

MeXiM (Mid-energy X-ray spectroscopy in Magnetism) beamline for soft x-ray experiment at Pohang Light Source-II (PLS-II)

Woo-suk Noh*¹, Kyung-Tae Ko¹, Ho Young Kim¹, Byeong-Gyu Park², Jae-Young Kim³, and Jae-Hoon Park¹

¹*Max Planck POSTECH/Korea research initiative (MPK), Pohang, 37673, Republic of Korea*

²*Pohang Accelerator Laboratory (PAL), POSTECH, Pohang, 37673, Republic of Korea*

³*Institute for Basic Science (IBS), Daejeon, 34126, Republic of Korea*

**dajy@mpk.or.kr*

The MeXiM beamline which covering a wide energy range of 250 ~ 3000 eV was constructed under the program of MPK on June, 2016 at PLS-II. For providing a sufficient photon flux up to 3000 eV, the beamline is designed to use four reflection optics with highly grazing angles. A Hetterick style monochromator with various incident angles is adopted under no entrance slit configuration. The first and the last mirrors are toroidal and they are configured to compensate the line curvature errors each other. The merit of this beamline is capability of mid-energy range photon beam 1500 ~ 3000 eV which was hard to use up to now. We can cover widely research field of electron spectroscopy of new materials by using these energy range photon beam for researching not only carbon but also rare earth metal, 3d, 4d, 5d transition metal elements, sulfur, phosphor and chlorine absorption edge. The beamline is dedicated to x-ray magnetic circular dichroism (XMCD) and soft x-ray scattering (SXS). The energy resolution is > 3000 in all energy range, beam flux is $> 10^{10}$ photons/sec/0.1% bandwidth. Experiment condition are 20 ~ 370 K at temperature, 7 T (XMCD) / 0.8 T (SXS) in magnetic field. In this talk, the design details and commissioning result will be presented.