

TPS 09A Temporally Coherent X-ray Diffraction Beamline

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Abstract

Taiwan Photon Source (TPS) 09A Temporally Coherent X-ray Diffraction beamline is dedicated to study the dynamic behavior and static structure of advanced crystalline materials, in particular thin films and bulk single crystals. Crystalline structure, phase transition of ordered structures as well as dynamical behavior of crystals upon external excitation are the foci of this beamline. The advantages of high collimation, high brightness, energy tunability, and subnanosecond pulse width of synchrotron radiation add additional dimensions to X-ray scattering beyond conventional structure determination. Apart from lattice, selectively sensing of new forms of orders involving charge, orbit, and spin are possible. Techniques including crystal truncation rods (CTR), grazing incidence X-ray diffraction (GIXD), resonant diffraction, X-ray reflectivity (XRR), reciprocal space map, and etc. are available.

Keywords: XRD, Crystalline structure, Dynamical behavior