

## Recent Developments at the Beamline for Biological Small Angle X-ray Scattering BL4-2 at SSRL

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The small-angle x-ray scattering station BL4-2 at the Stanford Synchrotron Radiation Lightsource (SSRL) is a permanent experimental station dedicated to structural biology and biophysics, providing state-of-the-art experimental facilities for structural studies on nucleic acids, proteins, protein assemblies, virus particles, biological fibers, lipid membranes and their complexes. A range of specialized sample environments for variety of different SAXS experiments is available at the beamline, including a fully automated high-throughput sample delivery robot for static solution scattering on biological macromolecules, and a temperature controlled flow-cell. In case of aggregation prone samples or weakly bound complexes a size-exclusion chromatography (SEC) setup can be directly connected to the instrument allowing in-line SEC-SAXS experiments to provide the highest sample quality for the SAXS data collection. In addition to the static solution scattering measurements we also provide state-of-the-art instrumentation for time resolved experiments on biological systems on the millisecond time scale with the 2D pixel array detector (Pilatus3 X 1M). Our stopped-flow device has been optimized to substantially reduce the required sample volume in order to allow time-resolved measurements on systems that are difficult to produce in larger amounts. Here we will discuss recent technological developments and present some of the recent scientific results obtained at the beamline.