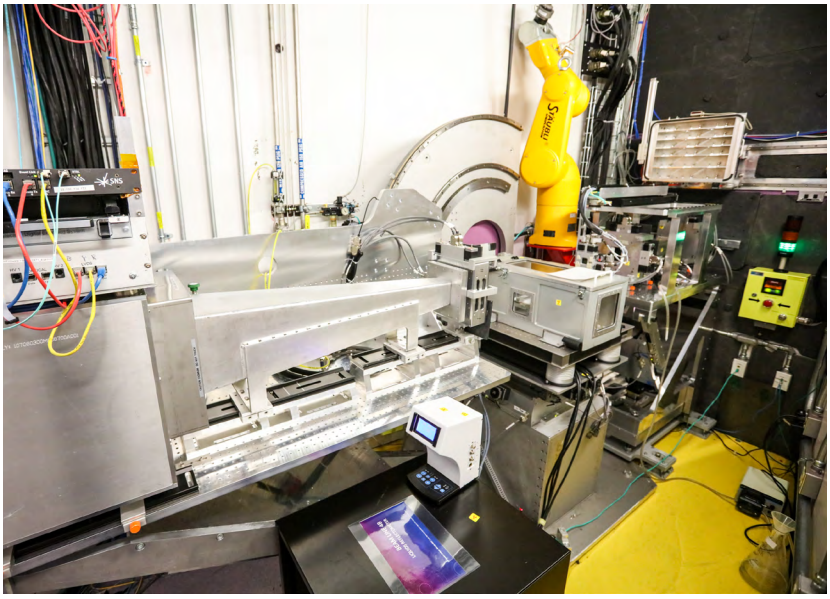
LIQREF
Liquids Reflectometer

Spallation Neutron Source

BEAMLINE
4B

The Liquids Reflectometer features a horizontal sample geometry and thus can accommodate air/liquid surfaces in addition to air/solid and liquid/solid interfaces. Surface and interfacial structures of thin films on length scales of 0.5 nm to 350nm are studied. Data rates and Q range covered at a single scattering angle setting, for time-resolved experiments, are sufficiently high to permit "real-time" kinetic studies on many systems. These types of experiments include investigations of chemical kinetics, solid-state reactions, phase transitions, and chemical reactions in general.



SPECIFICATIONS

Source-to-sample distance	13.6 m
Sample-to-detector distance	1.5 m
Detector size	17 x 20 cm^2
Detector resolution	1.3 x 1.3 mm^2
Moderator	Coupled supercritical hydrogen
Bandwidth	$\Delta\lambda = 3.4$ Å
Wavelength range	2.5 Å < λ < 17.5 Å
Q range (air/liquid)	0.008 $Å^{-1}$ < Q < 0.3 $Å^{-1}$
Q range (air/solid)	0.008 $Å^{-1}$ < Q < 0.3 $Å^{-1}$
Minimum reflectivity	1 x 10^{-7}

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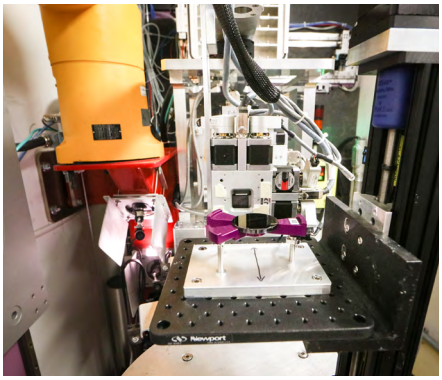
APPLICATIONS

The Liquids Reflectometer is useful for a wide range of science. Current areas of interest include biomaterials, polymers, electrochemistry, redox processes at interfaces, and chemistry involving thin layers of surfactants or other materials on the surfaces of liquids, such as cell-membrane analogs. The study of these systems provide information on structure- property relationships at the boundary between hard and soft matter, with applications in biomimetics, bio-sensing, and bio-compatible films; hydrogen storage, batteries, and fuel cells; as well as polymeric materials for a wide range of application.



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