

# CSIR-NCL Integrative Skill Initiative



## Skill Development Course in

# Industrial Catalysis



### About the course

Catalysts are the workhorses of chemical transformations in the industry. Approximately 85-90% of the products of chemical industry are made in catalytic processes. A catalyst offers an alternative, energetically favorable mechanism to the noncatalytic reaction, thus enabling processes to be carried out under industrially feasible conditions of pressure and temperature. Main aim of the course is to give in depth knowledge on theory and hands on experience in each aspect of industrial catalysis such as catalyst synthesis; catalyst characterization; catalytic batch reaction, its analysis and catalytic continuous reaction with online product analysis.

**Course Content:** Introduction to catalysts; types of catalysts; homogeneous and heterogeneous catalysts; different types of heterogeneous catalysts used in industrial batch and continuous processes; hands on experience in catalyst synthesis; types of synthesis methods and facility used; catalyst formulation; different types of catalyst characterization techniques; type of information generated from each characterization; interpretation of catalyst characterization to establish physico-chemical properties; Hands on experience to carry out catalytic reaction in batch reactor and its analysis in GC/HPLC etc; hands on experience in catalytic reaction in continuous reactor with online feed and product analysis. The course will also extend to add on knowledge in homogeneous catalysis; theory and hands on experience in computational chemistry.

**Course Instructors:** Scientist from Catalysis & Inorganic Chemistry Division, CSIR-NCL

**Course Code:** SDP-NCL-CAT-01

**Duration:** 28<sup>th</sup> Nov to 02<sup>nd</sup> Dec 2022, (1Week)

**Number of Participants:** 25

**Eligibility:** M. Sc., B. E., B. Tech., M. E., M. Tech.

**Course Fees:**

- **Students:** Rs. 5000 + 900(18% GST)
- **Faculties:** Rs. 25000 + 4500(18% GST)
- **Industry Participants:** Rs. 50000 + 9000(18% GST)

(Fee includes breakfast, tea and lunch)

**Accommodation (One weeks + 2 days):**

- **Students:** Rs. 500/-
- **Faculty/Professionals:** 1,000/-

Participants can make payment only by Online Transfer. For details see SDP website

### How to Apply

**Application form is available at**  
<http://www.ncl-india.org/files/SDP/Default.aspx>

### Mailing Address

**Coordinator,**  
**CSIR-NCL Skill Development Program,**  
**CMC Division, CSIR- National**  
**Chemical Laboratory, Dr. Homi**  
**Bhabha Road, Pune-411008, India.**

**Email:** [ncl.sdte@ncl.res.in](mailto:ncl.sdte@ncl.res.in)  
(Application will also be accepted by email)

