



**Indian Institute of Technology (ISM)
Dhanbad**

Three Day Workshop



Concepts of Interfacial Phenomena in Microscale Flows: Theory and Application

10-12 Dec 2024

Organized by

**Department of
Chemical
Engineering
IIT(ISM)
Dhanbad-826004**

- **Prof. Soubhik Kumar Bhaumik (Convener)**
Assoc. Prof: soubhikge@iitism.ac.in
- **Prof. Aritra Santra (Co-convener)**
Asst Prof: aritra@iitism.ac.in
- **Prof. Bidhan Chandra (Co-convener)**
Asst Prof bidhan@iitism.ac.in

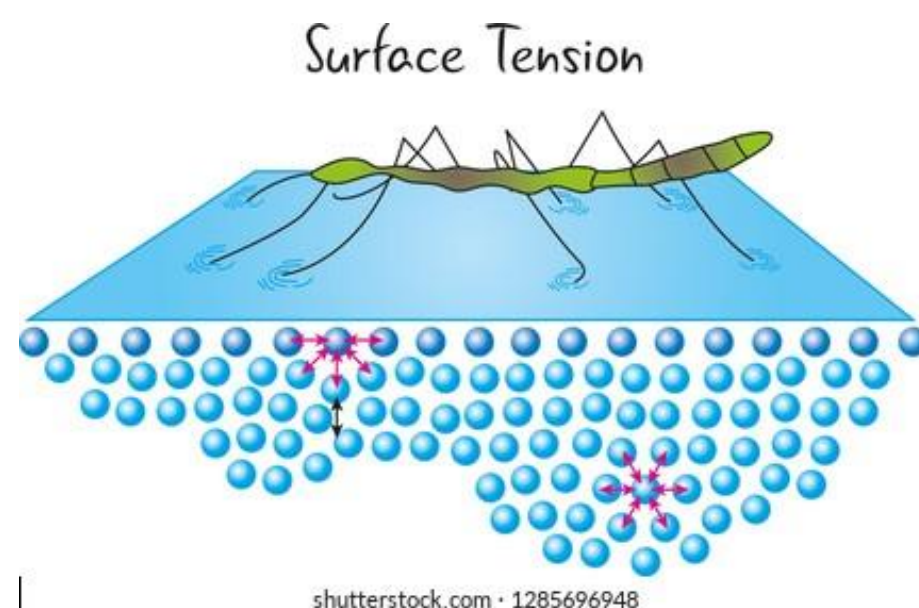
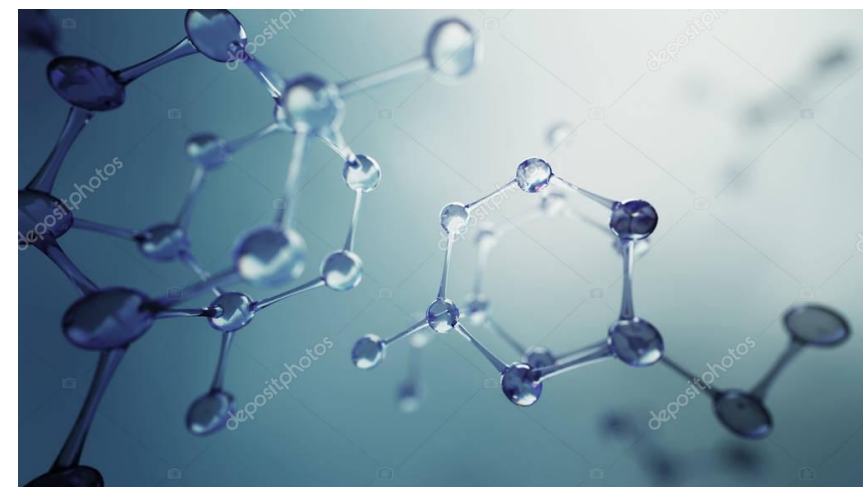
Registration Link:
<https://forms.gle/DeVKowobKx5pwhav6>



