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Recent topics of XAFS studies performed at Photon Factory

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Institute of Materials Structure Science is one of the institutes in KEK, and runs a synchrotron facility, Photon Factory (PF), where two synchrotron rings, PF and PF-AR (Advanced Ring) are operated. PF is operated with the beam energy of 2.5 GeV, and PF-AR with 6.5 GeV or 5.0 GeV to provide higher x-ray energy. There are about 50 end stations including 6 x-ray absorption fine structure (XAFS) beamlines: 9A, 9C, 12C, 15A1, AR-NW2A and AR-NW10A.

XAFS is one of the most demanded methods at synchrotrons and is used to study various materials such as catalysts, batteries, functional oxides, semiconductors, minerals and environmental samples. XAFS is usually divided into characteristic two regions, x-ray absorption near edge structure (XANES) and extended x-ray absorption fine structure (EXAFS). XANES is the region of the spectrum from just below the absorption edge to ~50-70 eV above the edge. EXAFS is the other higher energy region above XANES and analysed to investigate local structures of elements of interest, e.g. bond length and coordination number. We will share recent topics of our XAFS studies performed at our facility. In addition, I would suggest potential topics to be studied at the AfLS in the context of natural resources in the African continent.

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