

RECENT ADVANCES IN PCM BASED COOLING TECHNOLOGY

Overview

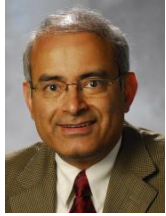
The proposed course sponsored by MHRD under GIAN Scheme is aimed at educating researchers, scientists, faculties and students working in the field of Mechanical/Chemical Engineering with special emphasis on Thermal Science and Energy Storage.

One of the key issues lies in understanding the fundamental transport phenomena involving mass, momentum and energy transport in PCM phase change process. The major application will focus on electronic cooling, solar PV cooling and space science. Hands-on experimentation along with computational fluid dynamics (CFD) simulation will be another key focus of the proposed course. This proposed course has significant relevance to a wide community involving engineers, industry professionals, academicians and researchers working in the area of energy storage and cooling technology.

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants. The course module can be broadly classified into four groups as given in the table.

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| Modules | A: Heat, Mass and Momentum Transfer involving PCM based cooling system B: PCM as a cooling solution for electronics components and space applications C: CFD Modeling of PCM based thermal energy system D: Hands-on training on PCM based heat sink experiment Number of participants for the course will be limited to fifty. | Dec 11-15, 2017 |
| Who Should Attend... | <ul style="list-style-type: none"> • Senior undergraduate students, graduate students pursuing M. Tech/MS and Ph. D. Programme in the Mechanical/Chemical/Materials engineering Departments would benefit most. • Proposed course has been designed to update knowledge and improve understandings of the faculty members in new IITs, IISERs, NISER and other academic institutions in the country about the best practices and recent advances in the field; • Practicing engineers and scientists working in electronic and thermal industries, as well as, in government research organizations will also be benefited. | |
| Fees | The participation fees for taking the course is as follows: Participants from abroad : US \$250 Industry/ Research Organizations: ₹ 8,000 Academic Institutions: Faculty - ₹ 4,000 and Students - ₹ 1,000 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



Professor Yogendra K. Joshi is a Professor in George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, USA. He is also JOHN M. MCKENNEY AND WARREN D. SHIVER DISTINGUISHED CHAIR in building Mechanical systems. Prior to joining the Georgia Tech faculty in 2001 as a Professor, Dr.

Joshi held academic positions at the University of Maryland, College Park, and the Naval Postgraduate School, Monterey, California. He also worked in the semiconductor assembly industry on process thermal model development. He is a fellow of IEEE since 2012. His major research area is thermofluid issues in emerging technologies and microthermal energy system. Professor Joshi is the author or co-author of approximately 350 archival journal articles and conference publications.



Professor Pradip Dutta is a Professor and Chair of Mechanical Engineering at Indian Institute of Science, Bangalore. He is a fellow of ASME and fellow of all four national academies of India. He is the Associate Editors of IEEE Transactions on Components and Packaging Technology, and

ASME Journal of Electronic Packaging. Most recently he received the J. C. Bose National Fellowship for his outstanding contribution in energy research. His major research areas include Heat transfer issues in complex electronic packaging, materials processing, solar energy storage, etc.



Dr. Mihir K. Das is currently working as Assistant Professor in the School of Mechanical Sciences, IIT Bhubaneswar. His research interest include two phase heat transfer, energy storage technology and thermal management of

electronics. He has published several research papers in reputed international journals. In addition, he is heading various projects funded by DST, CPRI, BARC related to two phase heat transfer and PCM based electronics cooling.



Dr. Prasenjit Rath is Assistant Professor of Mechanical Engineering in the School of Mechanical Sciences, IIT Bhubaneswar. His key research areas are CFD as applied to materials processing, phase change heat transfer and ultrafast transport.



Dr. Anirban Bhattacharya is Assistant Professor of Mechanical Engineering in the School of Mechanical Sciences, IIT Bhubaneswar. His major research areas are microstructural evolution in solidification of alloy system, and

materials processing.

Course Co-ordinators

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