



## *The composition and doping effect on intrinsic properties of $L1_0$ FePt*

by Mr. Xu Dongbin

**Date:** 01<sup>st</sup> October 2009 (Thursday)

**Time:** 12:30pm to 1:00pm

**Venue:** EA-02-11 (Executive Seminar Room)

### Abstract

The first hard disk drive (HDD) was used in computer in 1956 when IBM introduced Random Access Method of Accounting and Control (RAMAC). From then on, the capacity of HDD was increasing dramatically while the size of HDD was becoming smaller and smaller, which is responsible for the proliferation of HDD recording into new applications and markets. However, traditional longitudinal recording has faced several problems such as thermal stability issues and superparamagnetic limit when further increasing the recording density. For this reason, perpendicular recording as an alternative way excited scientists' interests and  $L1_0$  FePt is one of the most promising media material due to its high anisotropy and high corrosion resistance. In this study,  $L1_0$  phase FePt with high texture has been fabricated on MgO(001) substrate with AJA sputtering machine at elevated temperature. The intrinsic properties of  $L1_0$  FePt with different composition and doping elements and their relationships have been investigated. Both anisotropy and ordering parameter show a strong dependence on the stoichiometry and doping elements. With composition of Fe changes from 45% to 55%, the anisotropy and ordering parameter increase, which implicates that  $L1_0$  FePt in which the composition of Fe is slight larger than 50% are preferable for applications requiring the highest anisotropies.

**Mr. Xu Dongbin** Speaker

Mr. Xu Dongbin was graduated from Lanzhou University in 2008 with his bachelor degree of Material Physics. He is currently a PhD candidate under the supervision of Prof. Chow Gan Moog and Dr. Chen Jingsheng in Department of Materials Science and Engineering, NUS. His research focus is on "high anisotropic materials for high density magnetic recording".

Dr Xue Jun Min Host

*All are Welcome!*