

Novel Soft X-ray Spectroscopy on the PAL-XFEL

Research facilities for X-Ray free electron lasers (XFEL) exist all around the world, having been developed over the past decade. The technology behind XFELs allows for the production of brighter and higher quality high energy radiation from EUV/Soft X-rays to hard X-rays. New and improved forms of fundamental physics measurements, from material science to structural biology, will be possible at these facilities.

The PAL-XFEL is a facility in Korea that opened for users in 2017. In addition to bright X-rays the facility provides pulsed beams with a small width below 50fs. This allows the measurement of dynamic processes, related to atoms and electronics in materials, at energies not available with other technologies. The facility operates several beamlines for hard and soft X-Ray experiments. Among other detectors a PI-MTE is used on the soft X-ray scattering and spectroscopy beamline, using the large 2048x2048px sensor size with the flexibility of mounting the detector in vacuum.

The PI-MTE is used in coherent X-Ray diffraction imaging as well as X-ray absorption spectroscopy experiments. In this article researchers from the facility describe measurements that characterize the performance of the instruments at the beamline. For example, the researchers measure magnetic circular dichroism in the absorption spectra of Co/Pt multilayers using circular polarized X-Rays. These measurements allow researchers to make conclusions about the bulk ferromagnetism of this material.

Featured Paper/Publication: [Scientific instruments for soft X-ray photon-in/photon-out spectroscopy on the PAL-XFEL](#), Journal of Synchrotron Radiation, 2019

Reference Lab: [Pohang Accelerator Laboratory](#), Korea

Featured Product: [PI-MTE](#)