

BioMAX, a macromolecular crystallography facility at MAX IV

Ana Gonzalez¹

¹MAX IV

ana.gonzalez@maxiv.lu.se

BioMAX is the first operational Macromolecular Crystallography (MX) beamline at the MAX IV facility.[1] The design goal was to create a stable and reliable multipurpose beamline. The beamline optics consist of a double crystal Si(111) monochromator that provides an energy range between 5 and 25 keV and a pair of KB mirrors; the beam can be focused down to 20 x 5 μm^2 FWHM at the sample position with a photon flux of about 5×10^{12} photons/s at a ring current of 250 mA and an energy of 13 keV. Changes of energy and beam focus (up to 100 x 100 μm^2) are automated. The experimental hutch is equipped with a MD3 microdiffractometer, an IRELEC Isara sample changers and a 16M Eiger detector. MXCuBE3 is used for user beamline control and data collection.[2]

A wide range of MX experimental techniques are available at the beamline, from standard oscillation data collection at cryo-temperatures, optimized SAD and MAD experiments, humidity-controlled room temperature data collection and Serial Crystallography experiments, both fixed target and injector based.[3] A fragment-based drug discovery facility (FragMAX) is also based a BioMAX.[4] Conventional experiments at cryotemperatures can be done fully remotely.

References

- [1] Ursby et al. *BioMAX – the First Macromolecular Crystallography Beamline at MAX IV Laboratory*. *J. Synchrotron Radiat.* 2020, 27 (5), 1415–1429. DOI: 10.1107/s1600577520008723
- [2] Mueller et al. *MXCuBE3: A New Era of MX-Beamline Control Begins*. *Synchrotron Radiat. News* 2017, 30 (1), 22–27. DOI: 10.1080/08940886.2017.1267564
- [3] Shilova et al. *Current Status and Future Opportunities for Serial Crystallography at MAX IV Laboratory*. *J. Synchrotron Radiat.* 2020, 27 (5), 1095–1102. DOI: 10.1107/S1600577520008735
- [4] Lima et al. *FragMAX: The Fragment-Screening Platform at the MAX IV Laboratory*. *Acta Crystallogr. Sect. D, Struct. Biol.* 2020, 76 (8), 771–777. DOI: 10.1107/S205979832000889X,