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XAFS AS A TOOL TO STUDY CHEMICAL STATES AND LOGICAL STRUCTURES

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Abstract

X-ray Absorption Fine Structure (XAFS) spectroscopy is one of the most used methods at synchrotron facilities. XAFS is divided into two regions: x-ray absorption near edge structure (XANES) and extended x-ray absorption fine structure (EXAFS). XANES is a region of spectra from just below absorption edges to 3050eV above edges. EXAFS includes higher energy region above XANES usually up to ~600-800, even up to 1000 eV, and is used to determine local structures around elements of interest. One can obtain bond lengths and coordination numbers, for instance, around elements of interest. Information is obtained element specifically, because energies of absorption edges are element specific. For example, Fe K-edge is about 7112 eV, and Co K-edge 7709 eV. In my talk, fundamental concepts of XAFS are introduced, and several topics on XAFS studies will be shared.

About

Hitoshi Abe was born in Tokyo, Japan in 1980. He initiated surface and ultrathin film magnetism studies in Prof. Toshiaki Ohta's group at the Universityy of Tokyo. He received his master degree in Chemistry from the University of Tokyo in 2005. Under the supervision of Prof. Tetsuya Hasegwa, he received his doctoral degree (Science) from the University of Tokyo in March 2008. He had been a special research fellow of Japan Society for the Promotion of Science from April 2005 to March 2008. In April 2008, he started to work as a research associate at Department of Chemistry, Keio University. His research interests also include surface chemical reactions and development of surface chemistry and magnetism analysis methods with synchrotron x-ray radiation. In April 2010, he moved to Institute of Materials Structure Science, High Energy Accelerator Research Organization as associate professor.

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