



# INDIAN INSTITUTE OF TECHNOLOGY INDORE

Department of Physics, Organizes

7 Days Active Learning Training and Karyashala on

## Advanced Technology for Materials Physics and Engineering

January 20 - January 26, 2022

Sponsored by Science and Engineering Research Board  
(KARYASHALA: ACCELERATE VIGYAN SCHEME)



KARYASHALA

### ABOUT IIT INDORE

Indian Institute of Technology Indore, located in Madhya Pradesh, known as IIT Indore, is an institute of national importance established by the Government of India in 2009. The Centre for Advanced Electronics at IIT Indore has been initiated in 2020 with a vision of establishing a center of excellence that will focus on research in multidisciplinary areas of Advanced Electronics, Engineering, Physics, Chemistry and Materials Science. The discipline offers the PhD degrees. Recently, IIT Indore debuted with a rank of 351-400 in the Times Higher Education World University Rankings, 2019, 2<sup>nd</sup> among Indian institutes.

### DETAILS COURSE SYLLABUS

Introduction to Semiconductors, Physics of Semiconductors, Electronics; Materials Physics and Materials Science, Soft materials, Energy Materials, Li-ion Battery Technology, H<sub>2</sub>-storage Technology, Corrosion Engineering, Computer Simulations at Different Time Scales, Multiscale Aspects of Materials, Creating New Materials, Thermodynamics of Materials Engineering, Principles of Engineering Practice, Introduction to Porous Semiconductor materials, Fundamentals of Materials Science and Engineering, Solar Cell, Transistors, Introduction to Phase-Field Method and Its Formalisms, some examples related to microstructure evolution.

### OBJECTIVES

- i) To provide the participants with a working knowledge of semiconductors, electronics, materials science, Li-ion battery, energy storage technology, microstructure-property relations and atomistic modeling of nanostructures.
- ii) To provide the participants with the mathematical tools needed for quantitative characterization of microstructure and calculation of effective properties.
- iii) To provide the participants with a working knowledge of the various tools and techniques needed to characterize and design heterogeneous materials using both micromechanics and nano-mechanics techniques.
- iv) To introduce the participants into practical problems of micromechanics and nano-mechanics, and their solutions, through case studies and live projects.

### COURSE FACULTY

- Dr. Srimanta Pakhira (Assistant Professor, IITI)
- Dr. Sudeshna Chattopadhyay (Associate Professor, IITI)
- Dr. Shailesh I. Kundalwal (Associate Professor, IITI)
- Dr. Apurba K. Das (Associate Professor, IITI)
- Prof. A. K. Das (Sr. Prof., IACS Kolkata)
- Prof. G. P. Das, (Sr. Prof., IITKGP)
- Dr. Shaibal Mukherjee (Associate Professor, IITI)
- Prof. C. S. Upadhyay (Prof., IIT Kanpur)
- Dr. Mrigendra Dubey (Asst. Prof., IIT Indore)
- Prof. B. Mondal (Asst. Prof., IIT Mandi)
- Dr. Rajesh Kumar (Associate Prof., IIT Indore)
- Dr. Mukesh Kumar (Associate Prof., IIT Indore)

### COURSE MODULE

This is an active learning-based course and comprised of lectures, tutorials, and hand-on training/demonstrations .

### CERTIFICATE

Participants who successfully complete the course will be awarded with a certificate.

### TARGET PARTICIPANTS

This course is tailor made for the students, researchers, and faculty members from any academic background.

### REGISTRATION PROCESS

Interested participants need to submit **online** form below:  
[https://docs.google.com/forms/d/12SZgnZFO\\_SJnQ8wK2YoxOuKzeUiWLGfVtHcWJAUVxWA/edit](https://docs.google.com/forms/d/12SZgnZFO_SJnQ8wK2YoxOuKzeUiWLGfVtHcWJAUVxWA/edit). Number of participants are limited to 30 on first come first basis.

### Online Registration Link:

[https://docs.google.com/forms/d/12SZgnZFO\\_SJnQ8wK2YoxOuKzeUiWLGfVtHcWJAUVxWA/edit](https://docs.google.com/forms/d/12SZgnZFO_SJnQ8wK2YoxOuKzeUiWLGfVtHcWJAUVxWA/edit)

**REGISTRATION DEADLINE: 20th January 2022.**

**COURSE COORDINATOR & ORGANIZER:**

**DR. SRIMANTA PAKHIRA**

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Web site: <https://spakhirafsu.wixsite.com/acmslab>

