

# PREFACE

Today, the SPring-8 campus operates both the SPring-8 and SACLA facilities and offers a unique environment where the two can be used synergistically.

In this volume, Prof. Jian-Ren Sen of Okayama University has contributed an important article on the radiation-damage-free structure of photosystem II revealed by femtosecond X-ray pulses at SACLA. His group has also contributed an excellent article on the detailed structures of the light-harvesting complex on plant photosystem I revealed at SPring-8. Readers will learn of the characteristics of the SPring-8 and SACLA facilities in both articles. Users of SPring-8 have performed high-level research in a wide range of fields, including life, physical, chemical, earth/planetary and engineering sciences, and representative users report the essence of their results in this volume. Two comprehensive review articles have been contributed by two active SPring-8 users, Prof. Chikashi Toyoshima of the University of Tokyo and Prof. Katsuya Shimizu of Osaka University. In addition, six excellent articles contributing to the life, physical and chemical science chapters have been provided by active users of SACLA.



The SPring-8 facility welcomed over 15,000 users in 2015. In 2015, 9,423 users conducted 1,317 experiments at the 26 public beamlines, and 5,858 users performed 552 experiments at the 19 contract beamlines. The operation time of the storage ring in 2015 was 4,805 h and the user time was 4,034 h. In addition, the SACLA X-ray free electron laser facility welcomed 1,079 users, who conducted 68 experiments at the two beamlines in 2015. The total operation time in 2015 was 6,483 h and the user time was 3,924 h.

A number of SPring-8 and SACLA users were awarded prizes in 2015 and 2016 for their achievements in science and technology. Prof. Hideo Hosono (Tokyo Institute of Technology) was awarded the Japan Prize in 2016 for his achievement in the creation of unconventional inorganic materials with novel electronic functions based on nanostructures. Prof. Susumu Kitagawa (Kyoto University) was awarded the Japan Academy Prize in 2016 for the creation and application of porous metal complex materials. Prof. Zenji Horita (Kyushu University) and Prof. Hisanori Shinohara (Nagoya University) were respectively awarded the Medal with Purple Ribbon in Fall 2015 and Spring 2016.

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

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