

# GLOBAL INITIATIVE FOR ACADEMIC NETWORKS



National Coordinating Institute  
**INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR**

[www.gian.iitkgp.ac.in](http://www.gian.iitkgp.ac.in)

## PRINCIPLES AND APPLICATIONS OF FLUIDIZATION

### Overview

Fluidization is a modern process used in variety in industrial operations because of intensive heat and mass transfer. Fluidization is a process in which the solid material is kept in suspension by the upward flowing fluid (gas or liquid). At low fluid velocities the bed remains static. With increasing velocity the bed expands and the particles become suspended in the fluid. Further increase in fluid velocity causes the more vigorous fluidization until the bed material leaves the vessel and moves up with fluid flow. At fluidization solid particles behave as a fluid. The first commercial process implemented in the 1940s was the fluid catalytic cracking of heavy petroleum fractions. Other industrial applications of fluidization include: Minerals processing and metallurgy (calcination and roasting of minerals), combustion (e.g. of coal for power generation) and gasification (of coal and biomass), municipal and hazardous waste incineration, catalytic cracking, flue-gas desulphurization, chemical reactors (e.g. production of maleic and phthalic anhydride), syngas conversion using Fisher-Tropsch reaction, drying, etc. . On successful completion of this module, the participants will have demonstrated their ability

- To understand fluidized bed fundamentals, i.e. basic parameters of fluidization, classification of materials suitable for fluidization, fluidized bed regimes and their transitions, and to perform design calculations.
- To apply fundamental engineering and science knowledge together with process design skills in case studies for chemical processes in a fluidized bed.
- To apply fundamental engineering and science knowledge together with process design skills in case studies for physical processes in a fluidized bed.
- To apply fundamental engineering and science knowledge together with process design skills in case studies for combustion and gasification in a fluidized bed.
- To apply fundamental engineering and science knowledge together with process design skills in case studies for flue gas desulphurization in a fluidized bed.

#### Modules

**A : Principals and Applications of Fluidization** : December 11- 16, 2017  
Number of participants for the course will be limited to fifty

## Who Should Attend

- Executives, engineers involved in chemical engineering design and manufacturing, researchers from academia and manufacturing, service and government organizations including R&D laboratories.
- Students at all levels (B. Tech/M. Sc/M. Tech/PhD) or Faculty Members/Scientists from reputed academic institutions and technical institutions.

## Fees

The participation fees for taking the course is as follows:

<b>Participants from abroad</b>	:	<b>US \$ 500</b>
<b>Industry/ Research Organizations</b>	:	<b>₹ 25000/-</b>
<b>Academic Institutions</b>	:	<b>₹ 10000/-</b>

The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

## The Faculty



**Prof. Milan Carsky** is a Professor Emeritus, Chemical Engineering, School of Engineering, Howard College at the University of KwaZulu-Natal in Durban, South Africa. Prof. Carsky has more than 30 years teaching and research experience and expert in Fluidization Technology and Industrial Safety. He has been several times as head of department of Chemical Engineering at his University, member of the University Senate chairman of the departmental HAZOP committee, and the university representative at the accreditation committee. He is an Editor-in- Chief of the South African Journal of Chemical Engineering and a member of the organizing committee of the conference IFSA. He is a member of the South African Institution of Chemical Engineers and a Czech Society of Chemical Engineers.



**Prof. B. C. Meikap** is a Professor of Chemical Engineering, Indian Institute of Technology, Kharagpur. He has 25 years teaching and research experience in the area of industrial pollution control, fluidization, hazardous waste treatment. He is Member of many professional societies like AIChE, IChemE, RSC, IChE, SAChE & IE(I). He has handled many industrial projects and published over 100 journal papers in international journals.

## Course Co-ordinator

Prof. B. C. Meikap

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## Registration Process

Registration for GIAN courses is not automatic because of the constraints on maximum number of participants allowed to register for a course. In order to register for one or multiple non-overlapping courses, you have to apply online using the following steps:

1. **Create login and password at [www.gian.iitkgp.ac.in/GREGN/index](http://www.gian.iitkgp.ac.in/GREGN/index)**
2. **Login and complete the registration form.**
3. **Select courses**
4. **Confirm your application and payment information.**
5. **Pay ₹ 500 (non-refundable) through online payment gateway.**

The course coordinators of the selected courses will go through your application and confirm your selection as a participant one month before the starting date of the courses. Once you are selected you will be informed and requested to pay the full fees through online payment gateway service.

