

High Energy Diffraction Microscopy at the Advanced Photon Source 1-ID Beamline

Ulrich Lienert

The APS 1-ID beamline is dedicated to high-energy diffraction and the status of the single grain diffraction program and selected applications will be presented.

Three distinct techniques are employed. 'Near field' diffraction imaging and forward modeling can provide grain boundary topology mappings. Strain sensitivity is greatly improved in the 'far field' geometry where complete stress tensors are measured of an increasingly large number of grains. Most recently high resolution reciprocal space mapping has been employed to probe evolving dislocation structures during tensile deformation.