

EDITOR'S NOTE

This is the 2023 issue of SPRING-8/SACLA Research Frontiers, which presents the outstanding scientific outcomes of SPRING-8 and SACLA in 2022 and 2023. The best scientific achievements were selected annually from more than 1,000 papers published using SPRING-8 or SACLA. Protein crystallography remains a highly active field, and research on a variety of functional materials aimed to achieving sustainable development goals (SDGs) is ongoing.

This issue contains two reviews. One is written by Prof. Kazuto Yamauchi (Osaka University), who is the leader in the development of the "OSAKA mirror." He introduced a method focus X-rays effectively using precisely fabricated optics. Consequently, ~7 nm focusing was realized. In the review, machining and polishing processes and figure-correction methods are introduced. The other review is written by Dr. Alfred Baron (RIKEN/SPRING-8). He reviewed the activities and instrumentations of meV-resolution inelastic scattering experiments. The atomic dynamics of various materials are currently being investigated using the high-performance inelastic scattering X-ray monochromators at BL35XU and BL43LXU. In the review, examples of high-pressure science, liquids, thin films, and complex materials are introduced in addition to future plans.

SPRING-8/SACLA Research Frontiers is composed primarily of two sections. The first presents the scientific results (Scientific Frontiers) and the second provides additional information regarding hard and soft infrastructures that support scientific research. Although some important parameters, such as the operation, time are provided in the second section, other information and more complete statistical data on the operation of SPRING-8 and SACLA are available on the website, thus enabling access to more updated information (http://www.spring8.or.jp/en/about_us/spring8data/). Additionally, the full text of SPRING-8/SACLA Research Frontiers is available on the SPRING-8 website (<http://www.spring8.or.jp/en>). For the list of publications by SPRING-8 users and staff, please visit the publication database at http://www.spring8.or.jp/en/science/publication_database/.

On behalf of all the editors, I would like to thank those who have helped us by recommending excellent research results suitable for publication in this issue, as well as the users, and staff of SPRING-8, who have contributed their reports.

Toyohiko Kinoshita

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