OIST Seminar

Okinawa Institute of Science and Technology

SPEAKER

Prof. Sang-Wook Han

Department of Physics Education, Jeonbuk National University
Jeonju, Korea
shan@jbnu.ac.kr

Introduction of XAFS and its applications

Friday, May 1, 2015 13:30 – 14:30
@ Meeting Room C015, Lab 1

Abstract: X-ray absorption fine structure (XAFS) is a unique tool to detect local structural and chemical properties of a selected species in compound materials. XAFS includes X-ray absorption near edge structure (XANES) and extended XAFS (EXAFS). XANES can detect the chemical valance states and local density of states of selected ions in a material, meanwhile EAFS can describe local structural properties including bond lengths, bond length disorders, coordination numbers, and species of neighboring atoms around a probing atom. XAFS can be applied to a solid, liquid, and even gas with no mater of its crystallinity. XAFS is useful particularly in the determination of structural properties of nanostructures. Including nanoparticles, nanorods, and thin films. X-ray diffraction (XRD) is a canonical tool to determine the crystalline structural properties. XRD is not very useful in analyzing nanoparticles because they do not have sufficient scattering sources. XAFS analysis require neither a crystalline structure nor a large number of scattering sources. Furthermore, in-situ measurements of XAFS would provide considerably useful information, particularly, for catalysts, batteries, chemical reactions, and others. In the seminar, I will introduce the XAFS technique and its applications to nanoparticles, ZnO nanorods, Pt nanoparticles, and VO_2 films.

Short Biography:

Education

B.S. in Physics, Kyungpook National University, Daegu, Korea (Graduation in Feb., 1989)

Ph.D. in Physics, University of Missouri-Columbia (Graduation in Dec., 1999)

Academic Experiences

1994. June – 1999. Dec., Research Assistant in Department of Physics at University of Missouri-Columbia,

1999. Dec. – 2001. Dec., Research associate in Department of Physics at University of Washington

2002. Jan. – 2003. Aug., Postdoctoral physicist in Chemical Science Division at Lawrence Berkeley National Laboratory

2011. Feb. – 2012. Feb., Visiting scholar at X-ray Science Division of APS

2013. July – 2013. Dec., Visiting scholar at X-ray Science Division of APS

2003. Aug. – Current, professor in Department of Physics Education, Jeonbuk National University

Position Careers

2014 – Current, Chair of the Korean XAFS Society

2012 – Current, Director, Institute of Fusion Science, Jeonbuk National University

2015 – Current, Chair, Division of Science Education, Jeonbuk National University

2014 – Current, Vice-chair, Korea Proton Acceleration Users Association

2015 – Current, Lead guest editor, Journal of Nanomaterials

2012 – Current, Director of Institute of Fusion Science in Jeonbuk National University

2012 – Current, A board member of Korean Synchrotron Radiation User Association

2006 – 2006, Guest editor, International Journal of Nanoscience and Nanotechnology

2008 – 2013, Representative of XAFS division in Korean Synchrotron Radiation User Association

For more information
Energy Materials and Surface Sciences Unit (Qi Unit)
Ayako Masaki Tel: (098) 966-1516 / ayako.masaki@oist.jp