

# INSTRUMENT

BEAM LINE

# 4B

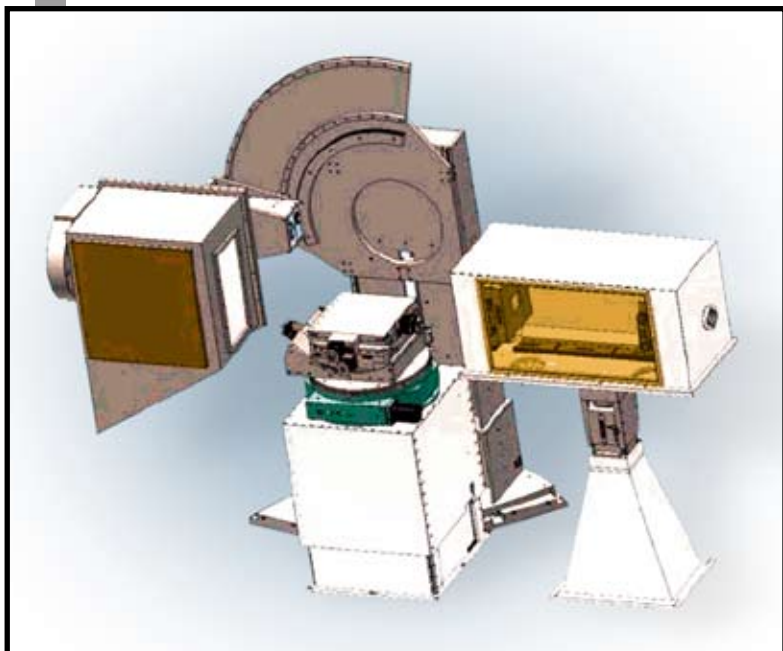
SPALLATION NEUTRON SOURCE

## LIQUIDS REFLECTOMETER



The Liquids Reflectometer features a horizontal sample geometry and thus can accommodate air/liquid surfaces in addition to air/solid and liquid/solid interfaces.

Active vibration isolation minimizes capillary-wave production by the external environment. Data rates and Q range covered at a single scattering angle setting will be sufficiently high to permit “real-time” kinetic studies on many systems. Time-resolved experiments include investigations of chemical kinetics, solid-state reactions, phase transitions, and chemical reactions in general.



*Liquids Reflectometer goniostat.*

### SPECIFICATIONS

Source-to-sample distance	13.6 m
Sample-to-detector distance	1.5 m
Detector size	20 x 20 cm <sup>2</sup>
Detector resolution	1.3 x 1.3 mm <sup>2</sup>
Moderator	Coupled supercritical hydrogen
Bandwidth	$\Delta\lambda = 3.5 \text{ \AA}$
Wavelength range	$2.5 \text{ \AA} < \lambda < 17.5 \text{ \AA}$
Q range (air/liquid)	$0 \text{ \AA}^{-1} < Q < 0.3 \text{ \AA}^{-1}$
Q range (air/solid)	$0 \text{ \AA}^{-1} < Q < 0.3 \text{ \AA}^{-1}$
Minimum reflectivity	$1 \times 10^{-7}$

Status: Operational

### APPLICATIONS

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

#### FOR MORE INFORMATION, CONTACT

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