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Developing A Dedicated Grazing-Incidence Small-Angle X-ray Scattering Beamline at the APS. Xuefa Li, Michael Sprung, Suresh Narayanan, Alec Sandy, Dong Ryeol Lee, Jin Wang, APS, Argonne National Lab, Argonne, IL.

As an increasingly important structural-characterization technique, grazing-incidence small-angle scattering (GISAXS) finds vast applications in nanostructures and nanocomposites at surfaces and interfaces for *in situ* and real-time studies.

To meet the strong demand from the nanoscience community, a dedicated GISAXS beamline has been designed and constructed as a part of the 8-ID-E beam line at the Advanced Photon Source (APS). Taking advantages of x-ray beam from an undulator, this beamline is designed with both simplicity and flexibility in mind to achieve high resolutions in both reciprocal and real spaces as well as high temporal resolution in measurement. The simplicity comes from a fixed photon energy of 7.4 KeV with a stable upstream slit arrangement to ensure a high throughput user operation. The flexibility comes from the many aspects: four-circle diffractometer-based sample holder for freedom and precision of sample manipulations, and, various sample environments. More specifically, the samples can be situated in an integrated vacuum chamber on a high-precision heating and cooling stage. The sample chamber can also be isolated from the beamline to allow solvent flows and to accommodate other mechanical systems such as *in situ* dip-coating devices. In this presentation, the details of this dedicated beamline will be discussed along with scientific highlights from the first group of the experiments performed at the beamline.