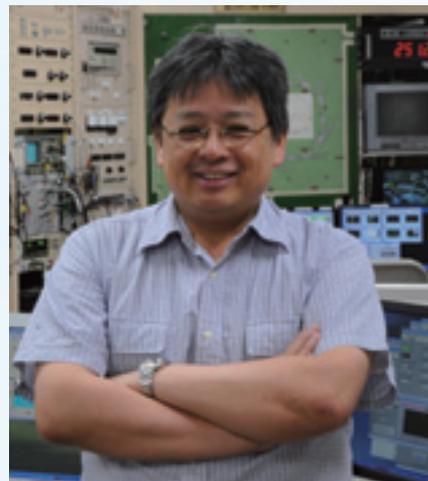


## *Preface*

This Activity Report covers the research activities carried out at the UVSOR Facility in FY2011 (April 2011-March 2012). This is the ninth volume in the new series for the third decade of UVSOR.

After the major upgrade in 2002-2003, we renamed the machine to UVSOR-II. This machine has been serving as the only low-energy third-generation light source in Japan. We are now preparing for the next upgrade. This time, the bending magnets will be replaced with combined-function magnets, to reduce the emittance from 27 nm-rad to around 15 nm-rad. The machine will be operated fully in the top-up mode. Although this operating mode was already established a few years ago, we are going to introduce a more sophisticated injection scheme, in which the perturbation to the stored beam will be greatly reduced. A total of six undulators will be operational. One of them, an in-vacuum undulator, will provide extreme ultraviolet (EUV) light to a new scanning transmission soft X-ray microscope (STXM) beamline.



Construction of all the necessary components for the accelerator and the beamlines was completed by March 2012. The reconstruction work is scheduled to start in April 2012 and be finished in May. The machine commissioning will begin in June. After commissioning, the machine will be referred to as UVSOR-III.

Under the Quantum Beam Technology Program of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), a new coherent light source and its dedicated beamline have been constructed. By using an external laser source, density modulation of various types can be created on the electron beam circulating in the storage ring. Such bunches radiate coherently. A new laser system, new optical klystron, and new terahertz (Thz) beamline have been successfully commissioned. To create the necessary space for this program, two old beamlines, BL1A and BL1B, were moved and renamed to BL2A and BL3B, respectively. In particular, BL3B was completely renewed, with the design and construction work carried out as collaboration between the UVSOR Facility and the user group.

At UVSOR, we have four research positions for accelerator physics (one full professor, one associate professor, and two assistant professors) and four research positions for photophysics and photochemistry (two associate professors and two assistant professors). In June 2011, Dr. Heishun Zen, an assistant professor of the accelerator physics, left IMS. Two new young researchers, Takuji Ohigashi and Taro Konomi joined the Accelerator Physics Group in August 2011 and in April 2012, as assistant professors.

We look forward to further exciting achievements in FY2012 at UVSOR-III.

Masahiro Katoh  
Director, UVSOR  
April 2012