Registration Form

Two week Online
- AICTE sponsored -
Faculty Development Programme on

Catalysis and Reaction Engineering

(22nd February - 6th March 2021)

Full Name:.....

Date of Birth:.....

Designation:.....

Institution:.....

.....

Whether the Institution is AICTE/UGC recognized:

.....

Highest Educational Qualification:

.....

Experience in Years: .....

Teaching/Research/Industry:.....

Courses Taught over last three years:.....

.....

.....

Demand Draft Details: .....

.....

Accomodation Required: Yes/No

Address for Correspondence: .....

.....

.....

.....

Email ID: .....

Mobile and Phone No.: .....

-Declaration-

The information provided above is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the course and shall attend the course for the entire duration. I also undertake to inform the Coordinators in case I am unable to attend the course, if selected.

Signature of Applicant

-Sponsorship Certificate-

Dr./ Mr./ Mrs./ Ms ..... is an employee of this College/Institute and is hereby sponsored to participate in the **Two week AICTE sponsored - Faculty Development Programme on Catalysis and Reaction Engineering.**

Signature of Head of Institution
(With Seal)

Organizing Secretary

Dr. V. N. Ganvir (9823453261)
Prof. A. C. Shende (9403604023)
Prof. A. J. Agrawal (9403148956)
Dr. S. N. Joglekar
Dr. V. G. Lade
Dr. J. B. Bhasarkar

Organizing Committee

Dr. M. G. Bhotmange
Dr. B. A. Bhanvase
Dr. J. B. Modak
Dr. S. P. Dautpure
Dr. M. L. Meshram
Dr. S. M. Wagh
Dr. S. P. Shirsat
Prof. R. P. Birmod
Dr. S. D Warbhe
Dr. V. B. Pawade
Prof. D. K. Kawadkar
Dr. R. P. Ugwekar
Dr. S. S. Sen
Dr. P. S. Agrawal
Dr. N. M. Patil
Dr. S. K. Deshmukh
Dr. S. V. Karadbhajne
Dr. S. B. Gawande
Prof. P. J. Giri
Dr. N. Thejokalyani
Prof. V. M. Gawande
Prof P. G. Shende
Prof. S. L. Pandharipande
Dr. V. Y. Karadbhajne
Dr. S. A. Pande
Dr. P. N. Belkhode
Dr. S. U. Meshram
Dr. Asar Ahmed
Prof. C. M. Chawhan
Prof. M. M. Yenkie
Dr. G. P. Lakhawat

CORRESPONDENCE

Dr. Girish M. Deshmukh
Co-ordinator
FDP on Catalysis and Reaction Engineering
Department of Petrochemical Technology
Laxminarayan Institute of Technology
RTM Nagpur University, Nagpur 440033 MS
Email: gmdeshmukh7@rediffmail.com
Mobile: 94 22 82 37 31
litnagpur.in

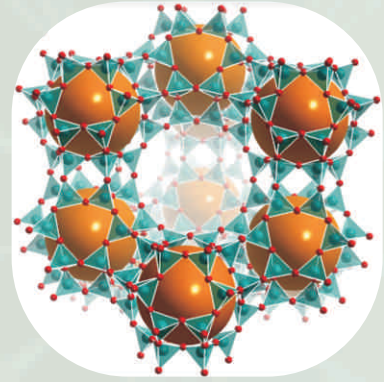
INSTITUTION'S INNOVATION COUNCIL
(Ministry of HRD Initiative)

Two week Online
- AICTE sponsored -
Faculty Development Programme on

Catalysis and Reaction Engineering

(18th January - 30th January 2021)

-Sponsored by-
All India Council for Technical Education
(AICTE), New Delhi



Director
Dr. Raju B. Mankar
Laxminarayan Institute of Technology, Nagpur

Co-ordinator
Dr. Girish M. Deshmukh
Head, Department of Petrochemical Technology,
Laxminarayan Institute of Technology, Nagpur

-Organized by-
Department of Petrochemical Technology
Laxminarayan Institute of Technology,
Rashtrasant Tukadoji Maharaj Nagpur University,
Nagpur-440033 Maharashtra

www.litnagpur.in

Introduction

Worldwide, more than 85% of all chemical products are manufactured with the help of reactions using catalysts. Virtually all transition metals of the periodic table are active as catalysts or catalyst promoters. Catalysts are divided into homogeneous catalysts, which are soluble in the reaction medium, and heterogeneous catalysts, which remain in the solid state.

