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PDF-4/Minerals



Standardized Data

More Coverage

All Data Sets Evaluated For Quality

Reviewed, Edited and Corrected Prior To Publication

Targeted For Material Identification and Characterization

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LET OUR TEAM OF EXPERTS HELP YOU TAKE YOUR SKILLS TO THE NEXT LEVEL!

Rietveld Refinement & Indexing Workshop 1 & 2 / 25-29 September 2017

Basic Workshop (1) / 25-27 September 2017

*Advanced Workshop (2) / 27-29 September 2017

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.

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

Practical X-ray Fluorescence / XRF:

30 April – 4 May 2018

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 / XRD I:

4 – 8 June 2018

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 incorporates hands-on computer demonstrations of the latest software, including data mining with the Powder Diffraction File™ (PDF®). Use of the powder diffractometer is featured with focus on topics pertaining to 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 / XRD II:

11 – 15 June 2018

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

The advanced clinic covers factors affecting crystal d-Spacings, diffraction-line intensities, structure-sensitive properties (atomic scattering and structure factors), polarization effects, and multiplicity. Additionally, the clinic inspects specimen-sensitive (orientation, particle size) and measurement-sensitive effects (use of peak heights and peak areas), and addresses scanning condition options.



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.



LOCATION:
ICDD Headquarters, 12 Campus Boulevard
Newtown Square, Pennsylvania 19073-3273 USA

FOR MORE INFORMATION CONTACT

Eileen Jennings, Education Coordinator

Tel: 610.325.9814 Fax: 610.325.9823

Email: clinics@icdd.com

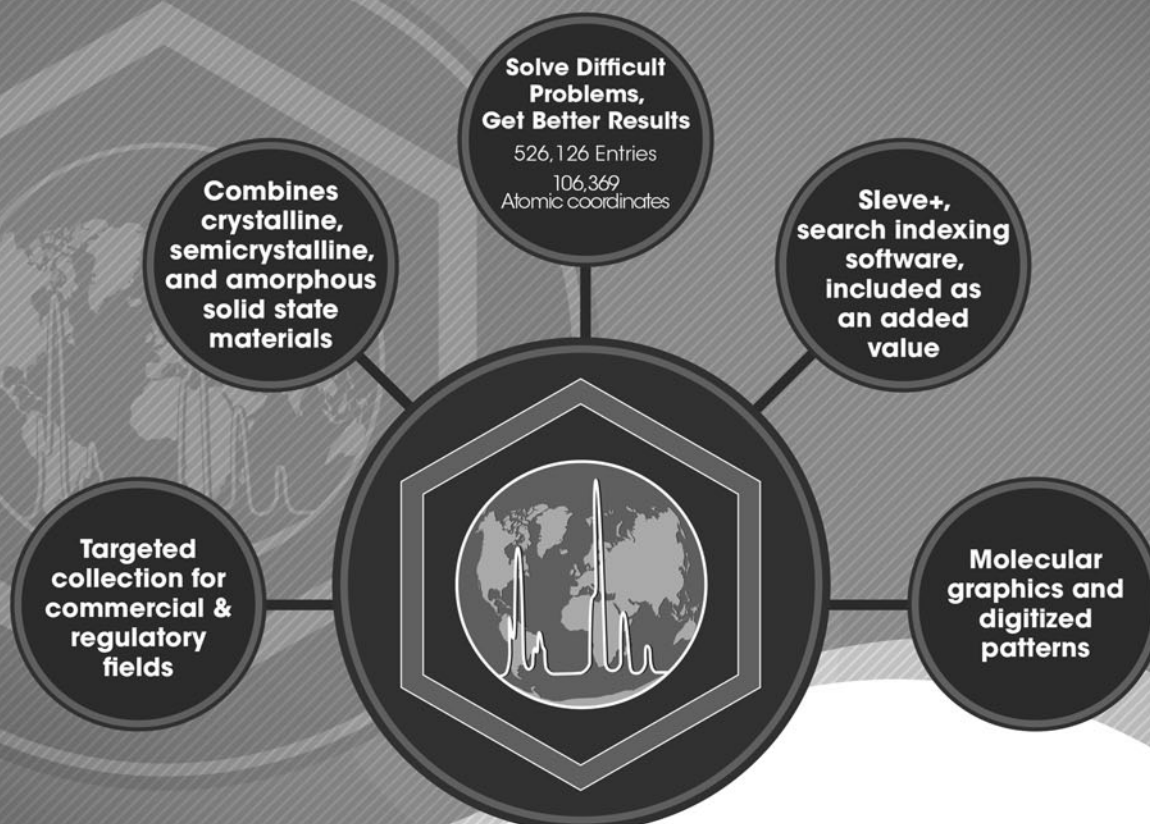
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PDF-4/Organics



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GRANT-IN-AID Program

JOIN ICDD'S ELITE GROUP OF SCIENTISTS
who contribute experimental powder diffraction patterns
to the Powder Diffraction File™.

