

Heterogeneous Catalysts for Industrial Applications

July 08 – 12, 2019

Overview

The catalysts are well known to provide alternate routes by lowering activation energy of the reaction. This key aspect of catalysts has led to their suitability in variety of operations ranging from chemical, biochemical, petrochemical, pharmaceutical and environmental cleanups. The catalysts are helpful in providing alternate routes with cost effective quality chemicals required for mass applications. Catalysts also occur in nature and keep cleaning our environment. Taking a clue from the nature, the catalysts have been applied in the cleanup methods for, otherwise, heavily polluted environment due to industrial applications. There are a number of factors that affect the choice, characterization and application of catalyst. As such it becomes necessary to familiarize and understand various catalytic processes of industrial applications. The proposed course provides basics of catalysts along with their applications in select processes so as to have a better understanding of the heterogeneous catalysis. This course will also provide the recent advancements in the field of characterization, functionalization, inhibition, deactivation, design and development of catalysis. This course has been especially prepared for researchers, academicians, professionals from industries and students to learn the important aspects of catalysis. The faculty will also discuss and share the related practical aspects.

Objectives

The primary objectives of the course are as follows:

- To teach fundamentals and advances in the field of heterogeneous catalysis to participants.
- To discuss the role of catalysts in securing clean energy and environment.
- Applications of heterogeneous catalysis in production of variety of chemicals.
- To discuss and highlight the techniques used in characterization of the catalysts.
- To discuss the role of catalysts in synthesis of Biodiesel, Green diesel, Removal of H₂S, hydro treating of heavy oil etc.
- To discuss on the fundamentals of catalysis, and their functionalization, characterization, inhibition, applications and deactivation.

Topics to be covered

- ❖ Catalytic processes: Fundamental, preparation and characterizations.
- ❖ Biodiesel production from various feedstocks using solid acid catalyst
- ❖ Catalysts for environmental cleanup
- ❖ Green diesel synthesis from bio-based feedstocks
- ❖ Nano-photo-catalysts for treatment of wastewaters
- ❖ Catalytic methods for the removal of H₂S from sour gases.
- ❖ Solid Acid Catalysis for Isomerization and Alkylation Reactions
- ❖ Immobilization of catalysts: techniques and comparisons
- ❖ Catalytic gasification of biomass to H₂ in supercritical water
- ❖ Synthesis and characterization of alumina supported Ni-Mo catalysts
- ❖ Industrial applications of Ni-Mo/Al₂O₃ catalysts for hydrotreating of heavy gas oil
- ❖ Functionalization and characterization of carbon nanotubes and nanohorns (CNHs)
- ❖ Inhibition and deactivation of catalyst active sites by non-basic nitrogen compounds

Course duration	July 08 – 12, 2019 (5 days)								
Who can attend	<ul style="list-style-type: none"> ❖ This program is open to the Faculty and Students (B.Tech/ M.Tech/ Ph.D) from reputed academic and technical Institutes ❖ Professionals working in Industries, consultancy firms and R&D laboratories can also attend the program 								
Venue	Dr B R Ambedkar National Institute of Technology, Jalandhar, Punjab – 144011								
GIAN portal Registration	<p>Step 1: One-time web portal registration Create login and password at http://www.gian.iitkgp.ac.in/GREGN/index login and complete the Registration Form and pay Rs. 500/- (non-refundable, GIAN Portal Registration Fee) through online payment gateway. After Payment select the course (Heterogeneous Catalysts for Industrial Applications) from the listed GIAN courses. Download "pdf file" of the application form and forward it to the course coordinators by email: hcia2019@gmail.com.</p> <p>Step 2: Institute Registration The registration form for this course can be found along with this brochure. The soft copy of brochure can be download from the institute website www.nitj.ac.in (GIAN portal). Participants are requested to fill the registration form and send to the course coordinators along with registration fee payment details scanned copy to the email hcia2019@gmail.com</p> <p>The participation fees (excluding lodging and boarding) for taking this course is as follows:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">Faculty/Scientists/Industry Personnel from abroad</td> <td style="text-align: right;">US \$300/-</td> </tr> <tr> <td>Persons working in Industry/ Consultancy Firms</td> <td style="text-align: right;">Rs. 4,000/-</td> </tr> <tr> <td>Faculty (Internal & External)/ Scientists from Research Organizations</td> <td style="text-align: right;">Rs. 3,000/-</td> </tr> <tr> <td>Students</td> <td style="text-align: right;">Rs. 500/-</td> </tr> </table> <p>The above fee includes all instructional materials, computer use for tutorials and assignments, and session refreshments. Limited accommodation is available on payment basis at Institute Guest House/Hostels (first cum first serve).</p>	Faculty/Scientists/Industry Personnel from abroad	US \$300/-	Persons working in Industry/ Consultancy Firms	Rs. 4,000/-	Faculty (Internal & External)/ Scientists from Research Organizations	Rs. 3,000/-	Students	Rs. 500/-
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Faculty (Internal & External)/ Scientists from Research Organizations	Rs. 3,000/-								
Students	Rs. 500/-								
Accommodation	Accommodation at the Institute Guest houses will be available on payment basis.								
About climate	The city has a humid subtropical climate with cool winters and long, hot summers. Summers last from April to June. The winter season in Jalandhar begins from middle of November and remains till mid-March. The weather during the course is expected to be hot and humid with scattered rainfall.								

