Editor's Note

This is the 2020 issue of SPring-8/SACLA Research Frontiers that covers outstanding scientific outcomes of SPring-8 and SACLA in 2019 and 2020, in the so-called pre-COVID-19 era. The best scientific achievements are collected from more than 1,000 papers published using SPring-8 or SACLA each year. At the moment we are not sure how COVID-19 will affect scientific output of SPring-8 and SACLA. Although our facilities are operating normally and users are making experiments, scientific activities particularly at universities have been severely restricted. This situation is expected to improve gradually and we all hope we can go back to the pre-COVID-19 state as soon as possible.

There are two reviews in this issue. One is written by Professor Yasuhiro Iwasawa of The University of Electro-Communications. Because of the serious energy crisis and concerns on carbon dioxide emission, research on batteries is very actively carried out at SPring-8. Among several different types of batteries, Professor Iwasawa is specialized in fuel cells. His group has built BL36XU which is dedicated to this research and utilized different experimental techniques to reveal chemical reactions in fuel cells. This review summarizes their more than ten years' efforts and outcomes. The second review was jointly contributed by Professor Kouichi Hayashi of Nagoya Institute of Technology and Professor Tomohiro Matsushita of Nara Institute of Science and Technology. Although they work in different X-ray disciplines, hard X-ray fluorescence and photoelectrons, their holography approaches are similar to each other as scientific tools, particularly in studies on dopants. They polished up the techniques for further refined measurements at SPring-8.

SPring-8/SACLA Research Frontiers is made of two parts. The first is scientific results (Scientific Frontiers) and the second is additional information on hard and soft infrastructures that support scientific research. Although some important numbers such as the operation time are given in the second part, other 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.

Naoto Yagi
Japan Synchrotron Radiation Research Institute (JASRI)

Editorial Board