AS A MEMBER OF THIS ELITE GROUP, YOU WILL RECEIVE THE FOLLOWING BENEFITS:

- Financial support to aid current research
- Publication of pattern(s) in the Powder Diffraction File™ (PDF®)
- Receive calibration standards
- Purchase certain ICDD products at reduced prices
- Web-based access to the list of compounds in the ICDD master database – includes published patterns, as well as patterns still in the editorial process
- First-time grantees receive a complimentary one-year subscription to *Powder Diffraction*

For over 50 years, ICDD has supported a well-developed program of grants to researchers around the world. One of our main objectives is to expand the range of reference materials by producing and cataloging high-quality diffraction patterns in our internationally renowned database, the Powder Diffraction File. Thanks to the longevity of this program, these contributions account for approximately a quarter of the current experimental file. ICDD awards financial support to qualified investigators in the form of grant-in-aid on a competitive proposal basis. The duration of a grant is 12 months with two cycles per year. Cycle I begins 1 April and Cycle II begins 1 October.

THE FINER POINTS OF THE GRANT-IN-AID PROGRAM

- Grant-in-Aid funds can be used most effectively as supplements to existing research projects involving the preparation and characterization of new materials, using powder diffraction techniques.
- Grant-in-Aid proposals will be considered, on a competitive basis, from any qualified investigator (academic, government, or industry), around the world, who can demonstrate expertise in the preparation of high quality powder diffraction patterns.
- Proposals addressing current opportunities to extend and improve the usefulness of the Powder Diffraction File™ are given highest priority.
- The duration of a Grant-in-Aid is 12 months. Renewal for additional 12-month periods may be considered on a competitive basis. Grant recipients are required to submit biannual progress reports.
- Deadlines for receipt of Grant-in-Aid proposals are due either by 31 July or by 31 January, depending on the cycle. Prior to submitting a grant proposal to the ICDD, please review the detailed Grant-in-Aid guidelines. These guidelines are available from ICDD's website at www.icdd.com/gia or by emailing the Grant Coordinator.

Any questions or comments regarding the ICDD Grant-in-Aid Program should be directed to:

Denise DelCasale, Grant Coordinator
Email: delcasale@icdd.com



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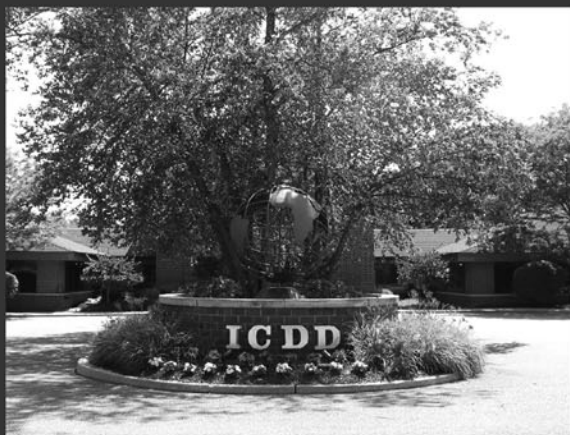
Geographic Locations of Grants for the Past 15 Years:

Argentina
Austria
Brazil
Canada
Chile
Columbia
Czech Republic
France
Germany
India
Israel
Italy
Japan
Malaysia
Netherlands
P.R. of China
Poland
Portugal
Russia
Spain
Switzerland
Taiwan
Tunisia
Ukraine
United Kingdom
United States
Uruguay

Total Proposals Funded for the Past Fifteen Years: 682



For more information on ICDD's Grant-in-Aid, visit www.icdd.com/grants



ICDD's Vision

The International Centre for Diffraction Data will continue to develop tools and support the education required for materials analyses of tomorrow.

ICDD's Mission

The International Centre for Diffraction Data will continue to be the world center for quality diffraction and related data to meet the needs of the technical community. ICDD promotes the application of materials characterization methods in science and technology by providing forums for the exchange of ideas and information.

ICDD Products:

- PDF-2
- PDF-4+
- WebPDF-4+
- PDF-4/Minerals
- PDF-4/Organics
- Sleeve/Sleeve+

Education:

- Clinics:
 - XRD
 - XRF
- Specialized Workshops

Conferences:

- Denver X-ray Conference (DXC)
- Pharmaceutical Powder X-ray Diffraction Symposium (PPXRD)

Publications:

- *Powder Diffraction*
- *Advances in X-ray Analysis*

Grant-in-Aid Program

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Online Resources

Visit our website at www.icdd.com

Our goal at ICDD is to help you solve your materials problems. We provide online publications, technical bulletins, tutorials, and videos. Many tutorials focus on capabilities of the database, but there are also general tutorials that describe methods used to analyze drugs, polymers, and minerals. The tutorial page has links to free download publications, as well as instructional videos. Our website also contains over 1,000 full publications for free download from *Advances in X-ray Analysis*. Our website, tutorial page, and publication pages are there to help you!

