

YOUR SYNCHROTRON POWDER DIFFRACTION INSTRUMENT: 11-BM AT THE ADVANCED PHOTON SOURCE

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"I would have used a synchrotron, if I had one" (Prof. Abe Clearfield, circa 1998).

Synchrotrons have revolutionized powder diffraction. They make possible data collection with tremendous resolution and superb signal to noise. Alternately, they allow for extremely rapid (<1 second) collection of entire, high quality, powder diffraction patterns. The high penetration and data sensitivity over wide Q range from high energy sources even allows synchrotrons to make inroads into territory that previously demanded neutrons: extreme sample environments and crystallographic site occupancy studies. However, there exist all too few synchrotron powder diffraction instruments and the community of scientists who use these facilities is too small.

To address this, the 11-BM synchrotron powder diffractometer at Argonne's Advanced Photon Source now offers rapid and easy mail-in access for structural analyses with truly first-quality data. This instrument offers resolution unmatched in U.S. ($\Delta Q/Q \sim 2 \times 10^{-4}$). With both vertical and horizontal focusing and a detection system with twelve perfect crystal analyzers, the diffractometer can collect a superb pattern suitable for Rietveld analysis in an hour or less. Mail-in data collection is possible with the sample maintained in the range 100 K to 490 K.

The 11-BM beamline is now also available for on-site use, for data collection over a much larger temperature range, under other special conditions or where data collection parameters will be adapted based on initial results from measurements.

Access to 11-BM is free for non-proprietary measurements and proprietary costs are modest. This presentation will outline the capabilities of the 11-BM instrument and how to obtain access. Further information is available at <http://11bm.xor.aps.anl.gov>.