

COMPRES Multi-Anvil Facility at Beamline 6BM-B of the Advanced Photon Source

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APS 6BM-B Beamline was established in 2015 at Argonne National Laboratory and is dedicated to synchrotron-based large volume high pressure research in earth and planetary science, especially rock and mineral physics. Currently a 250-ton hydraulic press equipped with a D-DIA module is installed and a Rotational Drickamer Apparatus from Yale University is hosted every run. 6BM-B Beamline operates in white beam mode with an effective energy range of 20-100 keV. Energy dispersive X-ray powder diffraction data is collected using a uniquely designed 10-element solid state Ge array detector arranged in a circular geometry to allow for the real time assessment of stress. Direct radiographic imaging using Prosillica CCD camera and scintillating YAG crystals produces sample strain and strain rate. This setup makes this beamline an ideal facility for deformation studies of minerals and rocks. In addition to applications in phase transitions, equation of states measurements, specialized hardware and software controls allow for steady state and dynamic deformation experiments, thermal diffusivity measurements, and acoustic wave velocity measurements using ultrasonic interferometry. In this presentation, technical features and strengths of 6BM-B will be discussed. Most recent progress and science highlights of our user community will be showcased. You are welcome to discuss your research needs with a beamline staff and become one of our valuable users.