

ARCI Materials Characterization Workshop Series

ICDD® Workshop on Materials Characterization Using Powder X-ray Diffraction

Hosted by International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) in collaboration with Vivertana Distributors Pvt. Ltd.

Date: December 4th (Monday) to 5th (Tuesday), 2023

Venue: International Advanced Research Centre
for Powder Metallurgy and New Materials (ARCI),
Balapur, Hyderabad - 500005

The structure of the workshop is intended to be very interactive with lectures followed by (or along with) hands-on sessions. Hands-on sessions are designed to learn the concepts by solving problems of different complexity levels (simple to advanced).

This workshop will describe both datamining using the ICDD PDF-5+® database and methods of analysis embodied in ICDD PDF-5+® Sieve+ and ICDD MDI JADEPro® software.

Hands-on access to PDF-5+® and JADEPro® will be available through a remote desktop server via web access. Attendees should bring their laptop computer with wireless web access (Edge, Chrome, Firefox browsers). WiFi accesses will be provided by ARCI.

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

The first day of the workshop will present the PDF databases, database overview, features, datamining capabilities and Sieve+ for phase identification.

The second day will be qualitative and quantitative XRD analyses using MDI JADEPro software. In addition, materials characterization using the JADEPro Toolkit features will be demonstrated.

Attendees will have two week (December 15th to 30th, 2023) post-meeting access to PDF-5+® and JADEPro®.

Speakers:

Dr. Soorya N. Kabekkodu, Editor-in-Chief, ICDD, USA
Professor Tayur N. Guru Row, Emeritus Professor, SSCU, IISc, Bangalore
Professor Arun M. Umarji, Emeritus Professor, MRC, IISc, Bangalore

Convener: Dr. K. Suresh,

Co-Conveners: Dr. Joydeep Jordar and Dr. G. Ravichandra

Members: Dr. N. Ravi, Mr. M. Ramakrishna, Mr. G. Murthy, and Mr. Janaki Rao

Registration: [Click Here for Registration](#), Number of participants is limited to 40

Email (for any other communication): arci.cmct@gmail.com

Registration fee: Rs. 1000/- for students; Rs. 1500/- for other participants

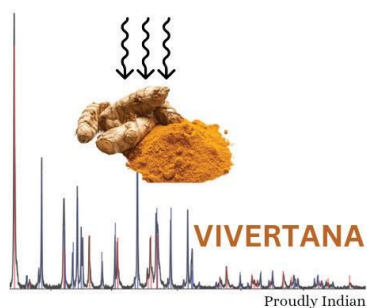
Key dates are as follows:

Last date for receiving the applications : November 13th, 2023

Intimation to the selected participants : November 15th, 2023

Last date for payment of the registration fee : November 22th, 2023

(please note that if payment is not received by this date, waiting list will be activated)



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December 4th (Monday) and 5th (Tuesday), 2023

Programme Schedule

Day 1: 4th December 2023 (9:30 am to 5:30pm)

9:30 - 10:00am	Opening remarks and introductions
10:00 - 10:30am	Powder X-ray Diffraction Method and Applications (TNG)
10:30 - 11:00am	Tea Break
11:00 - 12:30am	Diffraction Geometry, Systematic Angular errors and calibration procedures, sample preparation (SNK)
12:30 - 1:00pm	Setting up PDF-5+ and JADEPro access
1:00 - 2:00pm	Lunch Break
2:00 - 3:30pm	Hands-on sessions: Introduction to Search/Match Procedure with PDF-5+/Sieve+, PDF-5+ Database and features overview, Data mining (SNK)
3:30 - 4:00pm	Tea Break
4:00 - 5:30pm	Phase identification methods (SNK) Qualitative and semi-quantitative (RIR) phase analysis, Advanced phase identification (with amorphous components, Trace phases), Additional problem solving, Q&A

Day 2: 5th December 2023 (9:30 am to 5:30pm)

9:30 - 10:00am	Data collection strategies for materials characterization (AMU)
10:00 - 11:00am	Introduction to PXR indexing (SNK)
11:00 - 11:30am	Tea Break
11:30 - 1:00pm	Introduction to profile functions, fitting, and Quantitative Phase Analysis (QPA) using Rietveld method (SNK)
1:00 - 2:00pm	Lunch Break
2:00 - 3:30pm	JADEPro hands-on sessions (SNK) JADEPro features overview, Angular Calibration (Instrument Profile Curve, IPC) Pattern Indexing using JADE
3:30 - 4:00pm	Tea Break
4:00 - 5:00pm	JADEPro hands-on sessions (SNK) Whole pattern fitting (WPF) and Rietveld refinement, Phase identification and Quantitative Phase Analysis (Rietveld), Crystallinity measurement, Crystallite Size and Micro-Strain Analysis
5:00 - 5:30pm	Q&A, concluding remarks and feedback from participants

Speakers:

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

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

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

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