

# Microfluidics and Nanofluidics for Energy, Water and Health Care

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## Overview

A large number of engineering problems related to practical applications like oil and gas recovery, water quality monitoring, detection of different biomolecules of interest for biosensors (such as in medical diagnostics), targeted drug delivery/ blood extraction, miniaturized energy conversion, inkjet printing, and even underground bioconversion of coal involve the understanding of fluid transport in micro and nano confinements. The proposed course will cover the fundamental aspects of fluid transport in micro/nano-scales and provide key examples how such fundamental knowledge in microfluidics and nanofluidics is related to various engineering systems relevant to energy, water, and health care.

Internationally acclaimed academics, researchers and practitioners with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of Microfluidics and Nanofluidics will deliver lectures and discuss cases in the course. The course will be planned and offered as per the norms set by IIT Kharagpur for GIAN subject.

<b>Modules</b>	<b>A: Fundamentals (Part 1) : May 16 - May 18</b> <b>B: Applications (Part 1) : May 19 - May 20</b> <b>C: Fundamentals (Part 2) : May 23 - May 25</b> <b>D: Applications (Part 2) : May 26 - May 27</b>
<b>Who can attend</b>	<ul style="list-style-type: none"><li>Executives, engineers and researchers from manufacturing, service and government organizations including R&amp;D laboratories.</li><li>Students at all levels (BTech/MSc/MTech/PhD) or Faculty Members from reputed academic institutions and technical institutions.</li></ul>
<b>Fees</b>	The participation fees for taking the course is as follows: <b>Participants from abroad : US \$500</b> <b>Industry/ Research Organizations:</b> Any of two modules : Rs. 20000/- All modules : Rs. 30000/- <b>Academic Institutions:</b> Teachers : All modules : Rs. 10000/- Students : All modules : Rs. 2000/- The above fees include all instructional materials, computer use for tutorials, 24 hr free internet facility. The participants will be provided with single bedded accommodation on payment basis.

## The Faculty



**Prof. Sushanta Mitra** is Associate Vice-President Research at the York University and Kaneff Professor in Micro & Nanotechnology for Social Innovation in the Lassonde School of Engineering. His research interests are in the fundamental understanding of fluid transport in micro and nano-scale confinements with applications in energy, environmental monitoring, and bio-systems. He was the founding member of the Canada-India Research Centre of Excellence, IC-IMPACTS where he served as the Associate Scientific Director and the Theme Lead for Integrated Water Management. He is the Board Member and the Senior Vice-President of the Canadian Society for Mechanical Engineering. He is a member of several national and international committees including the Committee of International Scientific Affairs, American Physical Society. For his contributions in engineering and sciences, he has been elected as Fellow of the Canadian Academy of Engineering (CAE), the American Society of Mechanical Engineers (ASME), the Canadian Society for Mechanical Engineering (CSME), the Engineering Institute of Canada (EIC), and the Royal Society of Chemistry (RSC). He is also a Fellow of the National Institute for Nanotechnology (NINT).



**Prof. Suman Chakraborty** is currently a Professor in the Mechanical Engineering Department of the Indian Institute of Technology (IIT) Kharagpur, India. He has been awarded the Santi Swarup Bhatnagar Prize in the year 2013. He has been elected as a Fellow of ASME, Fellow of the Indian National Academy of Science (FNASc), Fellow of the Indian National Academy of Engineering (FNAE), recipient of the Indo-US Research Fellowship, Scopus Young Scientist Award for high citation of his research in scientific/technical Journals, and Young Scientist/Young Engineer Awards from various National Academies of Science and Engineering. He has also been an Alexander von Humboldt Fellow and a Visiting Professor at the Stanford University. He has 300+ International Journal publications.

## Course Co-ordinator

**Prof. Suman Chakraborty**

Phone: +91-3222-282990 (O),  
+91-3222-282991 (R)

E-mail: [suman@mech.iitkgp.ernet.in](mailto:suman@mech.iitkgp.ernet.in)

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