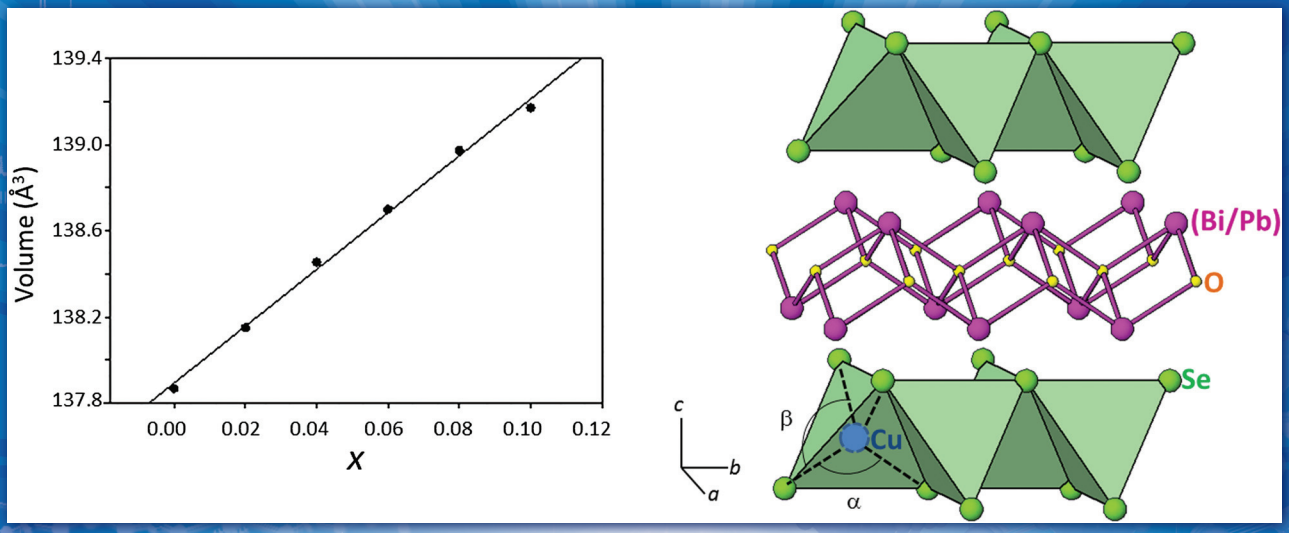
30 YEARS OF PDJ
1986 - 2016

Powder Diffraction PDJ

Journal of Materials Characterization



Celebrating 75 years 1941–2016
ICDD® International Centre for Diffraction Data
CAMBRIDGE UNIVERSITY PRESS
Volume 31 / Number 03 / September 2016
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Guidance software…
makes powder diffraction easy

Automatic alignment, CBO, and SmartLab's Guidance software engine combine to create an extremely flexible, intelligence-based data collection platform. SmartLab gathers information about your sample, suggests measurement configurations, helps you set the diffractometer, and executes measurements, all with the help of user-friendly dialog screens. CBO technology allows simple selection of focusing and parallel beam geometries on demand for the widest possible range of applications.

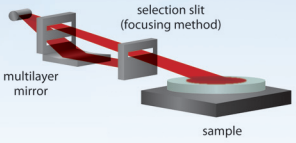
Supported powder diffraction applications include:

- Phase identification
- Quantitative analysis
- Percent crystallinity
- Crystallite size/lattice strain analysis
- Precise lattice parameter determination
- Rietveld refinement

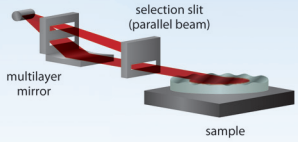
Cross Beam Optical (CBO) technology

Change and adjust optics easily, whether you are using focusing optics in the direct beam path, or a multilayer mirror optic for high-brilliance, monochromated parallel beams.

Bragg-Brentano focusing

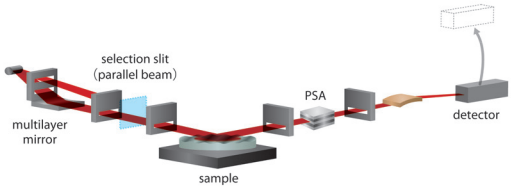


Parallel beam



High resolution parallel beam optics

By combining the parallel beam from a multilayer mirror with a long slit PSA (parallel slit analyzer), you can obtain exceptionally accurate, high-resolution data with high repeatability without the influence of sample shape or measurement environment. The effectiveness of this configuration is particularly notable for in-situ analysis, powder structure determination, and the analysis of clay minerals and organic materials.