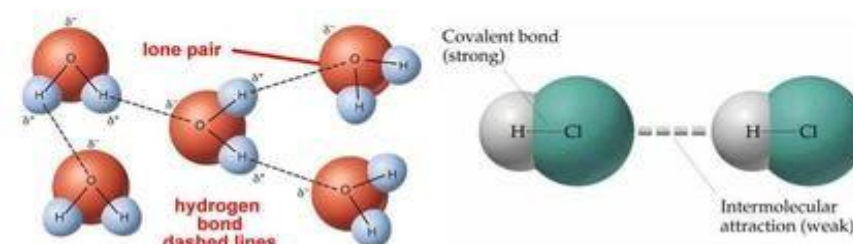


Course Overview

While occurring abundantly in nature, microscale flows are extensively encountered in process operations executed on miniaturized platforms such as microreactors, mixers, and lab on chip. The emerging domain presents a comprehensive scope for exploration of underlying physical concepts contrasting with that in macroscale due to predominance of surface over gravitational forces. With the increasing sophistications in microfabrication, micro-devices have been evolving to incorporate innovative flow geometries. and apply additional external fields to actuate flows and induce micro-mixing. This renders it highly interdisciplinary in nature amalgamating various facets of physics, biology and surface science. In the above perspective, this workshop intends to provide a platform for researchers to delineate microscale flow applying the principles of interfacial phenomena. and consolidate concepts of interfacial science in microscale flows



Intermolecular forces





Objective

This workshop aims at providing a forum of researchers, faculty, students and industrial delegates for the consolidation of concepts of interfacial phenomena applicable in microscale flows encountered in industrial applications



Outcome

- Understanding of fundamentals of interfacial phenomena, surface chemistry underlying the microscale flows that occur ubiquitously in industrial applications
- Exchange of ideas and bridging the gaps of existing subdomains and identification of newer domains, thereby opening up greater avenues for interdisciplinary research

- Fostering cohesiveness among researchers of the field for potential collaborations and further scientific interactions/exchanges
- Attract people from multiple fields to contribute and complement in the advancement of the field of microfluidics
- Integration of different domains to appreciate the versatility of the field of microscale flows.



Themes

I. Wettability and Spreading

- Intermolecular interactions
- Interface Shapes, Contact angle, Wettability Applications:

II. Capillary Flows

- Capillary rise: Flow in porous media
- Thermocapillarity, Capillary flow in Micro-Heat Pipe, Wicking action
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III. Interface Instability

- Instability
- Rayleigh Instability: Jet breakup, Dewetting
- Instability

IV. Electrokinetic Flow

- Charged Interfaces, Electrical Double Layer Digital Microfluidics : Applications Meniscus Dynamics under Field

V. Micromixing Effects in Complex Geometries

- MicroMixing in Helical systems : Radioactive tracer
- MicroFlow in Multihelical systems: Flow Physics and Applications

