

MS01-P09 | P11 AT PETRA III: A VERSATILE BEAMLINE FOR SERIAL AND HIGH-THROUGHPUT CRYSTALLOGRAPHY

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Beamline P11 is dedicated to structural investigations of biological samples from atomic to micrometer length scales. The beamline provides two state-of-the-art endstations: a crystallography experiment which is operated between 5.5 and 28 keV and in user operation since 2013 [1] and an X-ray microscope which is currently under construction.

Basis of beamline design was to make full use of the excellent source properties of PETRA III and to deliver most of the photons into micrometer-sized focal spots at both experimental endstations. The beamline is equipped with two X-ray mirror systems which allow for tailoring the beam properties to the experimental requirements: A large parallel beam can be generated for bioimaging experiments, *e.g.* ptychography combined with X-ray fluorescence element mapping, and single crystal structure determination from large unit cell systems. A highly intense microbeam with more than 10^{13} ph/s in a $4 \times 9 \mu\text{m}^2$ focal spot ($v \times h$, FWHM) is available for the investigation of microcrystals and serial crystallography experiments using jets, tape-drives [2] or solid sample supports [3].

The rapid automatic sample changer and the Pilatus 6M detector in place provide a very stable setup for high-throughput crystallography. The implementation of a Roadrunner II goniometer, an Eiger2 16M detector and a 'pink' beam option will further reduce data collection times and will allow for screening whole ligand libraries in short time.

[1] Burkhardt et al., EPJ Plus 131:56 (2016);

[2] Beyerlein, IUCrJ 4, 439 (2017);

[3] Roedig et al., Sci. Rep. 5, 10451 (2015).