

BL26B1 & BL26B2 (RIKEN Structural Genomics Beamlines I&II)

RIKEN Structural Genomics Beamlines I and II are composed of SPring-8 standard bending magnet beamline components and the end station is dedicated to high throughput protein crystallography^[1]. Users can collect diffraction data from a vast amount of cryo-cooled protein crystals in an automated manner with the auto-sample exchanger SPACE and user interface BSS^[2, 3].

Two types of remote user access are available. One is mail-in data collection where a web database system, D-Cha, supports sample and experimental information input/output on a browser^[4]. The other is remotely controlling beamline equipment via a dedicated interface program, SP8Remote, which allows users to directly log into the beamline control system under the districted safety interlock system^[5]. At both beamlines, further improvements of throughput and development of new devices have been continuously conducted for research projects such as ligand screening for drug discovery. In addition, a variety of experimental environments such as room temperature crystallography with a

HAG system, crystallization plate scanner, and micro-spectrometer have been implemented^[6]. In FY2018, asymmetric diffraction crystals for the monochromator were implemented to enhance the X-ray beam intensity. As the result, the photon flux at the sample was enhanced by a factor of 2.5 for 1.24-keV X-rays^[7]. It should reduce the exposure times and accelerate data collection. At BL26B1, by developing control software and a user interface, we have begun user operations of the plate scanner and exchange system (Fig. 1(a)).

At BL26B2, the implementation of a twin-armed sample exchanger, SPACE-II, shortened the sample exchange time from 48 s to 11 s (Fig. 1(b)). Additionally, the development of new devices and a software system are in progress. These include a microfluidic chip for *in situ* ligand soaking and data collection, a data processing and structure analysis pipeline, and a new web database system to cover the all data flow, including crystallization and data analysis.

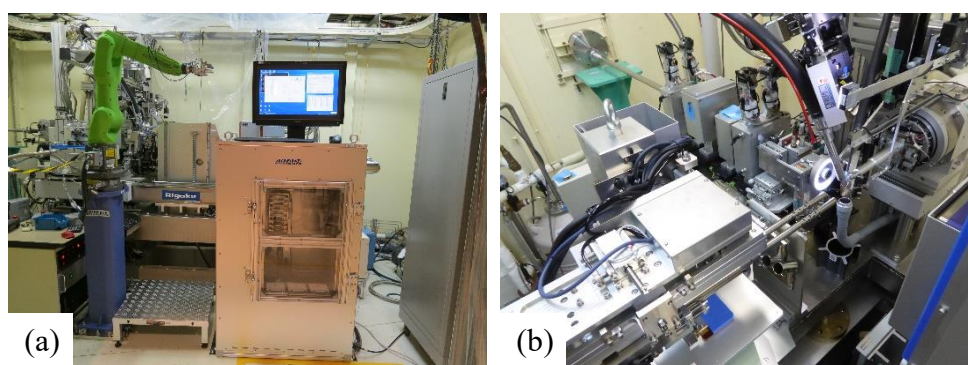


Fig. 1. (a) Crystal plate scanner and exchanging system at BL26B1. (b) Twin-armed sample exchanger SPACE at BL26B2.

Go Ueno

SR Life Science Instrumentation Team, Life
Science Research Infrastructure Group, Advanced
Photon Technology Division, RIKEN SPring-8
Center

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