

Hard X-ray Nanoprobes at the Advanced Photon Source: Current Capabilities and Future Perspective

Jörg Maser

Argonne National Laboratory, Argonne, IL 60439

Hard x-ray microscopy has emerged as a powerful characterization capability at the Advanced Photon Source. Both tomographic full-field microscopes and hard x-ray micro- and nanoprobe have opened new areas of study, including nano-electronics devices, energy materials, and environmental and biological systems. The CNM/APS hard x-ray nanoprobe represents a relatively new capability in nanoscale characterization of nanoscale materials and devices using diffraction, fluorescence and full field imaging. At the same time, hard x-ray nanoprobe dedicated to biological and health science applications is being built for operation at the APS.

We will discuss high-resolution x-ray microscopy and its application to nanoscale materials and devices. We will highlight novel hard x-ray optics aimed at bringing hard x-ray microscopy towards the 10-nm frontier and beyond. We will finally present plans for the *in situ* nanoprobe developed in the context of the APS upgrade.