



# Statement of Ownership, Management, and Circulation (All Periodicals Publications Except Requester Publications)



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f. Total Distribution (Sum of 15c and 15e)		211	178
g. Copies not Distributed ( <i>See Instructions to Publishers #4 (page #3)</i> )		84	174
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If the publication is a general publication, publication of this statement is required. Will be printed in the December issue of this publication.  Publication not required.

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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.

**Rietveld Refinement & Indexing Workshop:****Basic Workshop: 25 – 27 September 2017****\* Advanced Workshop: 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.

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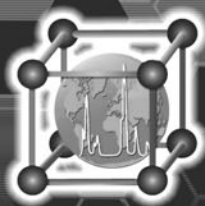
**Please note:** A minimum of 10 registrants per course is required, otherwise the course will be cancelled and your registration fee will be refunded. You will be notified of a course cancellation no later than two weeks prior to the start of the course.



**Eileen Jennings, Education Coordinator**  
**Tel:** 610.325.9814 **Fax:** 610.325.9823  
**Email:** [clinics@icdd.com](mailto:clinics@icdd.com)

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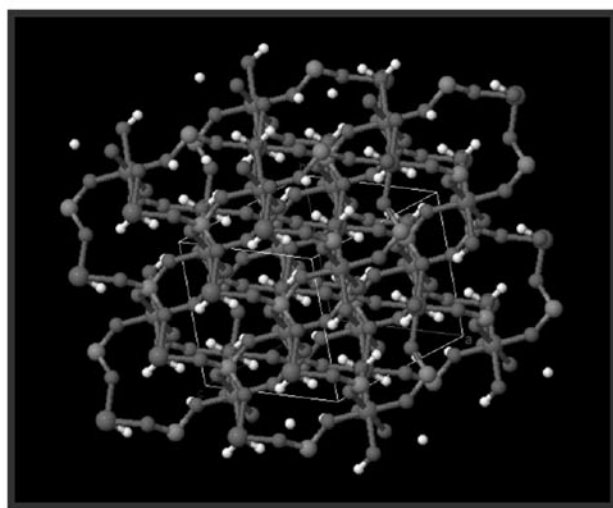
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**Comprehensive materials database  
featuring 384,000+ entries**



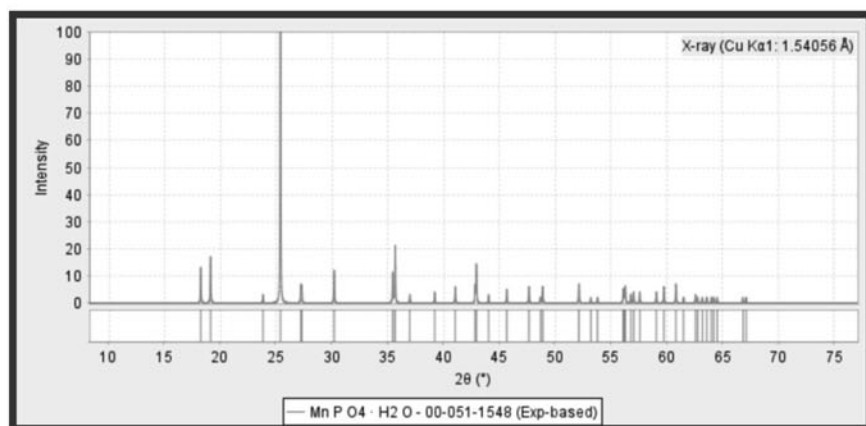
*All entries have digital patterns for use  
in total pattern analysis*

*271,449 entries with atomic coordinates*

*286,885 entries have  $I/I_c$  values for quantitative  
analysis by Reference Intensity Ratio*

*All entries are stored in a standardized format  
for easy search and interpretation*

*All entries go through a rigorous editorial  
process to ensure quality*



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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](http://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](mailto: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](http://www.icdd.com/grants)



