



High anisotropy FePt film for heat assisted magnetic recording

by Mr. Li Huihui

Date: 27th August 2009 (Thursday)

Time: 12:00pm to 12:30pm

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

Abstract

Due to the limits of conventional perpendicular magnetic recording, it appears that alternative technologies are needed at areal densities $> 500 \text{ Gb/in}^2$. Heat assisted magnetic recording (HAMR) is a promising approach for enabling large increases in the storage density of hard disk drives. A laser is used to momentarily heat the recording area of the medium to reduce its coercivity below that of the applied magnetic field from the recording head. In such a system, the recording materials have a very high magnetic anisotropy, which is essential for the thermal stability of the magnetization of the extremely small grains in the medium. In this work, we have fabricated FePt-C film with high perpendicular anisotropy, small and isolated grains. Here, the nonmagnetic matrix C plays a role in decoupling the exchange interaction and preventing FePt grains to grow during phase transition. The microstructure and magnetic properties of FePt-C thin film under different pressures were investigated. With increasing the sputtering pressure (P_{Ar}), the intensity of FePt (001) peak initially increased, and then decreased when $P_{Ar} \geq 20 \text{ mTorr}$. The microstructures of FePt-C film deposited at 20 mTorr showed a two-layer structure with a granular layer above a continuous underlying layer. The variations with different temperatures, powers and thicknesses were also studied.

Mr. Li Huihui Speaker

Mr. Li Huihui graduated from Lanzhou University in 2008 with his bachelor degree of theoretical physics. He is currently a PhD candidate under the supervision of Dr. Chen Jingsheng in Department of Materials Science and Engineering, NUS. His research focus is on "heat assisted magnetic recording."

Dr Xue Jun Min Host

All are Welcome!