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DEPOSITION, MICROSTRUCTURE AND MAGNETIC ANISOTROPY OF COBALT FERRITE THIN FILMS

by Mr. Yin Jianhua

Date: 12 March 2009, Thursday
Time: 10.00am to 11.00am
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Abstract

Co-ferrite films have showed potential applications recent years in magnetic recording, hard permanent magnet and spintronics devices, which require excellent texture, large perpendicular anisotropy (K_u) and high coercivity (H_c). This work mainly focused on fabricating Co-ferrite films using pulsed laser deposition (PLD) with different heating treatment to meet the requirements. Moreover, the physical mechanisms for thin film growth, texture evolution and magnetic anisotropy of Co-ferrite films were discussed in details. Texture evolution of films with various thicknesses prepared at different temperature and on different substrates is attributed to the competition between surface or interfacial energy and strain energy density. The evolution of magnetic anisotropy can be well explained with strain-induced stress anisotropy. Based on the understanding, ZnO underlayer was demonstrated as an effective underlayer to obtain Co-ferrite films on amorphous glass at a low temperature of 300 °C, and the film possessed excellent (111)-texture, high coercivity (over 10.7 kOe) and large K_u (2.3×10^6 erg/cm³).

Speaker Mr. Yin Jianhua

Mr. Yin Jianhua obtained his B. S. from Wuhan University, China in 2000 and M. S. from Wuhan University, China in 2003. From August 2003, he started his PhD study under A/P Ding Jun in the department of Materials Science and Engineering, National University of Singapore. Currently, he is working in Chartered Semiconductor Manufacturing Ltd

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Prof Li Yi Host