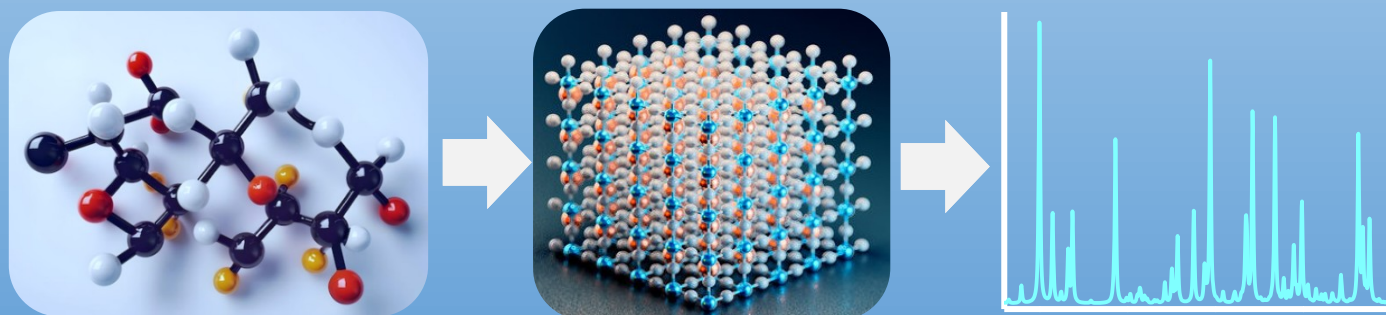


Workshop on Materials Characterization Using Powder X-Ray Diffraction (WMC-PXRD)

Venue: CSIR-National Chemical Laboratory, Pune
November 27-28, 2025



Speakers



Prof. Tayur N. Guru Row
Emeritus Professor, SSCU,
Indian Institute of Science,
Bangalore



Dr. Soorya N. Kabekkodu
Editor-in-Chief, International
Centre for Diffraction Data
(ICDD), USA



Prof. Arun M. Umarji
Emeritus Professor, MRC,
Indian Institute of Science,
Bangalore

[Register now](#)

Organized by:

The Central Analytical Facility at CSIR-National Chemical Laboratory, Pune In
collaboration with

International Center for Diffraction Data (ICDD), Philadelphia, USA
and

Vivertana Distributors Pvt. Ltd., Bangalore, India

About the Workshop

This workshop will emphasize the techniques and applications of powder X-ray diffraction (PXRD), a powerful method for structural analysis and material characterization. Special focus will be placed on its applications in pharmaceutical research, including phase identification, polymorphism studies, and quality control. Participants will develop a comprehensive understanding of PXRD principles, data acquisition, and data interpretation, which makes the workshop particularly valuable for researchers in pharmaceutical sciences, crystallography, and materials science and engineering. The WMC-PXRD workshop will be highly interactive, featuring a blend of lectures and hands-on sessions. Participants will work through problem sets ranging from basic to advanced levels, reinforcing essential concepts. The program will also cover data mining using the ICDD PDF-5+® database and analytical methods implemented in ICDD PDF-5+® Sieve+ and ICDD MDI JADE® Pro software. Hands-on access to PDF-5+® and JADE Pro® will be provided via a remote desktop server through web access. Participants are required to bring their own laptops equipped with wireless internet access (Edge, Chrome, or Firefox browsers recommended).

Note: Mac laptop (macOS) users should have Windows emulator installed.

First day (Nov 27): Demonstration of the PDF-5+® databases, database overview, features, datamining capabilities and Sieve+ for phase identification and quantification (RIR method).

Second day (Nov 28): Demonstration of qualitative and quantitative XRD analyses (Rietveld) using MDI JADEPro® software. In addition, materials characterization using the JADEPro Toolkit features. The PDF-5+® database and JADE Pro software will be accessible through a remote desktop server for a period of 3 weeks after the workshop.

