New X-ray Facility Brings Synchrotron-level Capabilities to BioPACIFIC MIP

UCSB

What was accomplished?

The BioPACIFIC MIP team has completed the design, construction, and installation of the advanced X-Ray Diffraction Platform, and instrument is now available to users. The X-ray instrument features an unparalleled laboratory SAXS-WAXS (small- and wide-angle x-ray scattering) beamline for high throughput characterization of biopolymers and nanostructures. The platform features a 10X increase in X-ray flux and a 50X increase in speed or sensitivity to provide new capabilities for a diverse array of research projects. The in-house team has also developed new sample environments designed for kinetic SAXS measurements upon mixing of complex fluids (mix-SAXS) that will position BioPACIFIC MIP as one of the premiere research facilities in the U.S. for kinetic structural characterization of complex and biological fluids.

Why is it important?

The development of this one-of-a-kind tool, with the highest data collection efficiency for a laboratory X-ray instrument and performance levels comparable to a second-generation synchrotron, provides users with easy access to high quality SAXS/WAXS measurements that would otherwise require application to highly-competitive national synchrotron facilities. The beamline design, user interface, and sample environments are all optimized for rapid measurements and turn-around, as well as versatility to suit a wide range of applications, promoting rapid discovery and the MGI approach.

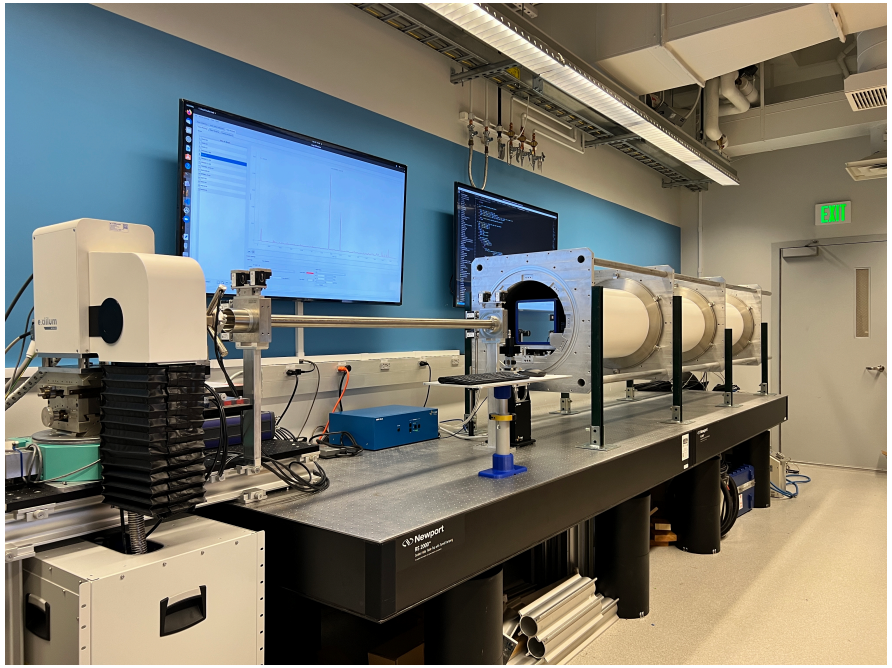

Figure 1. The X-ray Diffraction Platform development and construction is complete, and the instrument is now available to users. The facility enables SAXS/WAXS measurements at performance levels comparable to a second-generation synchrotron, but in a benchtop configuration.