MSE-Colloquium@NTU

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Introduction to Synchrotron Radiation and Its applications

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About the Talk

In this seminar, synchrotron radiation and its application particularly in material science will be introduced. A synchrotron radiation source is one of the most brilliant man-made light sources in the world - more than a million times brighter than the Sun. With a wide spectrum range from Infrared to high energy X-rays, many scientific research experiments can be carried out using synchrotron radiation.

In the first talk, given by Dr.Somchai Tancharakorn, the Synchrotron Light Research Institute (SLRI), Thailand will be introduced. The SLRI is running a synchrotron source also called the Siam Photon Source (SPS), which is one of more than 60 synchrotron facilities in the world. Most of them are open as user facilities in which external scientists have the opportunity to carry out experiments. In this talk, an overview of the available beamlines and facilities at SLRI will be given, together with information on how to apply for beamtime at our facility.

The SPS has been open to users since 2003 with only 2 beamlines available during its first year. However, since 2016, 12 beamlines are now available for users, and more than 350 proposals have been accepted to use this service. One of the most popular synchrotron-based experiments is X-ray Absorption Spectroscopy (XAS) and Dr.Pinit Kidkhunthod will give an overview of this technique in his talk entitled “XAS beamline@SLRI and its applications in advanced functional materials”. Another technique, Photoelectron Emission Spectroscopy and Microscopy (PES/PEEM) is extremely useful for materials science, especially for studying the electronic structures of materials such graphene, Diamond-like-Carbon (DLC) etc. Details of PES/PEEM techniques will be described by Dr.Sarayut Tunmee in his presentation entitled “Applications of synchrotron based Photoelectron Emissions Spectroscopy and Microscopy on materials”.

About the Speakers

Dr. Somchai Tancharakorn has got a Ph.D. in Engineering & Electronics from University of Edinburgh, United Kingdom since 2008. Presently, he is working as a head of Research and Facility Department, Synchrotron Light Research Institute (Public Organization), Thailand. His expertise includes applications of synchrotron-based X-ray fluorescence technique on archeology and environmental science.

Dr.Sarayut Tunmee finished his Doctor of Engineering (Materials Science) degree from Nagaoka University of Technology, Niigata, Japan in 2016 under funding by the Japanese government scholarship (Monbukagakusho). He has started working as a beamline scientist at BL3.2Ua (Photoemission Spectroscopy) at the Synchrotron Light Research Institute (Public Organization), Thailand since 2016. His interests is concerning a characterization of surface and thin-film using the synchrotron-based spectromicroscopy: near-edge X-ray absorption fine-structure (NEXAFS) and X-ray photoemission electron microcopy (X-PEEM) and carbon materials: Diamond-like carbon (DLC) films, Activated carbon, and Nano porous carbon.

Dr. Pinit Kidkhunthod is a beamline manager at the 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 amorphous/novel glass materials using an X-ray absorption spectroscopy (XAS) technique. Dr.Pinit Kidkhunthod received his 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 continuously received research grants for young scientist from Thailand Research Fund (TRF2013) and Ministry of Science and Technology (2014-present). He is the author of over 50 papers in ISI journals for structural studies of advanced functional materials using XAS technique.