



# I-MAT 24

*Conference on  
Innovations in Materials Science  
&  
Workshop on Characterization Techniques*

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*24th – 27th April, 2024*

## *Technical Schedule*

*Organised by  
Institute Instrumentation Centre  
Indian Institute of Technology Roorkee*



# I-MAT

## Conference on Innovations in Materials Science and Workshop on Characterization Techniques

### Technical program for Conference

**Day 2: 25<sup>th</sup> April 2024 (Thursday) [Venue: APJ Abdul Kalam Block (Lecture Hall Complex)]**

| Technical session 4 (Two parallel sessions) |   |  |
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|   | ROOM No. 103  | ROOM No. 104   |
|   | Chair: Ajay Thakur, IIT Patna   | Chair: MM Sinha, SLIET Longowal  |
| 9:30 am – 10:00 am                          | <u>Invited talk</u><br>"2D materials functionalized AlGa <sub>N</sub> /Ga <sub>N</sub> transistor for heavy metal ion detection"<br>by <b>Mahesh Kumar</b> , IIT Jodhpur            | <u>Invited talk</u><br>"Broadband optical response and dynamics in plasmonic nanostructures"<br>by <b>Parinda Vasa</b> , IIT Bombay                      |
| 10:00 am – 10:30 am                         | <u>Invited talk</u><br>"Graphene-based THz Devices"<br>by <b>Radhapiyari Laishram</b> , SSPL, New Delhi   | <u>Invited talk</u><br>"Development of ZnO@SiC Composites and Their Optical Properties"<br>by <b>Aloke Kanjilal</b> , SNU, New Delhi                     |
| 10:30 am – 11:00 am                         | <u>Invited talk</u><br>"Modulating Structural and Mechanical Properties of High Entropy Alloys through energetic ion irradiation"<br>by <b>Pawan Kumar Kulriya</b> , JNU, New Delhi | <u>Invited talk</u><br>"Dipolar ordering in simple tellurite oxides"<br>by <b>Venimadhav Adyam</b> , IIT Kharagpur                                       |
| 11:00 am - 11:30 am                         | Session Tea ☕   |  |
| Technical session 5 (Two parallel sessions) |   |  |
|   | ROOM No. 103  | ROOM No. 104   |
|   | Chair: Venimadhav Adyam, IIT Kharagpur  | Chair: H. K. Malik, IIT Delhi  |
| 11:30 am - 12:00 noon                       | <u>Invited talk</u><br>"Nanostructured carbon composites and their application in energy storage"<br>by <b>Pawan Kumar Jain</b> , ARCI, Hyderabad                                   | <u>Invited talk</u><br>"Structuring of materials: opening a new world of properties"<br>by <b>Neha Sardana</b> , IIT Ropar                               |
| 12:00 noon - 12:30 pm                       | <u>Invited talk</u><br>"Ferroelectric materials for energy storage"<br>by <b>Sanjeev Kumar</b> , PEC, Chandigarh  | <u>Industrial talk</u><br>"Study of Electrodeposition on Unconventional Microscale Dimensional Metal Helices"<br>by <b>Anjali Chaudhary</b> , IIT Bhilai |
| 12:30 pm - 1:00 pm                          | <u>Invited Talk</u><br>"Nonlinear Self-switching rectifiers and it's applications"<br>by <b>Arun Kumar</b> , PEC, Chandigarh  | <u>Industrial talk</u><br>"AFM-SEM Correlative Microscopy Imaging for TEM grid mounted samples"<br>by <b>Stefano Spagna</b> , Quantum design             |
| 1:00 pm - 2:30 pm                           | Lunch Break 🍽️  |  |
| 1:00 pm- 2:00 pm                            | Special Poster Session for School Kids  |  |
| Technical session 6 (Two parallel sessions) |   |  |
|   | ROOM No. 103  | ROOM No. 104   |
|   | Chair: Pradip K Maji, IIT Roorkee   | Chair: Pawan K Kulriya, JNU, New Delhi   |
| 2:30 pm - 3:00 pm                           | <u>Invited talk</u><br>"Neutron and Resonant X-ray Scattering"  | <u>Invited talk</u><br>"Oxide Thermoelectric materials"<br>by <b>Ajay Thakur</b> , IIT Patna   |

