Institute Interest Seminar Series, I2CNER

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Title: Neutron diffraction on energy materials

Speaker: Dr. Wang Hay Kan

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Abstract: Structural analysis is vital in material science research. Although X-ray diffraction has been widely applied to understand the crystal structure at ambient or elevated temperatures, probing atomic position and occupancy of light atoms (e.g., lithium ion) are of great challenges due to the small electron density of light atoms. Atoms (e.g., Ni and Mn) with similar electron densities are also indistinguishable by X-ray diffraction. In this seminar, the use of time of flight (TOF) neutron diffraction on two different types of energy materials will be presented: i) unrevealing the low thermal expansion coefficient of cation-substituted $YBaCo_4O_7$-type oxides, and ii) exploration of novel Ni-rich spinel $LiN_{2-y-z}Mn_yCo_zO_4$ by low temperature synthesis.

Introduction of Dr. Wang Hay Kan: Dr. Kan obtained his B.Sc. (Chem) from the Hong Kong University of Science and Technology in 2006 where he worked in Dr. Ian D. Williams lab on coordination polymer research. After that, he continued his M.Sc. study with Dr. Linda F. Nazar in University of Waterloo on morphology control of lithium-ion battery cathodes, particularly on Olivine type structure $LiMPO_4$ (M = Mn, Fe, Co). He then moved to University of Calgary to study his PhD under the guidance of Dr. Venkataraman Thangadurai on the development of unconventional mixed conductive anodes for solid oxide fuel cells. He worked as a postdoctoral fellow in Manthiram group in University of Texas at Austin to continue his battery and fuel cell researches for one and half years. Recently, Dr. Kan accepts a new position as a Beamline scientist/associate professor in China Spallation Neuron Source (CSNS) in the China Academy of Science (CAS).