Editor's Note

This is the 2021 issue of SPring-8/SACLA Research Frontiers that covers outstanding scientific outcomes of SPring-8 and SACLA in 2020 and 2021, the so-called COVID-19 era. Even under this unpreceded difficult situation, users published a plenty of papers (perhaps because they could not make experiments and had time to concentrate on analysis and writing). The best scientific achievements are collected from more than 1,000 papers published using SPring-8 or SACLA each year.

The two reviews in this issue are contributed by major user groups of SPring-8. Prof. Cramer has developed the technique of NRVS and his group have been using it to investigate functions of metalloproteins. Prof. Hirose has been leading the earth core science at SPring-8 for nearly two decades. Both of these studies were carried out in long-term proposals and not only produced outcomes with high scientific significance but also gave strong impacts on other users of SPring-8.

As has been the case in recent years, there are many reports on fuel cells and Li-ion batteries reflecting the gravity of the energy crisis in the world. As for the experimental techniques, there are several reports on XPS or HAXPES at near ambient pressure or even at atmospheric pressure. There is a high demand for operand measurement of chemical reactions which is also evident in other reports. These experiments are making very good use of intense synchrotron radiation of SPring-8. Since these techniques are still being improved, we can expect more reports on them in the next few years.

In addition to the scientific results (Scientific Frontiers), there is some information on hard and soft infrastructures that support scientific research. Although some important numbers such as the operation time are given in this 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.

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Editorial Board