



Small-angle Scattering Seminar Series

Organized by SAXS-SIG, Advanced Photon Source

A monthly seminar series, organized by Small Angle X-ray Scattering Special Interest Group (SAXS-SIG) at Advanced Photon Source, is focused on discussing, celebrating, and learning from new frontiers of science, research, and development based on small-angle scattering (SAS). This is a monthly seminar organized virtually over ZOOM where the speaker will be invited by SAXS-SIG. In order to join the seminar please subscribe to the small-angle mailing list here: <https://mailman.aps.anl.gov/mailman/listinfo/small-angle>

Upcoming Seminar

Date: Jan 26, 2022

Time: Wed, 11:00 AM (CST)

Speaker: Thomas Weiss

Institution: SSRL

Title: Small Angle X-ray Scattering Facilities at the SSRL: Capabilities, Instrumentation, and Applications

Abstract: The Stanford Synchrotron Radiation Light Source (SSRL) is a general user facility supported by the DOE Office of Science. It features two state-of-the-art dedicated SAXS beam lines for Structural Biology and Material Science, respectively. The two end stations provide advanced instrumentation and several highly developed sample environments for a variety of SAXS experiments.

The BioSAXS beam line BL4-2 focuses on equilibrium and time-resolved studies in the fields of structural biology and biophysics. The instrument features a variable sample to detector distance (0.3m – 3.5m), a choice of different state-of-the-art detectors (PAD and CCD) and an optional high-flux multilayer monochromator providing sufficient photon flux for time resolved studies on weakly scattering samples at the millisecond time scale. Several specialized and highly automated sample handling environments are



Thomas Weiss: Senior Staff Scientist, Group leader of the BioSAXS group at the Stanford Synchrotron Radiation Lightsource (SSRL)

available for use at the BL4-2 (e.g. solution scattering robot, automated SEC-SAXS setup, robotic multi capillary cassette system) that directly connect to a data reduction and analysis pipeline providing continuous real-time data analysis results during the experiment.

On the Material Science side, beam line BL1-5 focuses on characterizing process-structure-property relationships for functional materials both ex-situ and in-situ. BL1-5 has a variable sample to detector distance, capability for simultaneous SAXS/WAXS detection using a Pilatus 1M and 100k detectors respectively. Specialized sample environments include solution synthesis, sample annealing, and a high-pressure cell. Standard sample environments for ex-situ thin film or transmission samples are also available. The beam line offers real time data handling for data calibration, subtraction, and visualization.

This presentation will discuss some of the technical details of the dedicated SAXS beam lines at SSRL, showcase their experimental capabilities and highlight some recent scientific applications.