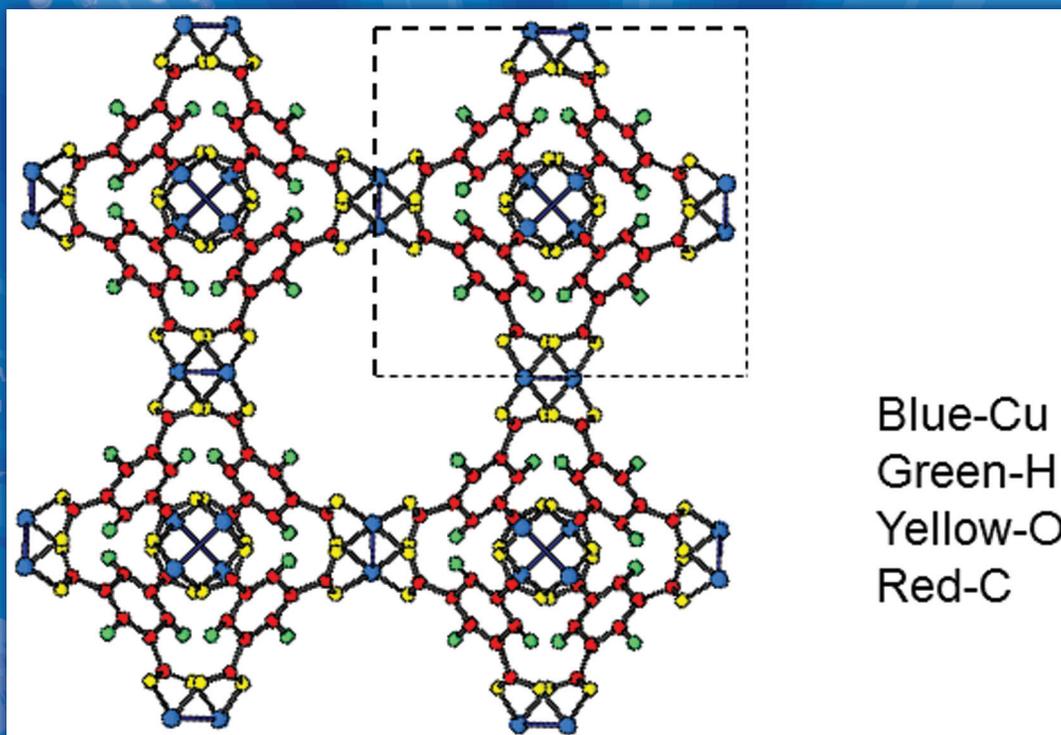


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On the Cover: Structure of open framework metal-coordination polymer d-Cu-BTC with view along the a-axis. (Courtesy of W. Wong-Ng, J.A. Kaduk, D.L. Siderius, A.L. Allen, L. Espinal, B.M. Boyerinas, I. Levin, M.R. Sucomel, J. Ilavsky, L. Li, I. Williamson, E. Cockayne, and H. Wu).

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Practical X-ray Fluorescence: 27 April–1 May 2015

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. Submit your samples for analysis by the XRF experts. Selected results will be the basis for class discussion!

Fundamentals of X-ray Powder Diffraction: 1–5 June 2015

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. Hands-on use of personal computers for demonstration of the latest software; data mining with the PDF. The powder diffractometer: optical arrangement, factors affecting instrumental profile width, choice and function of divergence slit, detectors, X-ray optics, calibration and alignment.

***Advanced Methods in X-ray Powder Diffraction: 8–12 June 2015**

For the experienced XRD scientist, this clinic offers enhanced analysis skills through intense problem solving, as well as an introduction to the Rietveld Method. Computer-based methods of data collection and interpretation, both for qualitative and quantitative phase analysis is also emphasized.

The advanced clinic covers factors affecting d-spacing of crystals: unit cell, crystal structure, and solid solutions, as well as factors affecting diffraction-line intensities: relative and absolute intensities, structure-sensitive properties (atomic scattering and structure factors), polarization effects, and multiplicity, specimen-sensitive effects (orientation, particle size), measurement-sensitive effects (use of peak heights and peak areas), and choice of scanning conditions.

***Rietveld Refinement & Indexing Workshops:**

Basic: 28–30 September 2015 / Advanced: 1–2 October 2015

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. 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.

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