

## **Harnessing the Power of High-Resolution Synchrotron Powder Diffraction for (Your) Rietveld Analysis**

Matthew R. Suchomel, Lynn Ribaud

Advanced Photon Source, Argonne National Laboratory, Argonne, IL 60439, USA

As the most modern dedicated powder diffraction beamline at the Advanced Photon Source (APS), 11-BM uses a single-crystal analyzer detection system to obtain the highest resolution available in the Americas. This talk will feature several applied examples from staff research and previous users projects to illustrate how the unique power of High-Resolution Synchrotron Powder Diffraction from 11-BM can be exploited to empower advanced Rietveld Analysis. Practical experimental aspects will also be covered, demonstrating how the impact of each measurement can be maximized, including special considerations for profile and Rietveld fitting of high-intensity, high-resolution synchrotron powder data.

The presentation will briefly highlight 11-BM's unique mail-in service, offered free of charge for non-proprietary users, which affords convenient and rapid access to truly world-class quality data for routine Rietveld Analysis. Finally, 11-BM's growing suite of sample environments will also be discussed; showing examples of how Rietveld Analysis can harness the combined power of both in-situ studies and high-resolution powder diffraction. More information about the beamline can be found at <http://11bm.xor.aps.anl.gov>