

6th International Conference and Exhibition on

Materials Science and Engineering

September 12-14, 2016 Atlanta, USA

Spinel ferrite films with enhanced magnetization and large magneto-resistance

Jun Ding

National University of Singapore, Singapore

Spinel ferrite (MFe_2O_4 with $\text{M} = \text{Fe}, \text{Co}, \text{Ni}$ and Mn) is an important family on magnetic materials for various engineering applications. However, their saturation magnetization is much lower compared to metallic compounds. Recently, enhanced magnetization has been reported in ultrathin spinel ferrite films. Our study on spinel ferrite on various substrates has indicated that the magnetization enhancement may be attributed to a large area of grain boundaries because of very small grain size in order of 4-5 nm. More recently, we have successfully fabricated spinel ferrite films on MgO substrate using chemical route – thermal decomposition. Epitaxial thick films can be deposited on MgO substrates of different crystallographic orientations. More interesting, these thick films exhibit enhanced magnetization over 1 Tesla. Our structural investigation has indicated that the enhanced magnetization may be attributed to doping of carbon because carbon substitution may lead in spin flip. The results have been supported by first principles calculation.

Biography

Jun Ding obtained his Diploma in Physics from University of Wuppertal in 1986, and PhD degree from Ruhr University Bochum, Germany in 1990. He has been working on magnetic and nanostructured materials for more than 25 years. He is currently working as Professor at Department of Materials Science & Engineering, National University of Singapore. He has published over 350 journal papers with a total citation ~12000 and H-Index=60 (Google Scholar). More recently, his research work has been extended into additive manufacture of functional devices.

msedingj@nus.edu.sg**Notes:**