



## *Insulator-metal transition in an Al incorporated $In_2O_3$ -ZnO system*

by Miss Sun Jian

**Date:** 03<sup>rd</sup> September 2009 (Thursday)  
**Time:** 12:30pm to 1:00pm  
**Venue:** EA-02-11 (Executive Seminar Room)

### Abstract

Insulator-metal transition has always been a hot topic in the last several decades due to its theoretical value in the physics, as well as its latent application in the new generation of storage devices. As is known, the strong Coulomb interaction between electrons can result in the insulator-metal transition while structure disorder in amorphous solids can induce an insulator-metal transition due to Anderson localization. Most examples of insulator-metal transitions concern oxide compounds containing transition metals. Here, phase transformation from amorphous to crystalline occurs in the Al incorporated  $In_2O_3$ -ZnO (Al-IZO) system, a main-group elements system, in which it is interestingly noted that there coincidentally exists a sudden drop of resistivity, namely that insulator-metal transition is observed in such Al-IZO system, which provides the direct observation of insulator-metal transition in nonclassical insulators. Additionally, the mechanism of this novel transition phenomena is expounded.

**Miss Sun Jian** Speaker

Miss Sun Jian received her master degree in School of Physics and Optoelectronic Technology of Dalian University of Technology in China 2007. She is currently pursuing her PHD in the Department of Material Science and Engineering, NUS. Her recent research interests focus on the transparent and conducting thin film under the supervision of Professor Gong Hao.

Dr Xue Jun Min Host

*All are Welcome!*