

High pressure single crystal diffraction at PX²

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The Partnership for eXtreme Xtallography (PX²) program is a research initiative focusing on high pressure diamond anvil cell research, supported by the Consortium for Materials Properties Research in Earth Sciences (COMPRES). PX² is a collaboration between the University of Hawaii at Manoa and GeoSoilEnviroCARS (GSECARS), located at the Advanced Photon Source (APS) experimental station 13-BM-C. This beamline provides focused X-rays at 29 keV energy, and a unique 6-circle heavy duty diffractometer, optimized for a variety of advanced crystallography experiments including interface studies, powder and single crystal structure determination, equation of state studies and thermal diffuse scattering. Multiple auxiliary experimental capabilities, including online ruby fluorescence pressure determination, Raman spectroscopy, and remotely-controlled resistive heating, are available for high pressure research. Diffraction studies at P-T conditions of more than 150 GPa and 2000 K have been carried out at PX², and several materials of interest to Earth's deep interior have been studied. These new capabilities are available to all researchers interested in studying deep earth materials through the APS General User Proposal system.

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