Registration link <https://nclsdp.ncl.res.in/Course/Default.aspx>

WMC-PXRD Information

The online application for workshop registration will be open from 8th Oct to 6th Nov 2025. After submission, up to 70 applicants will be shortlisted based on their CVs. Details regarding registration and fee payment will be communicated to the selected candidates. The maximum number of participants (with access to the software) is 70.

Participants are required to bring their own laptops for the hands-on training sessions using crystallography software. Mac (macOS) users should ensure that a Windows emulator is installed on their system prior to the workshop.

Important Dates:

- Oct 08, 2025 – Start of Online application for Registration
- Nov 06, 2025 – Last day to submit the online application
- Nov 08, 2025 – Selected participant will be informed to pay the fees
- Nov 13, 2025 – Last day to make payment
- Nov 15, 2025 – Registration Confirmation
- Nov 27&28 , 2025 – Workshop

Registration Fees:

- Rs. 1000/- for the Master students
- Rs. 2000/- for the Research Students
- Rs. 5000/- for the faculty members
- Rs. 10000/- for participants from Industry

Email id: ncl.sdtc.ncl@csir.res.in (8983213165/ 7007225052)

Registration link: <https://nclsdp.ncl.res.in/Course/Default.aspx>

(Click on "Apply" to the Workshop on Materials Characterization Using Powder X-Ray Diffraction (WMC-PXRD))

Note:

- ✓ Refreshments and meals will be provided on 27–28 November 2025.
- ✓ Limited on-campus accommodation may be available for students, subject to availability. Please contact us in advance.
- ✓ Participants who are not allotted campus accommodation are requested to make their own arrangements.
- ✓ Participants are expected to strictly follow the workshop schedule.
- ✓ Attendance in all sessions is mandatory to be eligible for the participation certificate.
- ✓ Participants must carry a valid ID card for gate entry and verification.

PROGRAMME SCHEDULE

Day 1:	27th November 2025 (Thursday)
09:30 - 10:00 AM	Inaugural Function, SSBLT Hall, CSIR-NCL, Pune
10:00 - 10:30 AM	High Tea
10:30 - 11:00 AM	Powder X ray Diffraction Method and Application
11:00 - 12:30 PM	Diffraction Geometry, Systematic Angular Errors and Calibration Procedures, Sample Preparation
12:30 - 01:00 PM	Setting up PDF-5 + and JADE Pro access
01:00 - 02:00 PM	Lunch Break
02:00 - 03:30 PM	Hands- on Session: Introduction to Search/ Match Procedures with PDF-5/ Sieve+, PDF-5+ Database and Features Overview, Data mining
03:30 - 04:00 PM	Tea Break
04:00 - 05:30 PM	Phase Identification Method, Qualitative and Semi-quantitative Phase Analysis, Advanced Phase Identification (With Amorphous Component, Trace Phases), Additional Problem Solving, Q&A
Day 2 :	28th November 2025 (Friday)
09:30 - 10:00 AM	Data collection strategies for materials characterization
10:00 - 11:00 AM	Introduction to PXRD indexing
11:00 - 11:30 AM	Tea break
11:30 - 01:00 PM	Introduction to profile functions, Fitting And quantity phase analysis using Rietveld method
01:00 - 02:00 PM	Lunch break
02:00 - 03:30 PM	JADEpro hands-on sessions, JADEpro features overview, Angular Calibration (Instrument Profile Curve, IPC), Pattern indexing Using JADE
03:30 - 04:00 PM	Tea Break
04:00 - 05:00 PM	JADEpro hands-on sessions Whole Pattern Fitting (WPF) and Rietveld Refinement, Phase Identification and Quantitative Phase Analysis (Rietveld), Crystallinity Measurement, Crystallite size and Micro-strain Analysis
05:00 - 05:30 PM	Q&A, Concluding Remarks and Feedback from Participants

Registration link <https://nclsdp.ncl.res.in/Course/Default.aspx>