



## *Highly Textured Growth of $Mn_{1-x}Zn_xFe_2O_4$ Film on Glass Substrate*

by Miss Huang Xuelian

**Date:** 24<sup>th</sup> September 2009 (Thursday)

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

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

### Abstract

Manganese zinc ferrite ( $Mn_{1-x}Zn_xFe_2O_4$ ) is an important soft magnet. Manganese zinc ferrite films are promising for microwave applications. High quality textured films have been achieved on single crystal substrates at relatively high deposition temperatures ( $>500^\circ C$ ). Commercial applications may be limited by the relatively high cost of single crystal substrate. In this work, we have developed a process for highly textured manganese zinc ferrite ( $Mn_{1-x}Zn_xFe_2O_4$ ) films deposited on normal glass substrate at relatively low temperatures by pulse laser deposition (PLD). The effects of thickness, substrate temperature and deposition rate on the structural and magnetic properties of manganese zinc ferrite have been studied in detail. XRD analysis indicated very high strain exists in highly textured films. No strain was found in polycrystalline films. The results indicate that the compress strain is attributed to the highly textured growth. The strain may be induced by relatively high deposition rate of the films and the difference thermal coefficient constant between glass substrate and ferrite films. Highly textured growth of Co-ferrite on glass substrate was also successfully fabricated. The work may provide one of techniques for fabricating high quality ferrite films on glass substrate. The new process may be promising for economic and practical applications.

**Miss Huang Xuelian Speaker**

Miss Huang Xuelian was graduated from University of Science and Technology Beijing in 2007. She is currently pursuing her PhD degree in Department of Materials Science and Engineering, NUS. Her current research interest is the Diluted Magnetic Semiconductor and is now under the supervision of Associate Professor Ding Jun.

**Dr Xue Jun Min Host**

*All are Welcome!*