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X-RAY DIFFRACTOMETER

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EDITORIAL

TECHNICAL ARTICLES

NEW DIFFRACTION DATA

DATA REPORT

INTERNATIONAL REPORTS

CALENDARS

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Powder Diffraction

An International Journal of Materials Characterization

On the Cover: From this issue's paper "X-Ray Powder Diffraction Reference Patterns for $Bi_{1-x}Pb_xOCuSe$" by W. Wong-Ng, et al. The improvement of properties and correlation with structure of thermoelectric materials was studied. The effect of Pb substitution on the Bi site was found to lengthen the c-axis therefore increasing the separation of the Cu_2Se_2 and $Bi_{2-2x}Pb_{2x}O_2$ layers.

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Powder Diffraction is a journal of practical technique, publishing articles relating to the widest range of application—from materials analysis to epitactic growth of thin films and to the latest advances in software. Although practice will be emphasized, theory will not be neglected, especially as its discussion will relate to better understanding of technique.
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LET OUR TEAM OF EXPERTS HELP YOU TAKE YOUR SKILLS TO THE NEXT LEVEL!

Rietveld Refinement & Indexing Workshop:

Basic Workshop: 26 – 28 September 2016
***Advanced Workshop: 28 – 30 September 2016**

Powder pattern indexing and Rietveld structural refinement techniques are complementary and are often used to completely describe the structure of a material. Successful indexing of a powder pattern is considered strong evidence for phase purity. Indexing is considered a prelude to determining the crystal structure, and permits phase identification by lattice matching techniques. This workshop introduces the theory and formalisms of various indexing methods and structural refinement techniques along with quantitative analysis. One unique aspect of this workshop is the extensive use of computer laboratory problem solving and exercises that teach method development in a hands-on environment.

Take the three-day basic workshop, the three-day advanced workshop or attend both for a full week of hands-on training.

Practical X-ray Fluorescence:

24 – 28 April 2017

From theory to hands-on exercises, this course offers techniques and skills to improve lab performance. Discover the latest in cutting-edge instruments such as TXRF, hand-held devices, energy dispersive and wavelength dispersive spectrometers through live demonstrations.

The XRF course covers the basics of X-ray spectra; instrumentation design; methods of qualitative and quantitative analysis; specimen preparation and applications for both wavelength and energy dispersive spectrometry. The course emphasizes quantitative methods, use of automated X-ray spectrometers, review of mathematical matrix correction procedures, and new developments in XRF.

Fundamentals of X-ray Powder Diffraction:

5 – 9 June 2017

For the novice with some XRD knowledge or for the experienced with an interest in the theory behind XRD, this clinic offers a strong base for increased lab performance.

The clinic covers instrumentation, specimen preparation, data acquisition and qualitative phase analysis through live demonstrations. It also covers hands-on use of personal computers for demonstration of the latest software including data mining with the Powder Diffraction File (PDF) and use of the powder diffractometer: optical arrangement, factors affecting instrumentation profile width, choice and function of divergence slit, calibration and alignment, detectors, and X-ray optics.

Advanced Methods in X-ray Powder Diffraction:

12 – 16 June 2017

For the experienced XRD scientist, this session offers enhanced analysis skills through intense problem solving, as well as an introduction to the Rietveld Method. The course emphasizes computer-based methods of data collection and interpretation, both for qualitative and quantitative phase analysis.

The advanced clinic covers factors affecting d-spacings of crystals, as well as factors affecting diffraction-line intensities; structure-sensitive properties (atomic scattering and structure factors), polarization effects, and multiplicity. Additionally, the clinic covers specimen-sensitive effects (orientation, particle size), measurement-sensitive effects (use of peak heights and peak areas), and choice of scanning conditions will also be addressed.

*See the ICDD web site for prerequisites for the advanced Rietveld course.

Register today at WWW.ICDD.COM/EDUCATION

Please note: A minimum of 10 registrants per course is required, otherwise the course will be cancelled and your registration fee will be refunded. You will be notified of a course cancellation no later than two weeks prior to the start of the course.

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For More Information Contact

Eileen Jennings, Education Coordinator
Tel: 610.325.9814 **Fax:** 610.325.9823
Email: clinics@icdd.com

Location
ICDD Headquarters, 12 Campus Boulevard
Newtown Square, Pennsylvania 19073-3273 U.S.A.

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