Preface

The Synchrotron Radiation Laboratory (SRL) of the Institute for Solid State Physics (ISSP) has been cooperating with the Synchrotron Radiation Research Organization of the University of Tokyo since 2006 to operate the BL07LSU soft X-ray beamline and experimental end-stations at SPring-8. The beamline has a 27-m-long polarization-controlled undulator and a monochromator covering the photon energy range from 250 eV to 2 keV with an average photon flux of 10^{12} photons/sec. As one of the central facilities for promoting advanced materials science and development of unique spectroscopic methods in the soft X-ray region, the SRL fully opened the beamline to public users in 2009. Since then, SRL staff members have played an essential role in promoting both domestic and international joint research. Three end-stations, a time-resolved photoelectron spectroscopy, a 3D nanoESCA, and a high-resolution soft x-ray emission spectroscopy stations, have the world's best time resolution (~50 ps), spatial resolution (~70 nm), and energy resolution ($E/\Delta E \approx 10{,}000$), respectively. They have been permanently installed in the beamline to accept joint-research proposals, while a free-port station equipped with a focusing mirror is available to outside users. In 2018, an ambient-pressure *operando* X-ray photoemission spectroscopy station was promoted as one of the end-stations accepting joint-research proposals.

In addition to the cutting-edge activities using synchrotron radiation, SRL joined the Laser and Synchrotron Research (LASOR) Center as a member in 2012. Since then, we have promoted soft X-ray science using high-harmonic lasers in the vacuum ultra-violet and soft X-ray regions at the Kashiwa Campus E-building. In 2014, SRL constructed a new high-resolution laser spin- and angle-resolved photoelectron spectroscopy (SARPES) apparatus that is designed to provide high-energy and -angular resolutions and high-efficiency spin detection for various types of solids, such as spin-orbit coupled materials and ferromagnetic materials. Since FY 2015, the SARPES system has been open for users and accepting joint-research proposals.

Our goal is to provide users with a soft X-ray platform that uses both synchrotron radiation and high-harmonic lasers by strong collaboration with other LASOR group members.

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