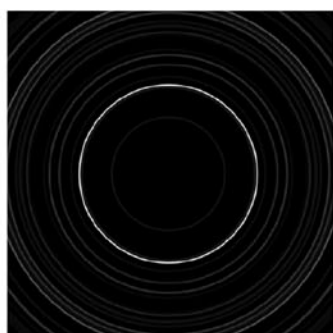


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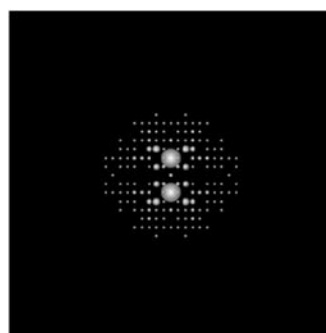
## An Electron Diffraction Database

Designed for phase identification  
using elemental composition

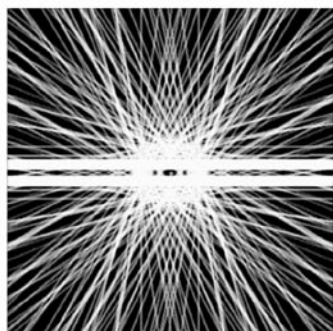
Electron diffraction simulations  
for 334,000+ entries



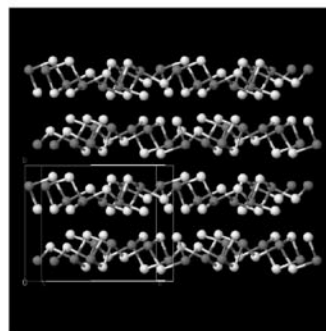
Electron diffraction  
powder pattern



Interactive spot pattern,  
including indexing



Electron backscatter  
diffraction pattern



Atomic and molecular  
visualization

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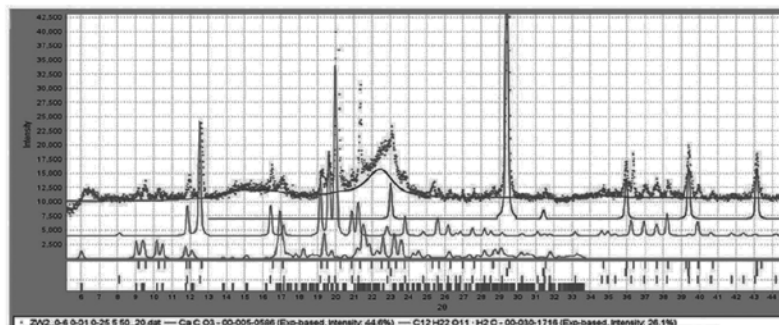
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**Comprehensive materials database featuring  
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- Features the largest collection of pharmaceuticals, excipients and polymers
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- Enhanced identification for crystalline, nano and amorphous materials
- Trade names for over 9,000 bioactive/ pharmaceutical entries
- Integrated data mining software
- Sleve+ search-indexing software (included as an added value)

**Combines powder diffraction and  
crystal structure reference data**



The four phase identification of the formulation of Lipitor uses references from a single crystal determination, an experimental powder pattern of cellulose  $\beta$ , a calculated powder pattern and pattern extracted from the patent literature. The identification required an inorganic excipient, polymer excipient and two organic compounds. A variety of reference materials and sources enabled the identification.

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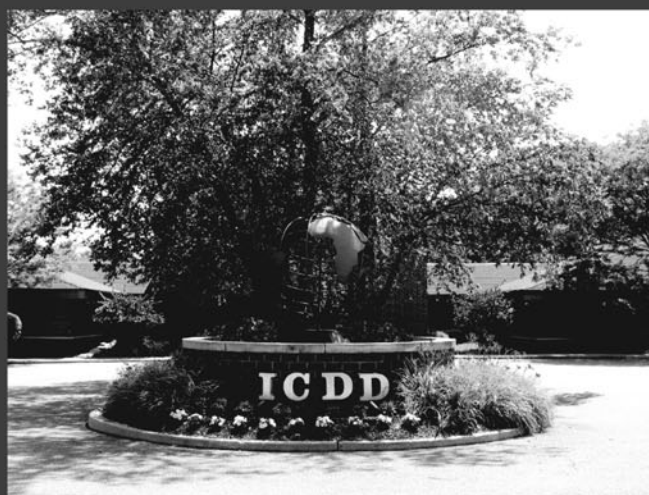
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## ICDD's Vision

