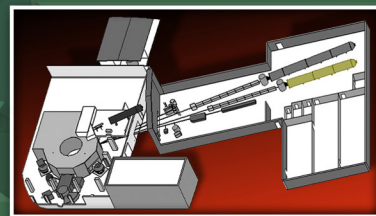


# INSTRUMENT

BEAM LINE

# CG-3

HIGH FLUX ISOTOPE REACTOR



## BIO-SANS – BIOLOGICAL SMALL-ANGLE NEUTRON SCATTERING INSTRUMENT

Bio-SANS was designed and optimized for analysis of the structure, function, and dynamics of complex biological systems. Bio-SANS is the cornerstone of the Center for Structural Molecular Biology (CSMB) at Oak Ridge National Laboratory. The

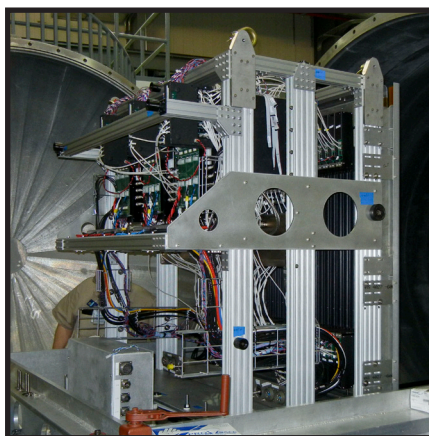


Detector tanks for the new SANS instruments at HFIR. The Bio-SANS detector is on the left.

Bio-SANS instrument is supported by additional CSMB capabilities that include development of advanced computational tools for neutron analysis and modeling, as well as biophysical characterization and X-ray scattering infrastructure. A dedicated biological sample preparation laboratory is located adjacent to the instrument.

### APPLICATIONS

- Bio-macromolecules and their assemblies
  - Protein complexes
  - Protein/DNA complexes
  - Lipids
  - Viruses
  - Carbohydrates
- Hierarchical biological structures
  - Gels
  - Fibers and fibrils
  - Vesicles
  - Microemulsions
- Membrane diffraction
- Biomimetic and bio-inspired systems



CG3 Detector Array

### USER ACCESS

Bio-SANS is operated as a user facility and is sponsored by DOE's Office of Biological and Environmental Research. The instrument is managed under the CSMB User Program.

### SPECIFICATIONS

Wavelength	$6 < \lambda < 25 \text{ \AA}$
Wavelength resolution	$\Delta\lambda / \lambda = 9-45\%$
Q range	$0.0009-0.8 \text{ \AA}^{-1}$
Sample-to-detector distance	1.1–15.3 m
Detector	2-D $^3\text{He}$
Detector size	$1 \times 1 \text{ m}^2$
Detector resolution/pixel size	$5.1 \times 5.1 \text{ mm}^2$
Max count rate	20 kHz

### CENTER CAPABILITIES

X-ray scattering
Light scattering
Computational tools
Bio-support lab
Protein production + analysis
Bio-deuteration lab

Status: Available to users



<http://www.csmb.ornl.gov>



### FOR MORE INFORMATION, CONTACT

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[neutrons.ornl.gov/cg3](http://neutrons.ornl.gov/cg3)



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