





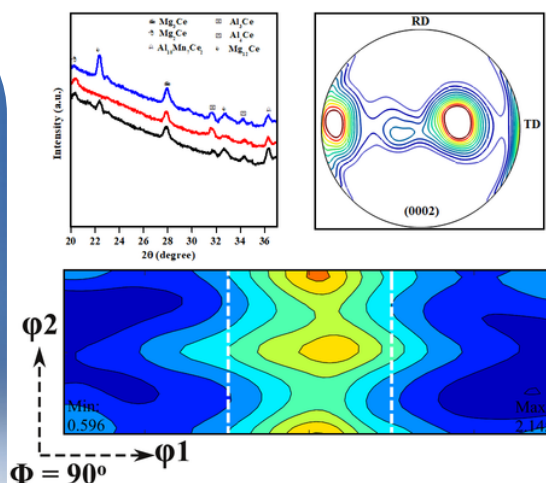
Department of Science & Technology (DST) funded

Training workshop under STUTI (Synergistic Training Program Utilizing the Scientific and Technological Infrastructure)

7 days workshop on Application of XRD Technique in Materials Science and Engineering

 22 - 28 August 2022

 Department of Metallurgical and Materials
Engineering, NIT Rourkela



Overview of STUTI and objectives of Workshop

DST welcomes all their participants for the workshop on X-RAY DIFFRACTION organized under STUTI. The STUTI program envisions hands-on training and sensitization of the state-of-the-art equipment as well as towards sharing while ensuring transparent access to S&T facilities. Department of Science and Technology has identified IIT Gandhinagar to function as a Project Management Unit (PMU) and NIT Rourkela has been chosen as the coordinator for this workshop.

The workshop is designed for a balance between theory and practical training on the equipment. Emphasis is on hands-on use of equipment for demonstration/characterization by each participant. Participants may be allowed to bring their samples.


Eligibility criteria for participants for the Training Program:

- Person of Indian origin;
- Minimum qualification should be Post Graduate (Science) or BTech (Technology);
- Professors/Scientists/ Post-Doc Fellows/ PhD Fellows/ Industry persons who are actively involved in research and development (R&D);
- Not more than 3 people from one institute per training should be allowed from outside the host institute.

Registration Details

Interested candidates must register and only selected candidates would be invited to the workshops. The total no. of participants is limited to 30. For selected candidates registration fees, travel (by train), boarding and lodging will be covered by NIT Rourkela

interested candidates should register using the following link:

 <https://forms.gle/8A2KN6RdzWwLAtVp9>

Registration Deadline: 24 July 2022

Shortlisted Candidates will be intimated by email, latest by 29 July 2022

Tentative Schedule

Session 1: 9:00 AM – 1:00 PM; Tea Break: 11:00 AM – 11:30 AM;

Lunch: 1:00 PM – 2:00 PM and

Session 2: 2:30 PM – 5:30 PM; Tea: 5:30 PM – 6:00 PM

DAY-1

Session 1: Inauguration and Welcome note followed by High Tea
Basic Crystallography: Symmetry Operations; Development of 7 Crystal Systems,

14 Bravais Lattices, 32 Point Groups; Introduction to Space Group.

Speaker: Prof. Dillip Pradhan, Dept. of Physics and Astronomy, NIT Rourkela

Session 2: NIT Rourkela Lab Visit; Facilities supported by DST

DAY – 2

Session 1: Basic Crystallography: Continued....

Session 2: Lab Session – 1 (Demonstration of X-ray Diffractometer)

DAY – 3

Session 1: X-ray Diffraction: X-ray Generation; Properties; Diffraction; Crystal Structure Determination; Phase Analysis.

Speaker: Prof. Debasis Chaira and Prof. Santosh Kumar Sahoo, Dept. of Metallurgical and Materials Engg., NIT Rourkela

Session 2: Lab Session – 2 (Phase Analysis)

DAY – 4

Session 1: Characterization of Nanomaterials, refractory materials, Coating materials and Polymers/Composites using XRD Technique; Some Case Studies.

Speaker: Prof. Anindya Basu, Prof. Syed Nasimul Alam, Prof. Rajesh Prusty and Prof. Anshuman Patra, Dept. of Metallurgical and Materials Engg., NIT Rourkela

Session 2: Lab Session – 3 (Characterization of Nanomaterials and Polymers/Composites)

DAY – 5

Session 1: Texture: Basics; Pole Figure; Orientation Distribution Function; Introduction to Electron Backscattered Diffraction (EBSD); Some Case Studies.

Speaker: Prof. Santosh Kumar Sahoo and Prof. Kumud Kant Mehta, Dept. of Metallurgical and Materials Engg., NIT Rourkela

Session 2: Lab Session – 4 (Texture Analysis)

DAY – 6

Session 1: Rietveld Refinement; Residual Stress Analysis by XRD Technique; Some Case Studies.

Speaker: Prof. Dillip Pradhan and Prof. Santosh Kumar Sahoo

Session 2: Lab Session – 5 (Rietveld Refinement and Residual Stress Analysis)

DAY – 7

Session 1: Measurement and characterization of participant's samples.

Session 2: Feedback, and Valedictory Function.

Coordinators



Prof. Santosh Kumar Sahoo



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Prof. Syed Nasimul Alam



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