BL08B2 Hyogo BM

1. Overview of BL08B2

Beamline BL08B2 at SPring-8 is a synchrotron radiation experimental facility overseen by the Hyogo Prefectural Government. This beamline provides a range of experimental techniques for industrial applications, such as X-ray imaging, Xray computed tomography (X-ray CT), and smallangle X-ray scattering (SAXS). The SAXS experimental station is equipped with an automated sample exchange system, which is designed to improve the efficiency of sample measurements. Additionally, this station supports *in situ* observation experiments, allowing for the efficient collection of large datasets on material structures.

XAFS, X-ray Topography Optical Hutch Experimental Hutch Section 1

Fig. 1. Schematic layout of BL08B2.

Experimental Hutch Section 2

In FY2023, user access to the X-ray CT, Xray imaging, and SAXS experimental stations was supported by the industrial utilization group of the Japan Synchrotron Radiation Research Institute (JASRI). This group provided assistance from preexperiment consultations and planning to support during the experiments. Administrative procedures for user access and the evaluation of user proposals were handled by the Hyogo Science and Technology Association (HSTA).

2. Utilization status of the beamline by industrial sectors

Many users from various industrial sectors utilize this beamline, with the highest usage observed in the field of engineering materials (50%), followed by the food industry (13%), battery industry (6%), and semiconductor materials (6%) (Fig. 2). In particular, local companies in the food industry have employed X-ray CT measurement techniques to challenge and advance the understanding of food fermentation processes as a new attempt at industrial applications.



Fig. 2. Utilization percentages of BL08B2 by industrial sectors in FY2023.

The primary measurement techniques utilized at BL08B2 are small-angle X-ray scattering (SAXS), X-ray CT, and X-ray imaging. All of these methods have traditionally been among the most frequently used by users.

Additionally, X-ray topography has continued to be employed for evaluating substrate materials for power devices. For this technique, it is planned to consolidate operations at the topography station of BL24XU in FY2024.



Fig. 3. Utilization percentages of each experimental technique at BL08B2.

Efforts to apply "data science" in synchrotron radiation measurements and the initiatives in materials informatics that had been attempted at the Hyogo Prefecture Beamline have been discontinued. The reason for this decision is that recruiting personnel who understand both synchrotron radiation and data science has become difficult. However, data utilization is recognized as a key initiative for the future industrial application of synchrotron radiation, and Hyogo Prefecture acknowledges the importance of developing personnel in this field.

3. Future Initiatives for New Industrial Support in Hyogo Prefecture

As the new phase of SPring-8 is about to begin, it is crucial for Hyogo Prefecture to develop strategic policies based on the following priorities. First, a service framework must be established to facilitate consultations with local companies, enabling them to leverage SPring-8 to solve challenges in the manufacturing process. In particular, efforts should focus on cultivating potential users to expand the utilization of SPring-8 facilities across various industrial sectors within the region. Furthermore, policies that enhance accessibility for local companies, including financial support measures, should be carefully considered.

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Hyogo Science and Technology Association