

EDITOR'S NOTE

SPring-8 Research Frontiers 2012 covers advances achieved during the last two consecutive research periods, the second half of 2011 (2011B) and the first half of 2012 (2012A). Remarkable scientific achievements at SPring-8 in various fields of basic and applied science including industrial applications, are described, as well as the development of accelerators, beamlines and experimental apparatus, and the present status of the SPring-8 facility. In addition, topics concerning the use of SACLA are introduced.

SACLA successfully completed its initial commissioning by the end of 2011. In this early period, exciting and useful information on radiation properties of XFEL have been obtained by utilizing instruments and methods newly developed for SACLA. Some of these findings, which indicate the novelties of SACLA, are reported in this volume. Following the commissioning, SACLA started user operation in March 2012. Stable XFEL light has been routinely provided to users without serious downtime. SACLA is now exploring the frontiers of optical science and technologies.

Two new beamlines were opened to users: BL28XU, the so-called "Kyoto University RISING-BL," named after the Research & Development Initiative for Scientific Innovation of New Generation Batteries (RISING) project, was developed to investigate the simultaneous valence and structure changes during battery charge/discharge cycles in time and space for safety, improvement and innovation of the present and future lithium batteries. BL36XU "Catalytic Reactions Dynamics for Fuel Cells" was constructed by The University of Electro-Communications under a New Energy and Industrial Technology Development Organization (NEDO) program, and is dedicated to the structural and electronic analyses of the dynamic events on polymer electrolyte fuel cell (PEFC) cathode catalysts for the development of next-generation PEFCs by high time- and spatially resolved XAFS methods.

A new facility, LEPS2 Experimental Building, for quark nuclear physics utilizing backward Compton scattered photons, has been constructed at the long straight section beamline BL31LEP (Research Center for Nuclear Physics, Osaka University). The beamline provides intense high energy polarized γ -rays with small angular divergence to allow most advanced experiments on a variety of strangeness channels with targets in a restricted space inset in a large-scale solenoid detector located outside the experimental hall. This new beamline will be opened to users in autumn 2013.

Dr. M. Takata left the editorial board and the editor in chief would like to express his sincere gratitude to him for his long-lasting contribution to Research Frontiers publications.

In the layout of Research Frontiers, photographs of flowers growing on the SPring-8 campus and at Harima Science Garden City have been inserted. These photographs taken by Mr. S. Tsujimoto and Mr. K. Shinbe are greatly appreciated.

Copies of SPring-8 Research Frontiers will be sent on request. The full text is also available on the SPring-8 website (<http://www.spring8.or.jp/>). 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/.

We extend our appreciation to those who have recommended excellent research results suitable for publication in SPring-8 Research Frontiers. We would also like to express our sincere gratitude to the users and staff of SPring-8 for contributing their reports to this issue.

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