

## 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, X-ray computed tomography (X-ray CT), and small-angle 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.

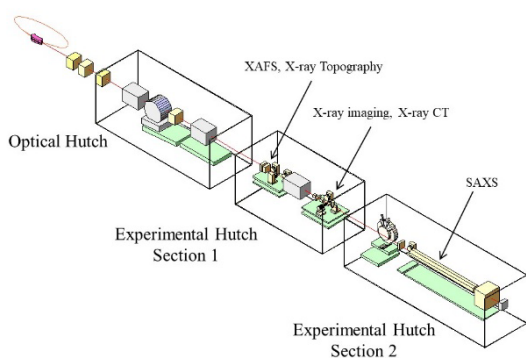


Fig. 1. Schematic layout of BL08B2.

In FY2024, user access to the X-ray CT, X-ray 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 pre-experiment 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).

Hyogo Prefecture has decided to terminate their activities at this research facility upon the expiration of the beamline installation contract in FY2025.

### 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 semiconductor materials (25%), followed by engineering materials (19%), food industry (12%), and battery industry (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.

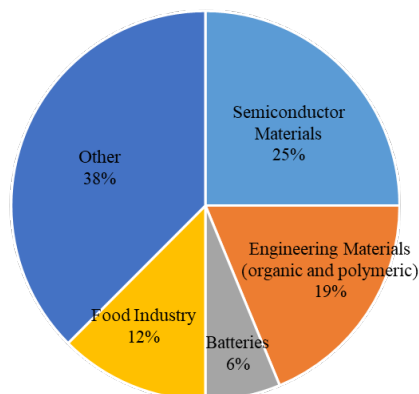


Fig. 2. Utilization percentages of BL08B2 by industrial sectors in FY2024.

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.

X-ray topography technology is now concentrated at the Topography Station of BL24XU.

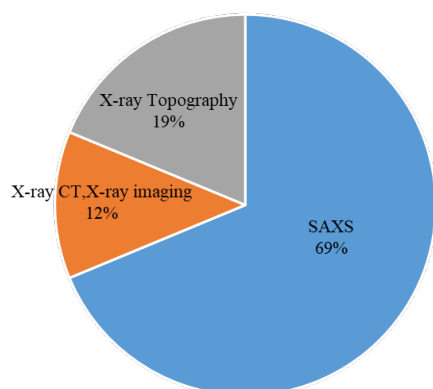


Fig. 3. Utilization percentages of experimental techniques at BL08B2.

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. We are working with relevant organizations to consider how to develop personnel in the future.

### 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. To this end, we are considering the appointment of a coordinator to develop new users for SPring-8.

Furthermore, policies that enhance accessibility for local companies, including financial support measures, should be carefully considered.

#### Acknowledgments

We would like to express our sincere gratitude to the Japan Synchrotron Radiation Research Institute (JASRI) for their invaluable support in facilitating the use of this experimental facility by companies in the industrial sector throughout the year. Their assistance has been instrumental in enabling these companies to achieve significant outcomes using SPring-8.

Hyogo Science and Technology Association