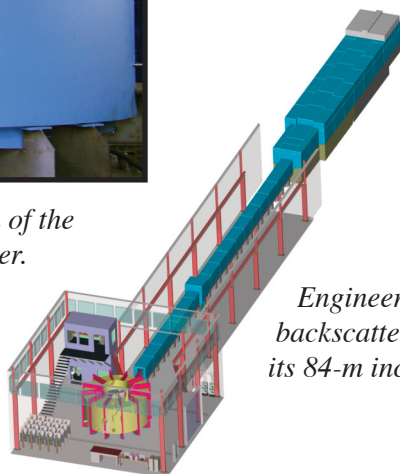


BACKSCATTERING SPECTROMETER

The backscattering spectrometer on beam line 2 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 (quasielastic 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, the instrument provides the unique capability of shifting the incident neutron bandwidth, enabling inelastic scattering to 18 meV of energy transfer with a resolution of 0.1% of the energy transfer.



Evacuated final flight path of the backscattering spectrometer.



Engineering rendering of the backscattering spectrometer and its 84-m incident flight path.

RECENT SIGNIFICANT EVENTS

Instrument Construction

- On-site guide installation is complete.
- Analyzer crystals are being delivered and attached.
- First 35 m of shielding is on site.
- Chopper installation is in progress.

Instrument Science

- Participating in Oak Ridge National Laboratory orientation visits to North Carolina State University.
- Participating in ACS Washington sessions on neutron-based analysis.

SPECIFICATIONS

Si 111	
Elastic energy	2.08 meV
Bandwidth	$\pm 258 \mu\text{eV}$
Resolution (elastic)	$2.2 - 2.7 \mu\text{eV}$
Q-range (elastic)	$0.17 \text{ \AA}^{-1} < Q < 2.0 \text{ \AA}^{-1}$
Solid angle	2.0 sr
	4.0 sr (upgrade)

Si 311 (upgrade)	
Elastic energy	7.64 meV
Bandwidth	$\pm 1700 \mu\text{eV}$
Resolution (elastic)	$10 \mu\text{eV}$
Q-range (elastic)	$0.35 \text{ \AA}^{-1} < Q < 3.8 \text{ \AA}^{-1}$
Solid angle	4.0 sr

FOR MORE INFORMATION, CONTACT BACKSCATTERING SPECTROMETER STAFF

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www.sns.gov/users/instrument_systems/instruments/inelastic/backscattering.shtml

