



An Application of Synchrotron-based X-ray Absorption Spectroscopy Study on Advanced Functional Materials

Dr. Pinit Kidkhunthod

*Synchrotron Light Research Institute (Public Organization),
Nakhon Ratchasima, 30000, Thailand
e-mail: pinit@slri.or.th*

ABSTRACT

The investigation of the local geometric and electronic structure of probing element in bulk samples is the most extensive field of application in X-ray Absorption Spectroscopy (XAS). XAS consists of two main regions which are X-ray Absorption Near Edge Structure (XANES) and Extended X-ray Absorption Fine Structure (EXAFS). The former region is used to explain the local geometry and oxidation states of selected element in a sample whilst the latter one is used to address the local structure around probing element in samples. In my talk, review applications of synchrotron-based XAS on advanced functional materials including magnetic and dielectric materials, thermoelectric materials and recently, metal-oxide composite materials for energy storage applications will be introduced in order to deeply understand of their locally structural information which cause that such properties in these materials (structure-function).

Keywords: advanced functional materials; Local structure; X-ray absorption spectroscopy; XANES; EXAFS

Dr. Pinit Kidkhunthod is a beamline scientist in charge at SUT-NANOTEC-SLRI XAS beamline (BL5.2), Synchrotron Light Research Institute (Public Organization), Nakhon Ratchasima, Thailand. His research of interest is in the fields of structural studies of advanced functional materials such as carbon-based ferrite composite materials and novel glasses using an X-ray absorption spectroscopy (XAS) technique. Dr.Pinit Kidkhunthod received his B.Sc. (Physics), first class honors 3.99 from Khon Kaen University, Thailand in 2008, and Ph.D. (Physics) from Bristol University, U.K in 2012. He was one of two Thai students representative for DESY summer program, Germany, in 2007. Recently, Dr.Kidkhunthod has received research grants for young scientist from Thailand Research Fund (TRF2013), Ministry of Science and Technology (2014) and SUT-Center of Excellent on advanced functional materials (SUT-COE-AFM) from 2015-present. He is the author of over 80 papers in ISI journals for structural studies of advanced functional materials using XAS technique.