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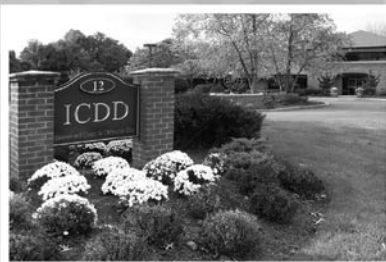
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Tuition Waiver Opportunities for ICDD XRF & XRD Educational Events

2017/2018



Educational Events

In continuing its commitment to education throughout the scientific community, the International Centre for Diffraction Data sponsors clinics and workshops in X-ray powder diffractometry and X-ray fluorescence spectrometry. These courses offer training in both theoretical and practical applications.

To promote these clinics and workshops, particularly in the academic sector, the ICDD offers a limited number of tuition waivers. The XRF, XRD I & II, and Rietveld Refinement tuition waivers are named in honor of world-renown scientists Dr. Eugene P. Bertin, Dr. Ron Jenkins, Dr. Deane K. Smith and William Frank McClune.

Who Should Apply

Faculty members and graduate students are encouraged to apply. If you are currently developing a program in X-ray fluorescence (XRF), X-ray powder diffraction (XRD), or Rietveld Analysis, or are interested in incorporating the topic into an established course, a tuition waiver can provide you the opportunity to learn the principles and practices of this discipline from some of the experts in the field.

Restrictions

Tuition waivers cover tuition only; travel and lodging are the responsibility of the attendee and are not included in the tuition waiver.

How to Apply

Submit a one-page written request stating your objectives in attending the clinic or workshop, and/or how you will incorporate the respective topic into the curriculum at your learning institute.

Tuition waiver applications must be accompanied by a clinic/workshop registration form and received at the ICDD by the application and registration deadline. All applications will be reviewed on a competitive basis, and recipients will be notified no later than four weeks prior to the start of the clinic/workshop session.

2017/2018 Applicable Events

Rietveld Refinement & Indexing 1 & 2

25-29 September 2017

Application Deadline: 14 August 2017

Practical XRF

30 April - 4 May 2018

Application Deadline: 18 March 2018

Fundamentals of XRD

4-8 June 2018

Application Deadline: 22 April 2018

Advanced Methods in XRD

11-15 June 2018

Application Deadline: 22 April 2018

Please return a completed [registration form](#) and your tuition waiver request to:

ICDD Clinics

12 Campus Boulevard,
Newtown Square, PA 19073

Attention: Eileen Jennings

Email: clinics@icdd.com

www.icdd.com/education

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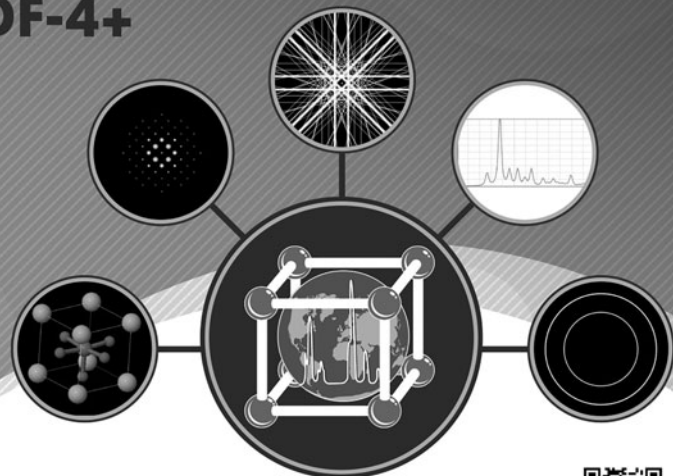
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ICDD X-RAY CLINICS & WORKSHOPS



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Practical X-ray Fluorescence:
30 April – 4 May 2018

**Fundamentals of
X-ray Powder Diffraction:**
4 – 8 June 2018

***Advanced Methods in
X-ray Powder Diffraction:**
11 – 15 June 2018

Rietveld Refinement & Indexing Workshops:
September 2018

FOR MORE INFORMATION CONTACT

Eileen Jennings, Education Coordinator

Email: clinics@icdd.com

Tel: 610.325.9814

Toll-free: 866.378.9331 (US & Canada)

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Introducing the 2018 Powder Diffraction File™

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Identify and Quantitate

398,726 Entries

295,309 Atomic Coordinates



WebPDF-4+

Data on the Go

398,726 Entries

295,309 Atomic

Coordinates

PDF-2

Quality + Value

298,258 Entries



PDF-4/Organics

Solve Difficult Problems,
Get Better Results

526,126 Entries

106,369 Atomic Coordinates



Powder Diffraction File™

871,758 Entries



PDF-4/Minerals

Identify and Quantitate

45,497 Entries

37,210 Atomic Coordinates

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