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|   | Studies of Spin Correlations in Triangular lattice antiferromagnet"<br>By <b>Anil Jain</b> , BARC  |  |
| 3:00 pm - 3:15 pm   | Invited talk<br>"Probing electron-phonon and spin-orbital-phonon coupling using neutron and optical spectroscopy"<br>by <b>Dipanshu Bansal</b> , IIT Bombay            | Oral talk<br>"Synthesis, Characterization and Pharmacological evaluation of Berberine loaded gellan-acacia gum nanocomplexes (Ber/Ge-AGNCs)"<br>by <b>Santosh Kumari</b> , Guru Jambheshwar University of Science & Technology, Hisar, Haryana |
| 3:15 pm - 3:30 pm   |  | Oral talk<br>"Activated Carbon Electrodes Derived from Biowaste of Rice With Polymer Electrolytes For Electrical Double Layer Supercapacitors"<br>by <b>Namrata Agrawal</b> , Swami Shraddhanand College, University of Delhi, New Delhi       |
| 3:30 pm - 3:45 pm   | Invited talk<br>"High-resolution sorting and implementation of single-walled carbon nanotubes"<br>by <b>Dawid Janas</b> , Silesian University of Technology, Poland    | Oral talk<br>"Regeneration of Electrode Material from Spent Li-Ion Batteries"<br>by <b>Rajen Kundu</b> , NML, Jamshedpur   |
| 3:45 pm - 4:00 pm   |  | Oral talk<br>"Optimizing the Effects of Temperature on MoS <sub>2</sub> Nanostructures for Enhancing the Electrochemical Performance"<br>By <b>Vinay Kumar</b> , CCS Haryana Agricultural University, Hisar, Haryana                           |
| 4:00 pm - 4:30 pm   | Session Tea ☕  |  |
| 4:00 pm - 5:30 pm   | <b>Poster session II for 56 to 107 posters</b>   |  |
| 5:30 pm - 6:00 pm   | <b>Prize distribution and conference closing (Room No. 103)</b>  |  |
| 5:00 pm - 7:00 pm   | <b>Registration for Workshop at APJ Abdul Kalam Block</b>  |  |
| <b><u>Technical program for Workshop</u></b>  |  |  |
| <b>Day 3: 26<sup>th</sup> April 2024 (Friday) [Venue: APJ Abdul Kalam Block (Lecture Hall Complex) for Lectures and Institute Instrumentation Centre (IIC) for lab session]</b> |  |  |
| 8:30 am – 9:30 am   | <b>Registration at APJ Abdul Kalam Block</b>   |  |
|   | <b>Technical session 1 (Two parallel sessions) at APJ Abdul Kalam Block</b>  |  |
|   | <b>ROOM No. 103</b>  | <b>ROOM No. 104</b>  |
| 9:30 am - 11:00 am  | Lecture<br>Magnetometer measurements<br>By <b>Ajay Thakur</b> , IIT Patna  | Lecture<br>"Basics of X-ray Diffraction and the application of XRD in various research areas"<br>by <b>Ravikumar Iyyamperumal</b> , Bruker AXS   |
| 11:00 am- 11:30 am  | Session Tea ☕ (Venue: APJ Abdul Kalam Block)   |  |
|   | <b>Technical session 2 (Two parallel sessions) at APJ Abdul Kalam Block</b>  |  |
|   | <b>ROOM No. 103</b>  | <b>ROOM No. 104</b>  |
| 11:30 pm - 12:15 pm   | Lecture<br>"Recent Breakthroughs in Field Emission Scanning Electron Microscope Imaging and Analytics at the Nanoscale"<br>by <b>Satya Srinivas Bokka</b> , Carl Zeiss | Lecture<br>"Basics of NMR and EPR"<br>by <b>Chandrashekar</b> , Bruker AXS   |
| 12:15 pm - 1:00 pm  | Lecture<br>"Basics of EDS plus EBSD"   |  |

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|   | by <b>Oxford Instruments</b>  |   |
| 1:00 pm - 2:30 pm   | <b>Lunch Break ☺ (Venue: APJ Abdul Kalam Block)</b>   |   |
|   | <b>Lab session 1 at Institute Instrumentation Centre (IIC)</b>                                      |   |
| 2:30 pm - 4:00 pm   | Demonstration and training of FE-SEM  | Demonstration and training of NMR and EPR   |
| 4:00 pm - 4:30 pm   | <b>Session Tea ☺ (Venue: IIC)</b>   |   |
|   | <b>Lab session 2 at Institute Instrumentation Centre (IIC)</b>                                      |   |
| 4:30 pm - 6:00 pm   | Demonstration and training of PPMS  | Demonstration and training of XRD   |
| <b>Day 4: 27<sup>th</sup> April 2024 (Saturday) [Venue: APJ Abdul Kalam Block (Lecture Hall Complex)]</b> |   |   |
|   | <b>Technical session 3 (Two parallel sessions) at APJ Abdul Kalam Block</b>                         |   |
|   | <b>ROOM No. 103</b>   | <b>ROOM No. 104</b>   |
| 9:30 am - 10:15 am  | <u>Invited Talk</u><br>"Structure based drug discovery"<br>by <b>T. P. Singh</b> , AIIMS, New Delhi | <u>Lecture</u><br>"Basics of TEM"<br>By <b>Shyam k. Sinha</b> , ThermoFisher India              |
| 10:15 am - 11:00 am   | <u>Invited Talk</u><br>"Methods of X-ray diffraction"<br>by <b>D. M. Salunke</b> , ICGEB, New Delhi | <u>Lecture</u><br>"Basics of ICPMS"<br>by <b>Radhey Shyam and Ashish</b> , Agilent Technologies |
| 11:00 am - 11:30 am   | <b>Session Tea ☺ (Venue: APJ Abdul Kalam Block)</b>   |   |
|   | <b>Lab session 3 at Institute Instrumentation Centre (IIC)</b>                                      |   |
| 11:30 pm - 1:00 pm  | Demonstration and training of MCU & XRF   | Demonstration and training of TEM   |
| 1:00 pm - 2:30 pm   | <b>Lunch Break ☺ (Venue: APJ Abdul Kalam Block)</b>   |   |
|   | <b>Lab session 4 at Institute Instrumentation Centre (IIC)</b>                                      |   |
| 2:30 pm - 4:00 pm   | Demonstration and training of FE-SEM  | Demonstration and training of NMR, EPR & GI-XRD   |
| 4:00 pm - 4:30 pm   | <b>Session Tea ☺ (Venue: IIC)</b>   |   |
|   | <b>Lab session 5 at Institute Instrumentation Centre (IIC)</b>                                      |   |
| 4:30 pm - 6:00 pm   | Demonstration and training of XPS   | Demonstration and training of ICPMS   |