

## **FEL experiments in Japan: from EUV to X-rays**

Kiyoshi Ueda

*IMRAM, Tohoku University, Sendai 980-8577, Japan*

In 2008, the SPring-8 Compact SASE Source (SCSS) test accelerator, started operation in Japan. It provides linearly polarized EUVFEL pulses in the wavelength region of 51-61 nm. We have been investigating multi-photon multiple ionization and subsequent relaxation processes in atoms, molecules, and clusters irradiated by EUVFEL pulses, using ion and electron momentum spectroscopy and pump-probe techniques. In June 2011, SCSS XFEL, nicknamed "SACLA" lased and started commissioning. Our scientific program with SACLA is largely based on research problems which constitute a bridge between atoms and small molecules and more complex systems. We plan to study, for example, light-induced phase transition in clusters and light-induced structural change of photo-reactive bio-molecules, using time-resolved coherent X-ray imaging combined with Coulomb-explosion ion imaging and photoelectron diffractions. The talk will describe current status of EUVFEL experiments as well as plans and preparations for experiments with SACLA, as well as the first commissioning experiment with SACLA.