

Synchrotron Biosciences at National Synchrotron Light Source II: A Biomedical Technology Research Resource

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We have developed a powerful and readily accessible suite of structural biology tools for the life-science research community. With the main focus on macromolecular crystallography (MX) and x-ray scattering, there is also a user program in fluorescence imaging of metals in biological materials. The facilities are operated by the NIH- and DOE-funded Life Science Biomedical Technology Research Resource: LSBR.

AMX and FMX are two MX beamlines with overlapping capabilities. While the AMX “mini” beam supports efficient structure determination and high-density throughput for chemical-library or mutation-activity screening, the FMX “micro” beam enables the study of macromolecular complexes, weakly diffracting samples, and radiation-sensitive crystals. To exploit the high flux, small focal spots, and fast data-acquisition rates, exposures will be short for individual crystals, and multi-crystal (serial crystallography) methods will be available. We expect that all specimens will be mounted by our fast and reliable automounters, based on six-axis robots and high-capacity in-hutch supply vessels.

The LIX scattering beamline supports three scientific areas: (1) high-throughput biomolecular solution scattering and time-resolved solution scattering based on microfluidic flow mixers, (2) scattering-based scanning-probe imaging and tomography of biological tissues, and (3) diffraction from single and multilayered lipid membranes.

We also have a laboratory that employs acoustic droplet ejection to support nanoliter-scale crystallization trials and drug-target fragment testing.

Beam time can be requested through this web site: <https://www.bnl.gov/ps/LSBR/users/>