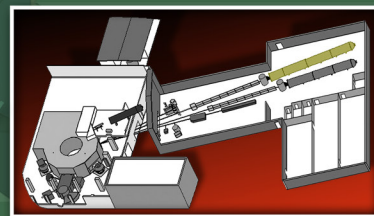


INSTRUMENT

CG-2

BEAM LINE HIGH FLUX ISOTOPE REACTOR



GENERAL-PURPOSE SANS – SMALL-ANGLE NEUTRON SCATTERING DIFFRACTOMETER

The general-purpose SANS diffractometer is optimized for providing information about structure and interactions in materials in the size range of 0.5–200 nm. It has a cold neutron flux on sample and capabilities comparable to those of the best SANS instruments worldwide, including a wide range of neutron wavelengths $\lambda = 4\text{--}20\text{ \AA}$, resolution $\delta\lambda/\lambda = 9\text{--}45\%$, and a 1 m^2 area detector with $5 \times 5\text{ mm}^2$ pixel resolution with a maximum counting capability of up to 2MHz. The sample-to-detector distance can be varied from 1 to 19.5 m, and the detector can be offset horizontally by up to 45 cm, allowing a total accessible Q range of from <0.001 to 1 \AA^{-1} . The 2 m sample environment area accommodates large, special-purpose sample environments such as cryomagnets, furnaces, mechanical load frames, and shear cells.



SPECIFICATIONS

Beam spectrum	$\lambda = 4\text{--}25\text{ \AA}$ $\Delta\lambda/\lambda = 9\text{--}45\%$
Sample-detector distance	1–20 m
Detector offset	0–45 cm
Source-sample distance	1.8–17.4 m
Max flux on sample	$>2 \times 10^7$ n/cm ² /s at $\lambda = 4.75\text{ \AA}$, $\Delta\lambda/\lambda = 14\%$
Detector	2D linear position-sensitive detector
Detector resolution/pixels	192 x 256
Momentum transfer range	$Q = 0.0007\text{--}1\text{ \AA}^{-1}$ $Q_{\text{max}}/Q_{\text{min}}$ 10–20

Status: Available to users

APPLICATIONS

- Soft condensed matter: molecular self-assembly and interactions in complex fluids; intermediate order in glassy systems, polymer solutions, gels and blends, colloids, micelles, and microemulsions
- Hard condensed matter: phase separation, grain growth, and orientation in metallurgical alloys, nanocomposites, advanced ceramics, and porous catalytic, adsorbent materials, geophysics and carbon-storage systems
- Magnetic systems: flux lattices in superconductors, ferrofluids, and the relationship between structural and magnetic domains and ordering

FOR MORE INFORMATION, CONTACT

Instrument Scientist: Lisa DeBeer-Schmitt, debeerschmlm@ornl.gov, 574.252.6060

Instrument Scientist: Lilin He, hel3@ornl.gov, 865.576.7748

Instrument Scientist: Yuri Melnichenko, melnichenkoy@ornl.gov, 865.576.7746

neutrons.ornl.gov/cg2