

Electronic structure studies of CoFeRO (R=Hf,La,Nb) thin films by X-ray absorption spectroscopy

J. H. Song¹, S. Gautam¹, K. H. Chae¹, K. Asokan²

¹Korea Institute of Science and Technology, ²Inter-University Accelerator Centre

We report the electronic structure of CoFeO-R (R=Hf, La, Nb) thin films studied by x-ray absorption spectroscopy (XAS). These ferrites thin films were prepared by pulsed laser deposition method and characterized by XAS measurements at O *K*-, Co and Fe *L*-edges. The O *K*-edge spectra suggest that there is a strong hybridization between O 2p and 3d electrons of transition metal cations and Fe *L*_{3,2}-edge spectra indicate that Fe-ions exist in Fe²⁺ with tetrahedral site of the spinel structure. Divalent Co ions is also distributed in tetrahedral site with rare earth ions goes to octahedral sites of spinel structure. X-ray magnetic circular dichroism (XMCD) is also used to explain the symmetry and magnetic nature dependence on rare-earth ions.