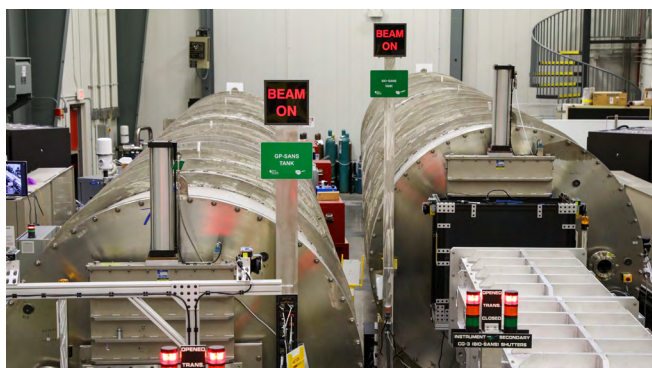


BIO-SANS

Biological Small-Angle Neutron Scattering Instrument

The Bio-SANS instrument is dedicated to structural analysis of complex biological systems. It is part of the Center for Structural Molecular Biology (CSMB) at Oak Ridge National Laboratory along with the Bio-deuteration Laboratory (BDL). The Bio-SANS instrument with its dual detector system offers users a wide dynamic Q-range (~300) in a single exposure. Users

can avail a variety of sample environments for static and in-operando measurements of biomacromolecules and biomaterials.



The SANS instruments at HFIR.
Bio-SANS is on the right.

SPECIFICATIONS

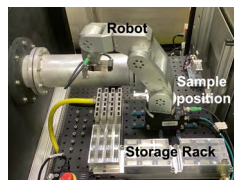
Wavelength	$6 < \lambda < 25 \text{ \AA}$
Wavelength resolution	$\Delta\lambda/\lambda = 9\text{--}45\%$
Q range	$0.0009\text{--}1 \text{ \AA}^{-1}$
Sample-to-detector distance	2.25–15.5 m
Detector	2–dimensional linear position-sensitive detector
Detector size	Main detector $1 \times 1 \text{ m}^2$ Wide angle detector $1 \times 0.8 \text{ m}^2$
Detector resolution	Main detector $192 \times 256 \text{ pixels}$ Wide angle detector $160 \times 256 \text{ pixels}$
Max count rate	1 MHz

APPLICATIONS

- Biomacromolecules and their assemblies
 - Protein Nucleic Acid/Lipid Complexes
- Bio-Membranes
 - Membrane Proteins
 - Liposomes
 - Nanodiscs
- Complex Systems
 - In-Cellulo Studies
 - Viruses
- Biomass & Biofuels
 - Plant cell wall structure & dynamics
- Biomimetic/Bioinspired Systems
 - Microemulsions
 - Micellar systems
 - Gels & fibers



Sample area



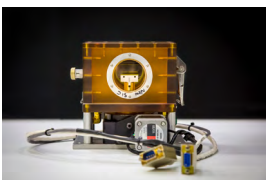
Robot sample changer



'Tumbler' or 'rotating cells'



Reaction cell for high temperature and pressure



Humidity chamber

CSMB CAPABILITIES

Biological deuteration (proteins, lipids, and carbohydrates)

Chemical deuteration (lipids and ligands)

Small-angle x-ray scattering (Available at SNS)

Dynamic and light scattering and optical spectroscopy (Available at SNS and Shull Wollan Center)

21-G02336/jdh Dec 2021

USER ACCESS

Bio-SANS operates an open access user program that is supported by DOE Biological and Environmental Research.

For more information, contact

Sai Venkatesh Pingali, pingalis@ornl.gov, 865.241.2424

Wellington Leite, leitewc@ornl.gov, 865.978.2507

Volker Urban, urbanvs@ornl.gov, 865.576.7221

neutrons.ornl.gov/biosans