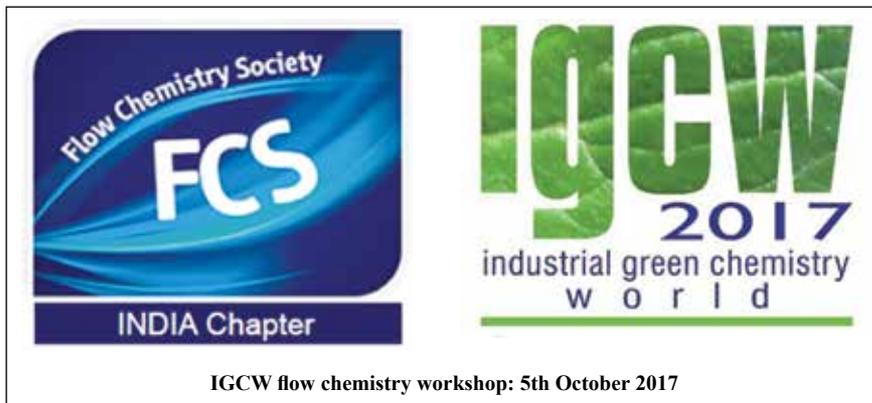
The 180° Seminars are one of the nine concurrent events scheduled for Day 2, 6th Oct. 2017.

These Seminars are 180 minutes of subject-specific discussions and presentations on topics that are most relevant in the industrialization of GCE applications. The seminars identify subject-specific impact areas, designed to bring forth a metaphorical 180° paradigm shift for integrating a 'greener' approach in chemical manufacturing units.

The 180° Seminars consist of 3-4 presentations and case-studies by domain experts focussing on specific concepts, how they work, how they can be implemented in a 'green' context, and how they can drive triple bottom line of people, planet and profit.

Managers and senior representatives from R&D and Production are expected to participate in the IGCW 180° Seminars.

The four topics selected are Green Processes, Green Solvents, Green Catalysts and Green Engineering.



### Green Processes

Green Processes refer to measures to eliminate the environmental burden in such areas as resources input, chemical substances use and energy consumption to the greatest extent possible. The seminar is designed to bring forth technical insights and knowhow for reducing the 'E-factor' (kgs of waste generated/per kg of the final product) of chemical processes. Case studies on cost-effective manufacturing processes set at normal pressure and temperature conditions, effective recycle of reaction extraction medium, new route selection, safer reagents and solvents with industrial ecology approach will be presented and discussed. Participants will take back insights on green standards and specifications to create a roadmap with tools needed to integrate the greening of a multi-step manufacturing process into "green processes".

### Green Solvents

Green Solvents expresses the goal of minimizing the environmental impact resulting from the use of solvents in chemical production. This seminar is designed to explore means and solutions for minimizing the environmental

### Confirmed Speakers

#### Prof. C. Oliver Kappe



Professor of Chemistry at the University of Graz (Austria) and Scientific Director of the Center for Continuous Flow Synthesis and Processing (CC FLOW).

#### Prof. Anil Kumar



Professor, Department of Chemistry, IIT Bombay; Department of Chemistry, Center for excellence in Nano-electronics; National Center for Photovoltaic Research and Education; National Center for Excellence in Technologies for Internal Security.

#### Karim Engelmark Cassimjee



Co-founder and CEO, EnginZyme AB, Sweden Bio-catalysis immobilization for Flow.

#### Vijay Kirpalani



President, Flow Chemistry Society – India Chapter; CEO of Pi-Process Intensification Exp. LLP; Director, ChemSphere Technologies.

impact resulting from the extensive use of solvents in chemical production.

Case studies on ionic liquids, di-tectic liquids, supercritical fluid extractions, water-based reactions, etc. to access environmental and economic benefits will be discussed.

Participants will get connected to tools for evaluating various comprehensive assessment methodologies for new solvent technologies and take back insights on measuring and distinguishing the “greenness” of an alternative solvent.

### **Green Catalysts**

Green Catalysts are catalysts which are eco-friendly, can be regenerated

hence reused multiple times and thus minimize waste production during process. This seminar will expand technical knowhow on biocatalytic and enzymatic routes, bringing forth successful case studies on replacing conventional stoichiometric & metal catalysts by sustainable metal catalysts or “green catalyst”.

The successful case studies will highlight the increase in economic benefits and a reduction in the negative environmental impact.

Participants will also get connected to potential collaborators and technology providers on ‘green catalysts’.

### **Green Engineering**

Green Engineering seminar is

designed to bring forth emerging aspects of “green engineering” for process intensification, water & energy optimization, reduced waste and toxicity, leading to higher safety.

Case studies on “Green Engineering” technologies incorporated at the design stage of materials, processes, systems, and/or devices, which can minimize the overall environmental footprint of the process industry will be discussed.

Participants will have the opportunity to explore potential contribution of flow chemistry and micro-reactors in reducing the overall environmental footprint of chemical manufacturing.