

AICTE Sponsored Short Term Course

on

Nanofluidics: Theory, Computation and Applications

28th January – 2nd February, 2019

Coordinator

Dr. Sarith P Sathian



Organized by

Department of Applied Mechanics
Indian Institute of Technology Madras
Chennai - 600 036
www.iitm.ac.in

INTRODUCTION

Life on earth is not possible without fluids. From flying planes to floating ships to the blood flow in organisms, fluid motion is inevitable. The branch of science that studies the various aspects of fluids and their dynamics is called fluid mechanics. Traditional fluid mechanics assumes the fluid to be continuous within the domain of interest. At nanoscale, where the time and length are of the order of 1×10^{-9} , this continuum assumption fails. This is because, with decrease in length scale, the particle nature of the fluid becomes increasingly significant. Theoretical nanofluidics investigate nanoscale fluid flow mechanisms using mathematical models that describe intermolecular interactions. Further, statistical mechanics is used to estimate the fluid properties from the particle motion. Knowledge on nano confined fluids is crucial for fields such as surface technology, nanomembrane design, electronic chip heat conduction, nano-sensor design and many more. Lab-on-a-chip, Micro Electro-Mechanical Systems (MEMS), Super-Capacitors, Bio-Membranes, Nanomembranes, DNA sensors etc. are few technologies that benefit from nanofluidics research.

COURSE OBJECTIVES

1. To disseminate the fundamental concepts of nanofluidics.
2. To introduce various theoretical and computational methods for research in this area.
3. To create awareness about the applications and opportunities in nanofluidics.

COURSE DURATION & VENUE

The course is of one week (six days) duration from **28th January – 2nd February, 2019**. Classes will be held at the IIT Madras, Chennai.

RESOURCE FACULTY

The resource faculty includes experts from IIT Madras.

ELIGIBILITY

The course is open to faculty with background in Applied Mechanics, Mechanical Engineering, Chemical Engineering, Material Sciences and Engineering, Physics, Chemistry and Nanotechnology/Nanoscience.

ABOUT THE DEPARTMENT

The Department of Applied Mechanics has been in existence since 1959 and has grown into a full-fledged inter disciplinary graduate research department over the years. The Department focuses on academic activities in three broad areas viz., Biomedical Engineering, Fluid Mechanics and Solid Mechanics. The Department has played a major role in contributing to the academic community and society. The faculty have won international recognition for their industrial research and sponsored projects. Some of the facilities available in various laboratories of this Department are unique in the country. Coupled with its multi-disciplinary background, the Department boasts of a highly diverse and experienced faculty. It has an excellent student-teacher ratio, providing opportunities for academically intense learning.

Equipped with state of the art facilities in a serene campus, the department offers an enriching academic environment.

Website: <https://apm.iitm.ac.in/>

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APPLICATION FORM

Name:
Designation:
Department:
Organization:
Qualification:
Experience:
Mailing Address:

Phone:
Mobile:
Fax:
E-mail:
(Required)
Date:

Signature of the Applicant

SPONSORSHIP CERTIFICATE

Certified that Dr./Mr./Mrs.
is a faculty of our institute and is hereby nomi-
nated for attending the QIP short term course on
“**Nanofluidics: Theory, Computation and Appli-
cations**” to be conducted at IIT Madras from **28th
January – 2nd February, 2019**.

Signature of the Sponsoring Authority
(With date and seal)

Duly filled application forms should be sent to:

Dr. Sarith P Sathian
Associate Professor
Department of Applied Mechanics
Indian Institute of Technology Madras
Chennai – 600036
Tel. : +91-44-22574062
E-mail : nanofluidicsfdp2019@gmail.com
<https://sites.google.com/site/sarithshomepage>

IMPORTANT DATES

Last date for applications: 9th November 2018
Intimation of selection: 16th November 2018
(By email)
Confirmation of participation: 23rd November 2018
(By email)

REGISTRATION FEE

There is **no course fee** for the participants from
AICTE approved engineering colleges.

TRAVEL

The train fare (ONLY two way 3-Tier AC train fare by
the shortest route from your institute to Chennai and
back) will be provided to the selected participants
as per AICTE guidelines.

BOARD AND LODGING

Boarding and lodging facilities will be provided for
the selected candidates in Taramani Guest House
at IIT Madras.