The Faculty



Dr. Ajay Dalai, Professor of Chemical Engineering and Canada Research Chair in Bioenergy and Environmentally Friendly Chemical Processing, College of Engineering, University of Saskatchewan, Saskatoon, SK Canada. He has 20 years of teaching experience in Chemical Engineering for UG and PG courses. Received teaching awards at the University levels and over 10 best paper presentation awards at conferences.

40 Msc and 21 PhD students have graduated under Professor Dalai's Supervision. During his career, Professor Dalai has over authored/co-authored 390 research papers in refereed international journals (including book chapters and review articles) and refereed conference proceedings. He has written 175 research reports for funding agencies and has presented over 400 papers at national and international conferences, and has given 98 invited lectures at institutions and conferences.



Dr. Ajay Bansal is Professor in the Department of Chemical Engineering at Dr B R Ambedkar NIT Jalandhar. He received his M Tech from IIT Delhi and later PhD from Panjab University Chandigarh in 2005. He has over 24 years of teaching and research experience. The research areas of Dr Bansal include Environmental Engineering, Multiphase Reactors and Flow, Rheologically Complex Fluids, Advanced Oxidation Processes and Photocatalysis.

To his credit, Dr Bansal has 3 books/monographs, 5 book chapters and more than 30 publications in Journals of international repute. Dr Bansal is reviewer of many International journals of repute and is on Advisory Board of Nanohybrids and Composites and International Journal of Chemical and Biological Sciences.



Dr. Shailendra Bajpai is currently working as Associate Professor in the Department of Chemical Engineering at Dr. B R Ambedkar National Institute of Technology, Jalandhar. He has 20 years of teaching experience involving both graduate and post graduate courses. He has authored six books and more than 50 research publications in International/national journals of repute and conference proceedings.

He is Reviewer of many International Journals such as Journal of Loss Prevention in Process Industries (Elsevier), Journal of Hazardous Materials (Elsevier), Journal of Intelligent and Fuzzy Systems, International Journal of decision making, Chemical Engineering Journal, etc. He is Life Member, Indian Institute of Chemical Engineer, Kolkata and honorary secretary of Doaba Regional Centre, IICHE. His Research interests include Waste water treatment, Safety in chemical plants, Membrane separation process, Risk assessment of intentional threats, etc.



Dr. N. K. Srivastava did his M Tech in Chemical Engineering from Indian Institute of Technology Roorkee and Ph D in Chemical Engineering from Dr. B. R. Ambedkar National Institute of Technology Jalandhar. Presently, he is working as Associate Professor of Chemical Engineering at Dr. B. R. Ambedkar National Institute of Technology Jalandhar for past 22 years. His area of interest is Wastewater Treatment, Air Pollution Control and Biofuels. He has published 01 Book Chapter in "Advances in Nanotechnology".

He has published 15 Research Papers in various International and National Peer reviewed Journals. He has also presented 46 Research Papers in various International and National Conferences. He has visited 05 Countries namely France, Australia, Canada, Thailand and Mauritius to present his paper at various International Conferences and interacted with many Researchers and Scientists for joint collaboration and research. He has guided 10 M Tech Dissertations and more than 45 Undergraduate projects. He is presently guiding 02 Research Scholars, 01 M Tech Student and 06 Undergraduate students.

