

S30-2 Protein micro-crystallography with a new micro-beam beamline

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Recently, researchers' demands for high-quality data collection from protein micro-crystals, which would usually result from crystallization difficulty, have been remarkably growing. In order to collect efficient diffraction data for structure determination from micro-crystals, an expert data collection system providing high signal-to-noise ratio should be essential. A small sized and highly brilliant X-ray beam with size of a few micrometers has been proved to achieve protein micro-crystallography by both increasing reflection intensities and reducing background scattering from sample environments.

Two micro-beam beamlines at SPring-8 and KEK-PF is currently under construction for Targeted Proteins Research Program by MEXT of Japan. At SPring-8, a new undulator beamline for protein micro-crystallography, named RIKEN Targeted Proteins Beamline (BL32XU), will start operation in the end of 2010. The beam size at sample position of BL32XU will correspond to $1 \times 2 \mu\text{m}^2$ with the photon flux density over 10^{10} photons/sec/ μm^2 . Furthermore, research and developments of indispensable components to achieve protein micro-crystallography with micro-beam, such as high-precision diffractometer, automated micro-crystal handling, advanced data collection system to suppress radiation damage and so on, are progressing. The present status of the research and development for protein micro-crystallography will be presented.