EQ-SANS

Extended Q-Range Small-Angle Neutron Scattering Diffractometer

Spallation Neutron Source

BEAMLINE

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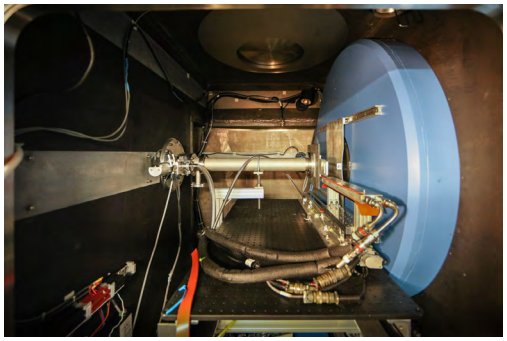
The EQ-SANS diffractometer is designed for the study of materials across length scales ranging from 0.1 to 100 nm. The high intensity provided by EQ-SANS enables both high-throughput experiments and time-resolved experiments facilitated by the pulsed source of SNS. EQ-SANS enables measurements over a wide Q-range at a single instrument configuration, providing improved throughput. The high maximum Q of the instrument allows both large- scale and local structure to be studied by the instrument. The versatility of SANS makes EQ-SANS broadly applicable to a wide range of materials in science and industry.



SPECIFICATIONS

Source-to-sample distance	14 m
Bandwidth	3–4.3 Å
Moderator	Coupled supercritical hydrogen
Integrated flux on sample	Up to ~10^7 n/cm^2/s
Q range	0.002 Å^{-1} < Q < 5 Å^{-1}

DETECTOR

Sample-to-detector distance	1.3–9 m
Detector size	1 x 1 m
Detector resolution	5.5 x 4.3 mm

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APPLICATIONS

Life science

- Solution structures of proteins, DNA, and other biological molecules and molecular complexes
- Protein-protein and protein-ligand interactions, kinase regulation
- Protein-membrane interaction, macro-organization of membranes
- Materials for drug delivery

Polymer and colloidal systems

- Block copolymers and dendrimers
- Micelles and emulsions
- Polyelectrolytes and ion distribution at solid-liquid interfaces

Materials science

- Simultaneous study of domain and crystalline structures
- Metallurgy, crystallization and precipitation
- Nanoparticles

Earth and environmental sciences

- Pore structure in soils
- Structure of geologic materials

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