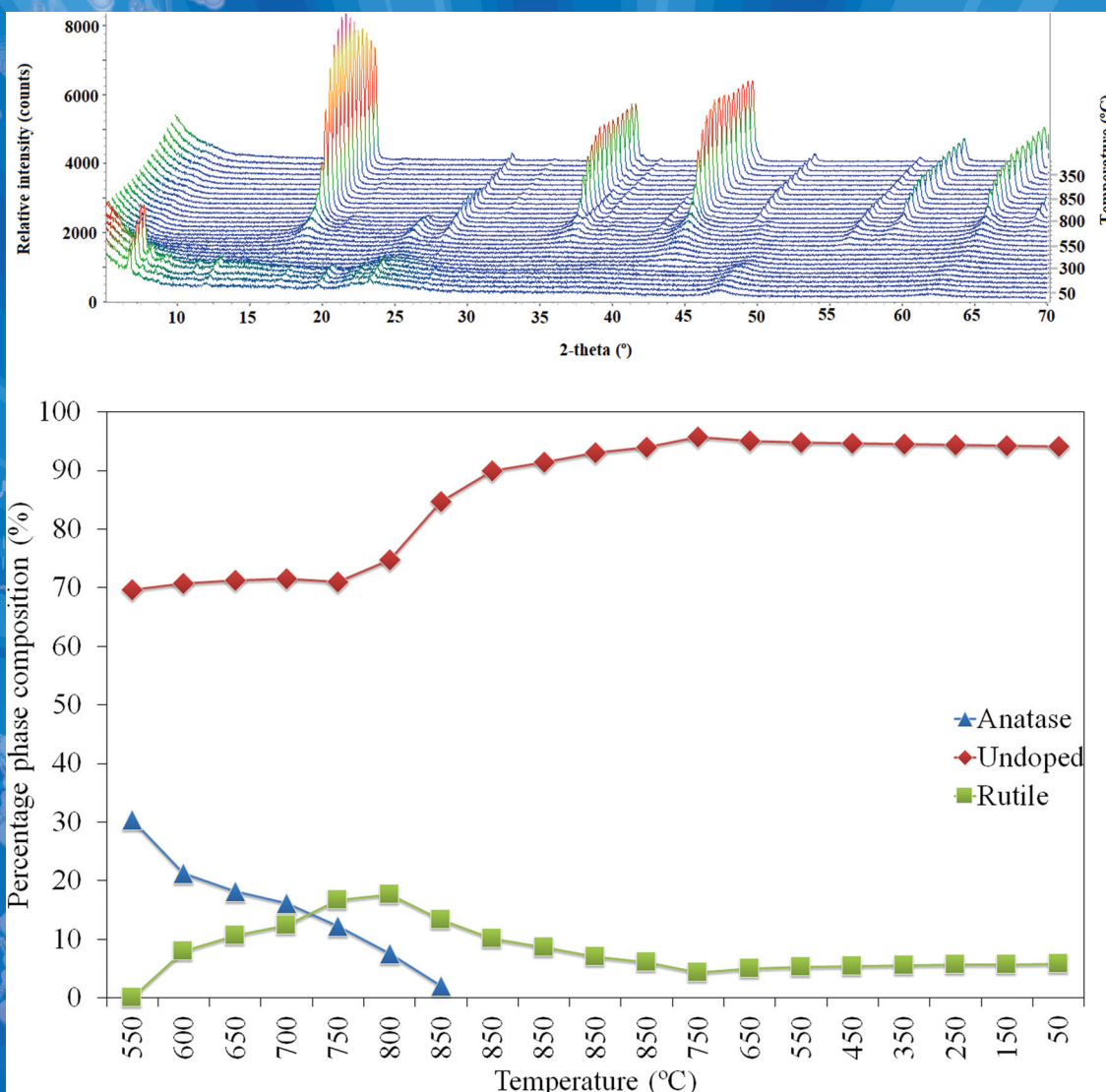


Powder Diffraction PDJ

Journal of Materials Characterization



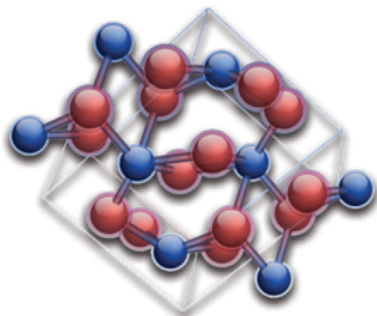
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26 – 30 April 2021

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.



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17 – 21 May 2021

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.



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24 – 28 May 2021

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The advanced course covers a wide range of topics including systematic errors, factors affecting intensities of diffraction peaks; data reduction algorithms; phase identification; advanced data mining with the PDF and its application in search/match; powder pattern indexing methods; structure solution methods; quantitative phase analysis using both reference intensity ratio (RIR) and Rietveld Method.



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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 USA



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Editor-in-Chief

Camden Hubbard
Applied Diffraction Services, U.S.A.
camden.hubbard@me.com

Managing Editor

Nicole M. Ernst Boris
International Centre for Diffraction Data, U.S.A.
boris@icdd.com

Production Editor

Kayla Riddleberger
Cambridge University Press, U.S.A.
kriddleberger@cambridge.org

Editors for New Diffraction Data

Soorya Kabekkodu
International Centre for Diffraction Data, U.S.A.
kabekkodu@icdd.com

Stacy Gates-Rector
International Centre for Diffraction Data, U.S.A.
gates-rector@icdd.com

Associate Editor for New Diffraction Data

Frank J. Rotella
Argonne National Laboratory (Retired), U.S.A.
fjrotella1949@gmail.com

Editors

Xiaolong Chen
Institute of Physics, Chinese Academy of Sciences, China
xlchen@iphy.ac.cn

José Miguel Delgado
Universidad de Los Andes, Venezuela
miguel@ula.ve

Norberto Masciocchi
Università dell'Insubria, Italy
norberto.masciocchi@uninsubria.it

Editors for Crystallography Education

James Kaduk
Poly Crystallography Inc., U.S.A.
Kaduk@polycrystallography.com

Brian H. Toby
Argonne National Laboratory, U.S.A.
brian.toby@anl.gov

International Reports Editor

Winnie Wong-Ng
National Institute of Standards and Technology, U.S.A.
winnie.wong-ng@nist.gov

Calendar of Meetings and Workshops Editor

Gang Wang
Institute of Physics, Chinese Academy of Sciences, China
gangwang@iphy.ac.cn

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On the Cover: The cover figures come from the manuscript "An Investigation into the Temperature Phase Transitions of Synthesized Lithium Titanate Materials Doped with Al, Co, Ni and Mg by in-situ powder X-ray Diffraction" published in this issue of *Powder Diffraction* by X. van Niekkerk, E.E. Feng, C. Gelant and D. G. Billing. The phase $\text{Li}_4\text{Ti}_5\text{O}_{12}$ (LTO) and the doped analogues are stated to be promising anode materials for lithium-ion batteries due to its zero-strain electrochemical capability, inherent safety and excellent cyclic performance. The cover shows the variable temperature PXRD scans of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ (LTO) synthesized from a sol-gel precursor (upper) and the percentage phase composition of spinel LTO material, anatase and rutile (lower).

Powder Diffraction is a journal of practical technique, publishing articles relating to the widest range of application—from materials analysis to epitaxial 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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- ✓ ICDD's data mining software is included! *
*Requires Vendor Software for phase identification and quantitation

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