



"FePt-C graded perpendicular recording media"

by Miss Huang Lisen

Date: 03rd September 2009 (Thursday)
Time: 12:00pm to 12:30pm
Venue: EA-02-11

Abstract

Magnetic recording is one of the most commonly used methods in data storage. Hard disk drives (HDD) are widely used in our daily life, from personal storage like PCs, to consumer electronics and enterprise storage such as workstations and servers. Before 2005, longitudinal recording technology was used in HDD. But the conventional longitudinal magnetic recording had a limitation in recording density. Due to the demand of larger recording density, perpendicular recording technology comes into play. To achieve ultrahigh recording density, the grain size must be further reduced. However, grain size reduction will bring the superparamagnetism problem. In order to maintain the thermal stability of supersmall grains, magnetic materials with large magneto-anisotropy K_u are preferred. $L1_0$ phase FePt is a very hot research field because its K_u can reach 7×10^7 erg/cc and its stable grain can go down to 2-3nm. However, writability problem arises as the conventional writing head cannot record data on such high K_u magnetic medium. Exchange-coupled composite (ECC) media, graded media and domain wall assisted media have been proposed to reduce the switching field without sacrificing the thermal stability. Simulations have shown that graded media work most effectively in reducing the switching field. In this project, FePt-C composite target was used to fabricate the anisotropy graded medium by controlling the deposition temperature in each layer. Crystallographic texture, magnetic properties and microstructure of the samples were investigated. The switching field was found to be reduced in a factor of 2 in our samples. With further refining the grain size and modifying the microstructure, anisotropy graded media can be realized.

Miss Huang Lisen Speaker

Miss Huang Lisen obtained her bachelor degree in Department of Materials Science and Engineering from National University of Singapore in 2008. Currently she is doing her research under the supervision of Dr. Chen Jingsheng in Department of Materials Science and Engineering, NUS. Her research area is in FePt perpendicular magnetic recording.

Dr Xue Jun Min Host

All are Welcome!