Editor's Note

This is the 2022 issue of SPring-8/SACLA Research Frontiers, which covers the outstanding scientific outcomes of SPring-8 and SACLA in 2021 and 2022. This was the period during which we were recovering from the influence of COVID-19. After the retirement of the previous editor in chief, Dr. Naoto Yagi, I assumed the position for this issue.

The best scientific achievements are collected from more than 1,000 papers published each year using SPring-8 or SACLA. Protein crystallography is very active, and the investigation of a variety of functional materials towards sustainable development goals (SDGs) is ongoing.

There are two review articles on this issue. One is written by Professor Akira Tsuchiyama (Ritsumeikan University) and Dr. Megumi Matsumoto (Tohoku University). They review the achievements of the Hayabusa 2 Project, which attracted considerable attention worldwide. Hayabusa 2 is an asteroid exploration project of the Japan Aerospace Exploration Agency (JAXA), and the spacecraft successfully returned a capsule containing sample materials from the asteroid Ryugu on December 6, 2020. This review is an example of how SPring-8 is playing an important role in a variety of research projects being performed in the worldwide. The other review is reported by Dr. Shinji Kohara (National Institute for Materials Science) who worked at SPring-8 previously as a member of the beamline staff. He introduces high-energy X-ray diffraction analyses for disordered materials. Combining theoretical simulations such as density functional theory (DFT), molecular dynamics (MD), and reverse Monte Carlo (RMC) modeling, pair distribution function (PDF) diffraction data are analyzed. Some interesting examples of ordered structures within disordered glass are introduced.

In addition to the scientific results (Scientific Frontiers), there is some information on hard and soft infrastructures that support scientific research. Although important data, such as operation time, are included in this part, additional information and more complete statistical numbers on the operation of SPring-8 and SACLA are available on the website so that more updated information can be accessed (http://www.spring8.or.jp/en/about_us/spring8data/).

The full text of SPring-8/SACLA Research Frontiers is also available on the SPring-8 website (http://www.spring8.or.jp/en). For the list of publications produced 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 helped us by recommending excellent research results suitable for publication in this issue, and the users and staff of SPring-8 who contributed their reports to this issue despite this pandemic.

Toyohiko Kinoshita
Japan Synchrotron Radiation Research Institute (JASRI)

Editorial Board