

Health-2 : Accelerating Drug Development: Current Status and Advancement Plans for PAL MX Beamline

Friday 5 June 2026 14:00 (30 minutes)

The Pohang Accelerator Laboratory (PAL) at PLS-II operates three macromolecular crystallography (MX) beamlines—5C, 7A, and 11C—supporting protein structure determination and structure-based drug discovery. Beamlines 5C and 11C are equipped with robotic sample mounting systems, enabling efficient high-throughput and remote experiments. In particular, the 5C beamline provides a dedicated Fragment-Based Drug Discovery (FBDD) platform, facilitating early-stage therapeutic development.

The 7A beamline is currently undergoing major upgrades, including the installation of an EIGER2 detector, robotic system, and advanced goniometer to enhance throughput and data quality. The 11C beamline, optimized for microcrystals (<50 μm) and synchrotron serial crystallography (SSX), is being expanded from 90 to 1,332 sample capacity through a high-throughput automation system. In addition, a compound refractive lens (CRL) transfocator will enable flexible beam size control, significantly broadening experimental capabilities. Furthermore, a novel flip-type fixed-target holder has been developed to address key challenges in SSX, enabling reliable room-temperature data collection.

Together, these developments position PAL's MX beamlines as advanced platforms for high-throughput structural biology, further accelerating structure-based drug discovery.

References

- [1] Novel fixed-target serial crystallography flip-holder for macromolecular crystallography beamlines at synchrotron radiation sources. *J Synchrotron Radiat.* 2025 Mar 1;32(Pt 2):315-320.
- [2] BL-11C Micro-MX: a high-flux microfocus macromolecular-crystallography beamline for micrometre-sized protein crystals at Pohang Light Source II. *J Synchrotron Radiat.* 2021 Jul 1;28(Pt 4):1210-1215.
- [3] Upgrade of BL-5C as a highly automated macromolecular crystallography beamline at Pohang Light Source II. *J Synchrotron Radiat.* 2021 Mar 1;28(Pt 2):602-608.

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