A heterogeneous metal catalyst typically consists of the active metal component, promoters, and a support material. In some cases, the metallic state itself forms the active ingredient.

However, this situation is largely restricted to precious metal catalysts and to some base metals used under reducing conditions. In most cases and especially in homogeneous catalysis, it is a metal compound or a complex that forms the active catalyst which form the backbone of industrial chemistry. Heterogeneous catalysis involves systems in which catalyst and reactants form separate physical phases. Typical heterogeneous catalysts are inorganic solids such as metals, oxides, sulfides, and metal salts, but they may also be organic materials such as organic hydroperoxides, ion exchangers and enzymes.

There are three areas of catalysis science in which major advances can be studied.

1. With the rise of nanomaterial science, the synthetic methodologies to fabricate catalysts underwent a revolution, since all catalysts are nanoparticles in the size range of 1-10 nm. Colloid chemistry, organometallic complexes and clever methods for producing enzymes are the ways by which catalysts are produced in large quantities.

2. Atomic and molecular level characterization has been extended by using many new photon based techniques to monitor dynamic changes to well-structured model systems under reaction conditions. Parameters measured include structure, composition, oxidation state, and mobility during bond formation and bond scission with spatial and time resolutions.

3. Catalytic reactor technologies, including miniaturized reactors, that are used to investigate transient processes occur ring in the 10-3 to 10 s range permit us to obtain kinetic information about the transition states that accompany chemical changes and thus to extend our reach beyond the steady state. Those studies are carried out using a combination of advanced new instruments in combination with novel theoretical approaches. Increasingly, complex catalyst architectures carry out seamless multi step catalytic processes in novel catalytic environments to bridge the gap between homogeneous and heterogeneous catalysis The aim of modern catalytic studies is to obtain desired products and reactants with 100 % selectivity in order to optimize product yield and eliminate wasteful by-products. Clearer and more detailed understanding of catalytic science is required to achieve the goals of producing clean energy, clean air, and clean water, and discovering new drugs to increase life expectancy. If we understand heterogeneous, homogeneous, and enzyme catalysis on the molecular level, new discoveries at the boundaries of these three fields will provide the knowledge for the construction of hybrid catalysis and thus further expansion of molecular catalysis science. Interdisciplinary knowledge of solid-state physics, chemistry, biology, and medicine, coupled with frontier engineering are needed to discover new catalysis science and develop new catalyst-based technologies. Increasingly, catalysis and its applications will become the frontier area of study in many fields that ultimately control and improve our quality of life.

Course Contents

- *Heterogeneous Catalyst Preparation and Characterization*
- *Introduction to Attainable Region*
- *Attainable Region in Chemical Industries*
- *Chemical Reactor Design- Using AR Strategy*
- *Kinetic Modelling*
- *Kinetics and Thermodynamics Analysis*

Eligibility and Selection Criteria

Faculty members from AICTE/UGC approved Degree/ Diploma Engineering colleges / institutes and from Post Graduate Department of Chemical Sciences are eligible to participate.

The FDP is likely to accommodate around 60 participants. It is mandatory to submit the duly completed applications by registered/speed post as early as possible. The selected participants will be informed by email well in advance.

About the Institute

Laxminarayan Institute of Technology, (established in 1942) is a conducted and constituted institute of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur. It is a premier institute in the field of chemical engineering and technology in the country. The sprawling 78 acre campus acts as a sanctum of learning. The institute attracts students with excellent academic credentials from all over the country and moulds them into efficient and practical engineers and technocrats that over the last seventy five years have made the institute proud. The institute has a highly qualified faculty, which is committed to imparting the best of knowledge and they are actively engaged in training the students, so that they meet modern academic and industrial standards.

About the Faculty

The speakers will be from IITs, NITs,NCL, NEERI, JNARDDC, Industries, LIT Nagpur and RTM Nagpur University.

Important Dates

Submission of Registration Form:
On or before 15th February, 2021

- The duly filled registration form to be submitted on following email: gmdeshmukh7@rediffmail.com
- The selected candidates are informed on respective email id mentioned on registration form.
- Seats will be filled based on first cum first serve.
- The programme scheduled will be informed to selected candidates on their email id.
- The Online lectures are scheduled from 10 am to 12 noon and 2 pm to 4 pm everyday except sunday.