One week GIAN
course on

Heterogeneous Catalysts for Industrial Applications

July 08-12, 2019

Course Coordinators

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<http://www.gian.iitkgp.ac.in/GREGN>

About the host Institute	<p>Dr B R Ambedkar National Institute of Technology was established in the year 1987 as Regional Engineering College and was given the status of National Institute of Technology (Deemed University) by the Government of India on October 17, 2002 under the aegis of Ministry of Human Resource Development, New Delhi. Now the Ministry of Human Resource Development, Government of India has declared the Institute as “Institute of National Importance” under the act of Parliament-2007. As one of the National Institutes of Technology (NIT), the Institute has the responsibility of providing high quality education in Engineering, Technology and Sciences to produce competent technical and scientific manpower for the country. The Institute offers BTech, MTech, MSc, MBA and PhD programmes in the several disciplines of Engineering, Technology and Sciences.</p>
About the Department	<p>The Department of Chemical Engineering, NIT Jalandhar is one of the sixteen Departments of the Institute. The coherent, cohesive and homely environment of the Department is attributed to the students, faculty and staff with tremendous potential and opportunities to grow academically, emotionally and spiritually. The Department started functioning in 1990 for teaching undergraduate B.Tech programme and subsequently M.Tech and PhD Programs were initiated. Department is striving to emerge as a premier Centre of Chemical Engineering teaching and research of the country. The Department has also been selected as ‘DST-FIST’ sponsored Department.</p>
How to reach Jalandhar	<p>Jalandhar can be conveniently reached by air, rail as well as road services. The city has a well-developed infrastructure, which keeps it connected to cities both within and outside the country.</p> <p>Local transport can be availed from Jalandhar bus depot to reach any part of the city. It takes nearly 7 hours to travel distance of around 372 km between Delhi and Jalandhar via NH 1. There is a wide network of bus services available in the city, connecting it to the other key cities in Himachal, Haryana, U.P, Jammu & Kashmir and Rajasthan. The railway terminus at Jalandhar falls on the Delhi-Amritsar Railway Line. Jalandhar City Railway Station on Amritsar-Delhi railway line is an important rail junction of Punjab. This route is mostly traversed by the passenger and express trains that connect the city to the important cities like Jammu, Kolkata, Nagpur, Mumbai, Puri and Delhi. Some of the important trains running through Jalandhar are Amritsar-New Delhi Shatabdi Express, Amritsar Howrah Mail, Amritsar-New Delhi Express, Amritsar-Bilaspur Chhatisgarh Express, Pathankot Tatanagar Express, JammuTawi-Pune Jhelum Express, Akal Takht Express, and so on. Jalandhar does not have an airport of its own. The closest international airport to is Rajasansi Airport of Amritsar, which is at a distance of 90 km. Amritsar, Chandigarh and Ludhiana have domestic airports, at a distance of 134 km and 59 km respectively.</p>
Places to visit	<p>Punjab- the land of five rivers. Punjab is the land of food, colour, and happiness. Being one of the most significant places in India historically, this state is filled with wonderful architecture and places of worship.</p> <p>Harmandir Sahib or the Golden Temple, Amritsar; The holiest Sikh Gurudwara in Punjab, there’s nothing about this place that won’t calm your senses, and put you at peace.</p> <p>Wagah Border ceremony; Every evening, thousands of people flock to the Wagah border, the international border that separates India and Pakistan, to witness the majestic changing of guards accompanied by the hoisting and retreat of the respective national flags. The border security forces of both nations undergo the elaborate process jointly through an interesting ceremony.</p>



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(July 08-12, 2019)

Under

Global Initiative of Academic Networks (GIAN)

Ministry of Human Resource Development

Government of India

REGISTRATION FORM

Name:

Category: (Academic/Student/Industry/R&D)

Designation:

Institution:

Town/City:

Country:

Email ID:

Mobile No:

Registration fee:

Payment details:

Bank Account details:

Accommodation required: (Yes/No)

Date:.....

Signature

(Signature of signing authority if any)

*Scanned copy of this form can be send via email to hcia2019@email.com or the hard copy of registration form can be posted on the below mentioned address on or before July 01, 2019 along with payment details.

Address: Dr. S. Bajpai, Associate Professor, Department of Chemical Engineering, NIT Jalandhar, Punjab – 144011.