

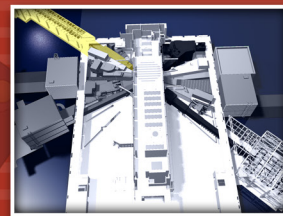
INSTRUMENT

BEAM LINE

2

SPALLATION NEUTRON SOURCE

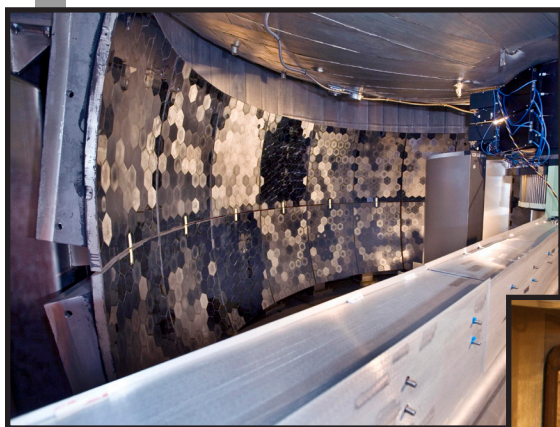
Fact Sheet



BASIS – BACKSCATTERING SPECTROMETER

BASIS is designed to provide extremely high-energy resolution near the elastic peak, enabling studies of the diffusive dynamics of molecules on the atomic length scale (quasi-elastic neutron scattering). This instrument features very high flux and a dynamic

range in energy transfer that is approximately five times greater than what is available on comparable instruments today. In addition, this instrument provides the capability of shifting the incident neutron bandwidth, enabling inelastic scattering with 18 meV energy transfer and a resolution of several microelectronvolts.



SPECIFICATIONS

Si 111	
Elastic energy	2.08 meV
Bandwidth	$\pm 250 \mu\text{eV}$
Resolution (elastic)	$3.5 \mu\text{eV}$
Q range (elastic)	$0.2 \text{ \AA}^{-1} < Q < 2.0 \text{ \AA}^{-1}$
Solid angle	1.2 sr 2.4 sr (future upgrade)

Si 311 (future upgrade)	
Elastic energy	7.64 meV
Bandwidth	$\pm 1700 \mu\text{eV}$
Resolution (elastic)	$10 \mu\text{eV}$
Q range (elastic)	$0.38 \text{ \AA}^{-1} < Q < 3.8 \text{ \AA}^{-1}$
Solid angle	1.2 sr

Status: Available to users

APPLICATIONS

BASIS can be used to probe dynamic processes in various systems on the pico- to nanosecond time scale. It is well suited for probing diffusive and relaxational motions but can also be effectively used for studying some types of collective excitations in condensed matter. Applicable fields of study include, but are not limited to, biology, polymers, small molecules, complex fluids, magnetism, materials science, ionic conductors, catalysts, H storage materials (functional energy-related materials), and low-energy spin excitations.

FOR MORE INFORMATION, CONTACT

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