VI. Flow over Patterned Surfaces

- Superhydrophobic flows
- Functional Coating

VII. Rheology in Microscale Flow

- Microemulsions
- Nano-synthesis
- Rheological Polymers



List of speakers



**Prof. Suman
Chakraborty**
Professor

Mechanical Engg
Indian Institute of Technology ,
Kharagpur



Prof. Sanjeev Gupta
Professor

Chemical Engg
Indian Institute of Science,
Bangalore



Prof. Rochis Thaokar
Professor

Chemical Engg
Indian Institute of Technology ,
Bombay



Prof. Prosenjit Sen
Associate Professor

Centre for Nanoscience & Engg
Indian Institute of Science,
Bangalore



Prof. V Shankar
Professor

Chemical Engg
Indian Institute of Technology
Kanpur



**Prof. Rabibrata
Mukherjee**
Professor

Chemical Engg
Indian Institute of Technology
, Kharagpur



**Prof. Dipankar
Bandhopadhyay**
Professor

Chemical Engg
Indian Institute of Technology,
Guwahati



**Prof. Chandi
Sasmal**
Asst Professor

Chemical Engg
Indian Institute of Technology,
Ropar



List of speakers



Prof. Sunando DasGupta
Professor

Chemical Engg
Indian Institute of Technology
Kharagpur



Prof. Jayanta Chakraborty
Professor

Chemical Engg
Indian Institute of Technology,
Kharagapur



Prof. Soubhik Bhaumik
Assoc. Professor

Chemical Engg
Indian Institute of Technology
(ISM) Dhanbad



Prof. Aditya Kumar
Assoc, Professor & HOD

Chemical Engg
Indian Institute of Technology
(ISM) Dhanbad



Prof. Pawan Singh
Assoc. Professor

Meechanical Engg
Indian Institute of Technology
(ISM) Dhanbad



Prof. Aritra Santra
Asst. Professor

Chemical Engg
Indian Institute of Technology
(ISM) Dhanbad



Prof. Bidhan Chandra
Asst, Professor

Chemical Engg
Indian Institute of Technology
(ISM) Dhanbad



Prof. Shantanu Roy
Professor & Deputy Director

Chemical Engg
Indian Institute of Technology
Delhi-Abu Dhabi



Registration Details & Venue

Participation in Hybrid Mode

Participants	Online (Inclusive of 18% GST)	Offline (Inclusive of 18% GST)
International	\$ 100	\$ 120
Industry Professionals/ Executives	7000	9000
Scientist/Faculty	4000	6000
Research Scholars/PG students	2500	3000
UG students (Limited to 25 students: Offline)	1000	1500

Accommodation

Accommodation for offline participant can be arranged on payment basis subject to availability on first cum basis

Participants	Type of accomodation	Cost (inclusive of GST) /day Rs
Faculty/Scientists	Guest House	2240
Industry Professionals/ Executives	Guest House	2240
Research Scholars	Hostel on twin share basis	

Venue

**Golden Jubilee Lecture Theatre (GLJT)
IIT(ISM) Dhanbad**



Sponsorship Chart

Type of Sponsorship/Facilities	Platinum	Diamond	Gold	Silver	Bronze
Rate in INR (Lakhs)	1.0	0.75	0.60	0.5	0.3
Complementary Registration(s)	2	1	1	0	0
Logo on Promotional Items	√	√	√	√	
Acknowledgement in Workshop Program	√	√	√	√	√
Recognition on the Workshop Website	√	√	√	√	√
Advertisement in the Conference Program	√	√			
Social Media Mentions	√				

Additional Fees for Product Promotion

Talk for Product Promotion (30 Minutes)	25000
Stall for Product Promotion	20000

+ GST @ 18 %



About Department

Chemical engineering is the profession in which a knowledge of mathematics, chemistry, and other natural sciences gained by study, experience, and practise is applied with judgment to develop economic ways of using materials and energy for the benefit of mankind" (AIChE). Welcome to the Department of Chemical Engineering at the Indian Institute of Technology (ISM), Dhanbad. We started our journey in the year 2010 and currently offers academic and research programmes leading to B.Tech, M.Tech and PhD degrees. The sanctioned students' strengths of B. Tech. and M. Tech. are 55 and 27 per year. Many of our graduated students are placed in reputed organizations like IOCL, BPCL, ONGC, GAIL, Reliance Industries, L&T, Vedanta, AdityaBirla, and many other national and multinational companies and also doing higher studies in reputed Institutes in India and abroad.

Places of Attraction

Dhanbad, the coal capital of India, lies at the Eastern Indian Shield. The Dhanbad district is ornamented by several tourist spots namely; **Parasnath Hill, Parasnath Temple, Topchanchi**, famous Jharia coalfields, to mention a few. Other important places are **Bodh Gaya, Maithon Dam**, and this town is only at 250 km distance by rail route from Kolkata.

