

Overview

2-Dimensional materials are a class of nanomaterial defined by their property of being merely one or two atoms thick. The study of 2-D materials is one of the newest and most exciting areas of Materials Science and Engineering. 2-D materials have the potential to revolutionize many electronics applications such as solar cells, transistors, camera sensors, digital screens, and semiconductors. These atomically thin materials are derived primarily from bulk-layered materials which consist of strong in-plane covalent bonding and weak interlayer van der Waals bonding. Their large surface areas, high degrees of variability in structure, and electronic properties make them distinctly superior for energy storage systems (ESSs). This STC introduces elemental 2D nanomaterials and describes their properties and key applications such as Optoelectronics/ Spintronics and thermoelectric energy conversion.

Short Term Course (STC)

On

“Two-Dimensional Materials: Atoms to Devices”

21st – 25th October 2021



Registration Fee

External Candidates (Student) = Rs.300+54*

External Candidate (Ph.D. + Faculty) = Rs.500+90*

Internal Candidates (UG Student) =Rs 50

Internal Candidates (PG Student) = Rs.300

Internal Candidates (Ph.D.+ Faculty) = Rs.500

Industrial Candidate = Rs.1000+ 180

Note: *18% GST has to pay by the external fellows

Please Follow the Link to get register
<https://apply.iitaa.ac.in/event/register/>

About IIT-A

The Indian Institute of Information Technology Allahabad (IIIT-A) was established in 1999, as a center of excellence in Information Technology and allied areas. The institute was conferred the "Deemed University" status by Govt. of India in the year 2000. . In 2014 the IIIT Act was passed, under which IIITA and four other Institutes of Information Technology funded by the Ministry of Human Resource Development were classed as Institute of National Importance.

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Course

Objective

Resource Persons

- Introduction to 2D materials: From Atoms to Applications
- Physics of Photons and Phonons in 2D materials
- Theoretical/computational perspective of 2D materials: An ab-initio approach
- Synthesis and Characterization of layered Materials: A bottom up approach
- Role of layered materials in Spintronics devices
- 2D materials: A key solution for Green energy generation and transformation
- 2D materials for Energy storage applications
- Optoelectronics/Thermoelectricity using layered materials
- Emerging 2D materials: a key insight
- Twistronics: An emerging avenue in layered structure

The main objective of the present short term course is to introduce various aspects of emerging 2D materials. The course aim to train the interested learners to take up research and development activities in thin film materials. The STC covers important topics Physics of 2D materials, fabrication and characterization techniques, computational modeling of 2D materials using first principle investigations and numerous vibrant applications of 2D materials in different domain like thermoelectric/optoelectronic/spintronics etc. We are conducting the STC with a fusion of Lectures and hands on sessions for the maximum understanding of the participants. Our goal is to bring together bright minds to discuss topics that are idea-focused, and on a wide range of subjects, to foster learning, inspiration, and wonder and provoke conversations that matter course contents.

Dr. B. K. Agrwal (Uni. of Allahabad)
Dr. Ambesh Dixit (IIT- Jodhpur)
Dr. Pramod Kumar (IIIT- A)
Dr. Pankaj Shrivastava (IIITM Gwalior)
Dr. Ashutosh Tiwari (IAAM, Sweeden)
Dr. Yogendra (Uni.of SouthDenmark)
Dr. Sunny Sharma (IIIT- A)
Dr. S. Bhattacharya (IIIT- A)
Dr. Sanjai Singh (IIIT- A)
Dr. Sudheer Kumar (MJPRU)

Hands On Session

- Introduction to Density Functional Theory: Toolset for atomic simulation
- Calculation of Electronics and structural parameters for 2D materials
- Introduction to Quantum espresso: A powerful tool for numerical simulation of 2D materials
- Impulse technology : technological solution for materials to device simulation