

*In situ and operando structural analysis with high-energy X-rays at the Advanced Photon Source APS*

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The Structural Science (SRS) Group in the X-ray science division at the APS supports 4 beamlines for in situ and operando experiments with high-energy X-ray to explore the development structure of novel materials during synthesis, various exposures and application for catalysis, energy storage, energy conversion etc.

High-energy X-rays above 30 keV offer the great opportunities for precise structure determination and insight to the pair distribution function by the access to a large reciprocal space. The high penetration power and the small Bragg angles enable the easy use of sample environment with limited option for windows.

An additional beamline operated by SRS group in the hard X-ray regime offers the opportunity for laser pump and X-ray probe experiments enabling a time resolution between 100 picosec and microsec, which is an important tool for photo-induced processes.

For the various electrochemistry related experiments at our beamlines, in particular battery research, a dedicated electrochemistry lab provides support to the users including access to glove boxes and cyclers.