

Abstract Submitted
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Resonant Soft X-ray Scattering for Soft Materials CHENG WANG, ATHONY YOUNG, ALEXANDER HEXEMER, HOWARD PADMORE, Lawrence Berkeley National Laboratory — Over the past a few years, we have developed Resonant Soft X-ray Scattering (RSoXS) and constructed the first dedicated resonant soft x-ray scattering beamline at the Advanced Light Source, LBNL. RSoXS combines soft x-ray spectroscopy with x-ray scattering thus offers statistical information for 3D chemical morphology over a large length scale range from nanometers to micrometers. Its unique chemical sensitivity, large accessible size scale, molecular bond orientation sensitivity with polarized x-rays and high coherence have shown great potential for chemical/morphological structure characterization for many classes of materials. Some recent development of in-situ soft x-ray scattering with in-vacuum sample environment will be discussed. In order to study sciences in naturally occurring conditions, we need to overcome the sample limitations set by the low penetration depth of soft x-rays and requirement of high vacuum. Adapting to the evolving environmental cell designs utilized increasingly in the Electron Microscopy community, customized designed liquid/gas environmental cells will enable soft x-ray scattering experiments on biological, electro-chemical, self-assembly, and hierarchical functional systems in both static and dynamic fashion. Recent RSoXS results on organic electronics, block copolymer thin films, and membrane structure will be presented.

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