Special Topics in Micro scale Flow and Heat Transport

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Overview

Understanding the heat transport processes in small dimensions and time scales is imperative when exploring the unlimited potential that nanotechnology has to offer in areas such as micro/nano electronics, MEMS and NEMS etc. Microscale heat transport phenomena also determine the overall efficiency of many large-scale processes such as pool and flow boiling, spray cooling etc. In recent years, there has been a great deal of interest in this area this is reflected from a surge in the number of research publications and a handful of books. Micro scale fluid mechanics and heat transfer is an interdisciplinary area of research encompassing aspects of science, engineering and technology and requires a synergy of fundamental ideas with the ability to characterize them for building novel applications. Heat and fluid flow at micro scales are governed by the predominance of surface forces such as surface tension, wettability, surface properties and morphology and molecular level interactions leading to several interesting phenomenon. The processes at micro scale are found to significantly influence momentum, heat and mass transfer at macro. The primary objectives of the course are as follows:

i) This course will address some special topics related to Micro scale flow and heat transport in various fields of current interest such as thermal dissipation from electronic devices and phase change thermal systems.

ii) Provide exposure to Post graduate research scholars and practicing professionals the aspects of micro scale flow and heat transport phenomena impacting microelectronic cooling and micro channel design.

Modules	**A: Special Topics in Micro scale Flow and Heat Transport: August 3-7, 2020** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ you are a mechanical engineer or research scientist interested in micro scale flow and heat transfer and working on cooling technologies. ▪ you are a student or faculty from academic institution interested in micro scale flow and heat transport phenomena impacting microelectronic cooling and micro channel design.
Fees	The participation fees for taking the course is as follows: **Participants from abroad: US $** **Student participants: 1000** **Faculty participants: 3000** **Industry: 5000** **Research Organizations: 3000** The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. **Modes of payment:** Online transfer: Account Name: CCE IIT Madras Acc. No: **36401111110** Branch: SBI, IIT Madras Branch, Chennai IFSC Code: SBIN0001055 Swift Code: SBININBB453 Note: The participants should be mentioned the purpose of GIAN while the transaction and must send the transaction details to gian@iitm.ac.in **OR** Demand draft in favour of "**CCE IIT Madras**" payable at **Chennai**. The demand draft is to be sent to the course coordinator at the address given below.

	Address of the Course Coordinator: Dr. Arvind Pattamatta Associate Professor Department of Mechanical Engineering IIT Madras Chennai 600036 Email: arvindp@iitm.ac.in Phone: 44-22574654
Accommodation	The participants may be provided with hostel accommodation, depending on availability, on payment basis. Request for hostel accommodation may be submitted through the link: http://hosteldine.iitm.ac.in/iitmhostel/
Registration Procedure	Please follow the following steps for the registration: 1. Go to GIAN website (http://www.gian.iitkgp.ac.in/GREGN/index) First time users need to register and pay a one-time fee of INR 500 / 2. Enroll for the course: Special Topics in Micro scale Flow and Heat Transport. Once you enroll for the course, an Enrollment/Application number will be generated, and the course coordinators will be notified.

The Faculty

Prof. Peter Stephan is in the faculty of Techanical University of Darmstadt, Germany. His research interests include Boiling and evaporation, Spray and film cooling, Microscale and interfacial heat transfer, High heat flux heat exchangers, Heat and mass transfer in micro-gravity and Thermal system analysis.

Dr. Arvind Pattamatta is an Associate Professor at Indian Institute of Technology, Madras. His research interests include Computational Fluid Dynamics and Heat Transfer, Micro and Nanoscale Heat transfer, and Two Phase flows.

Course Co-ordinator

Prof. Arvind Pattamatta
Phone: 044-22574654
E-mail: arvindp@iitm.ac.in

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