



## ***Synthesis and Characterization of Multifunctional ZnO-Pt Nanocomposites***

by Mr. Yuan Jiaquan

**Date:** 10<sup>th</sup> September 2009 (Thursday)  
**Time:** 12:30pm to 1:00pm  
**Venue:** EA-02-11 (Executive Seminar Room)

### **Abstract**

The rapid advancement of nanotechnology research has led to many creative applications for photocatalysis. One such application is that of decontamination of polluted water. For example, by using metal deposited ZnO catalysts, dyes such as methyl violet could be decomposed into small nontoxic compounds under UV light irradiation. Moreover, multifunctional nanocomposite with ferromagnetic property for magnetic separation and recycling of catalysts attracts great interest. We report a simple synthetic route to obtain ZnO-Pt bifunctional nanocrystals (NCs), which exhibit both fluorescent and ferromagnetic properties from ZnO and Pt components. Monodisperse Pt nanocrystals were firstly formed through the decomposition of organic Pt salt in the reaction system, which subsequently served as the seeds for in situ nucleation and epitaxial growth of ZnO lobes. It was hypothesized that the Pt atoms, which thermally migrate into the ZnO matrix, induces magnetic property, and the interfacial states caused by broad interface contact, which traps the photo-excited electrons, greatly suppresses the electron-hole recombination for higher catalytic efficiency. Herein, it is reported for the first time the epitaxial growth in a medium temperature using one-pot synthesis, which introduced the possibilities of exploring novel morphologies for high efficient catalyst in photocatalysis.

**Mr. Yuan Jiaquan Speaker**

Mr Yuan Jiaquan received his bachelor degree in Mechanical Engineering from the Shanghai Jiao Tong University (SJTU) in 2008. He is currently a PhD candidate under the guidance of Dr. Xue Jun Min in the Department of Materials Science and Engineering (NUS). His research interest lies in the synthesis of inorganic nanoparticles and surface engineering of nanoparticles for photocatalysis applications.

**Dr Xue Jun Min Host**

*All are Welcome!*