The Bio-SANS instrument is optimized for analysis of the structure, function, and dynamics of complex biological systems. It is the cornerstone of the Center for Structural Molecular Biology (CSMB) at Oak Ridge National Laboratory. The 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**
- Biomacromolecules and their assemblies
  - Protein Complexes
  - Viruses
  - Protein/Nucleic Acid/Lipid Complexes
  - Carbohydrate Complexes
- Hierarchical and biomimetic systems
  - Gels
  - Fibers
  - Vesicles
  - Membranes
  - Microemulsions

**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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>$6 &lt; \lambda &lt; 25 \text{ Å}$</td>
</tr>
<tr>
<td>Wavelength resolution</td>
<td>$\Delta \lambda / \lambda = 9-45%$</td>
</tr>
<tr>
<td>Q range</td>
<td>$0.0009-1 \text{ Å}^{-1}$</td>
</tr>
<tr>
<td>Sample-to-detector distance</td>
<td>$1.1-15.5 \text{ m}$</td>
</tr>
<tr>
<td>Detector</td>
<td>2-D linear position-sensitive detector</td>
</tr>
<tr>
<td>Detector size</td>
<td>Main detector 1 x 1 m² Wide angle detector 1 x 0.8 m²</td>
</tr>
<tr>
<td>Detector resolution</td>
<td>Main detector 192 x 256 pixels Wide angle detector 160 x 256 pixels</td>
</tr>
<tr>
<td>Max count rate</td>
<td>1 MHz</td>
</tr>
</tbody>
</table>

**Center Capabilities**

- Bio-Deuteration Laboratory
- Protein production + analysis
- HFIR Bio-support Laboratory
- Computational tools (Tools for GI SANS analysis)
- Small-angle x-ray scattering (Available at SNS)
- Light scattering (Available at the Shull Wollan Center for Neutron Sciences Lab)

Status: Available to users

**For more information, contact**
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neutrons.ornl.gov/biosans

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