

PREFACE



I am Yoshiyuki AMEMIYA, who took over the role of the president of JASRI on June 17, 2019. I am very grateful to Dr. Yoshiharu DOI, the previous president, who guided JASRI with his prescient leadership for six years. I am fully determined to make every effort to serve JASRI so that it can continue fulfilling its responsibility of operating two world-leading accelerator-based light sources, SPring-8 and SACLA, located on the same campus, whose synergy produces groundbreaking results.

It is my great pleasure to publish this volume describing the activities of SPring-8 and SACLA in 2018. SPring-8 (Super Photon ring 8 GeV) welcomed over 17,000 users in 2018 who came to perform more than 2,000 experiments. Currently, SPring-8 users are publishing over 1,000 research

papers per year. SACLA users published over 50 research papers in 2018. The ratio of papers in the top 1% of the citation index was as high as 4.3% for the papers published by SACLA users in 2017.

A number of SPring-8 and SACLA users were awarded prestigious prizes in 2018 and 2019 for their achievements in science and technology. Professor Makoto Fujita (The University of Tokyo) was awarded the Imperial Prize and Japan Academy Prize in 2019 for his achievement in the development of an X-ray structural determination technique that does not require crystallization. Following Professor Chikashi Toyoshima of The University of Tokyo in 2018, it is remarkable that SPring-8 users were successively awarded this most prestigious award in Japan. Professor Eiichi Takahashi (Tokyo Institute of Technology) was awarded the Medal with Purple Ribbon in Fall 2018 for his achievements in earth science. Professor Rie Umetsu was awarded the Saruhashi Award for her study on the physical properties of Heusler-type functional magnetic materials including half-metal-type magnets. This award is given to just one female Japanese scientist every year who is conducting outstanding research.

In this volume, two comprehensive reviews are reported by the groups of Professor Kiyoshi Ueda (Tohoku University) and Professor Stuart Hopper (Monash University). Active users of SPring-8 have also contributed the essence of their results as review articles in this volume. In addition, six articles are provided by active users of SACLA.

As part of its efforts to promote leading-edge sciences in Japan, SPring-8 has been collaborating with ESICMM (Elements Strategy Initiative Center for Magnetic Materials) over the past several years. In this project, a superconducting magnet was installed at BL25SU, and magnetic domains in a fractured surface of a Nd-Fe-B permanent magnet were studied at submicron spatial resolution. The article by Billington *et al.* in this issue describes this study, which may lead to the development of more powerful magnets in future.

I am very grateful to the many authors and experts who contributed their papers to this volume. Special thanks are due to Dr. Naoto Yagi and the members of the editorial board for their continuous efforts.

Yoshiyuki Amemiya
President

Japan Synchrotron Radiation Research Institute (JASRI)