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
- Sleve/Sleve+

## 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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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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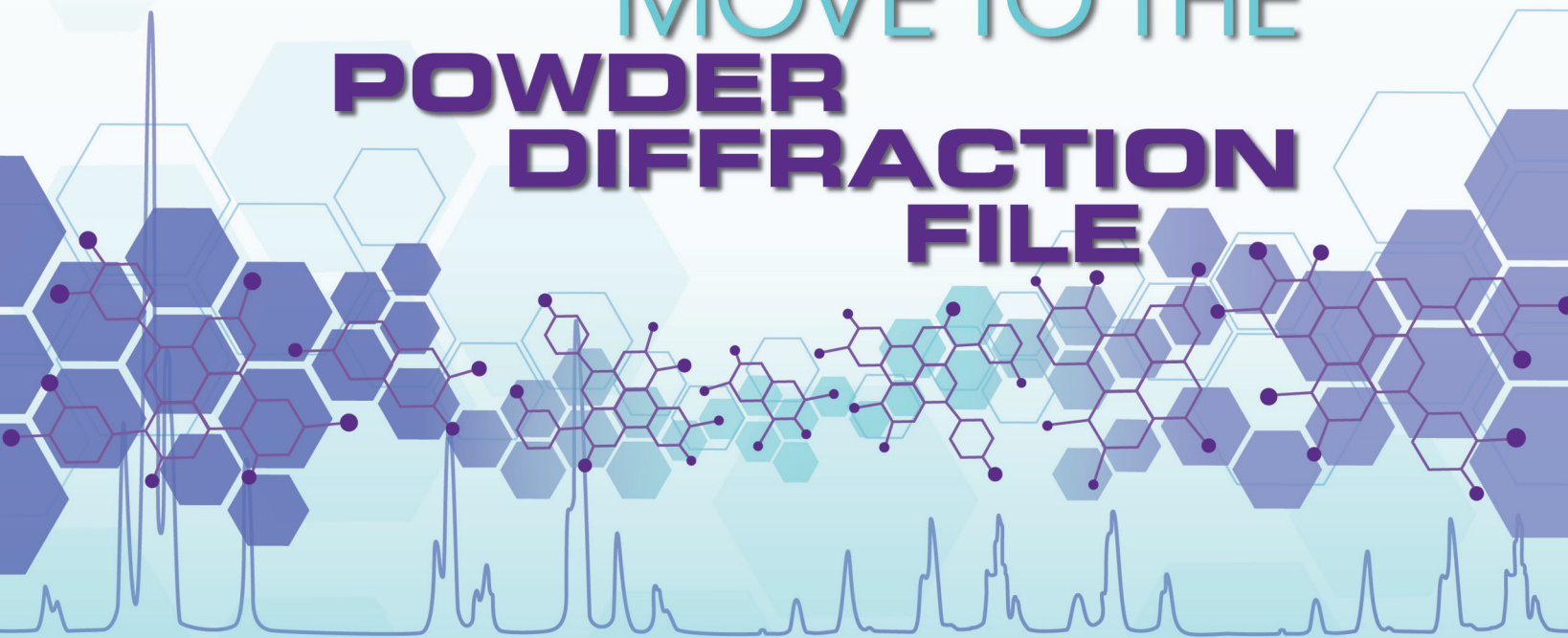
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<b>A</b>	All data sets are evaluated for quality
<b>R</b>	Reviewed, edited and corrected prior to publication
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