

Abstract: E5.00005 : Spin and Orbital Magnetic Moments of Fe and Co in Co/Fe and Fe/Co Multilayers on Si from L<sub>2,3</sub> Edge X-ray Magnetic Circular Dichroism Spectroscopy\*

G. Mankey – University of Alabama

et al.

Deposited 07/18/2019

Citation of published version:

Vemuru, K., Rosenberg, R., Mankey, G. (2016): Abstract: E5.00005 : Spin and Orbital Magnetic Moments of Fe and Co in Co/Fe and Fe/Co Multilayers on Si from L<sub>2,3</sub> Edge X-ray Magnetic Circular Dichroism Spectroscopy\*. *Bulletin of the American Physical Society*, 61(2). DOI: <http://meetings.aps.org/link/BAPS.2016.MAR.E5.5>

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Spin and orbital magnetic moments of Fe and Co in Co/Fe and Fe/Co multilayers on Si from  $L_{2,3}$  edge X-ray Magnetic Circular Dichroism Spectroscopy**<sup>1</sup> KRISHNAMURTHY VEMURU, George Mason University, Fairfax, Virginia, RICHARD ROSENBERG, Advanced Photon Source, Argonne National Laboratory, Lemont, Illinois, GARY MANKEY, The University of Alabama, Tuscaloosa, Alabama — Nanostructured FeCo thin films are interesting for magnetic recording applications due to their high saturation magnetization, high Curie temperature and low magnetocrystalline anisotropy. It is desirable to know how the magnetism is modified by the nanostructure. We report Fe  $L_{2,3}$  edge and Co  $L_{2,3}$  edge x-ray magnetic circular dichroism (XMCD) investigations of element specific spin and orbital magnetism of Fe and Co in two multilayer samples: (S1) Si/SiO<sub>2</sub>/[Co 0.8 nm/Fe 1.6 nm] $\times$ 32/W (2nm) and (S2) Si/SiO<sub>2</sub>/[Co 1.6 nm/Fe 0.8 nm] $\times$ 32/W (2nm) thin films at room temperature. Sum rule analysis of XMCD at Fe  $L_{2,3}$  edge in sample S1 shows that the orbital moment of Fe is strongly enhanced and the spin moment is strongly reduced as compared to the values found in bulk Fe. Details of sum rule analysis will be presented to compare and contrast spin magnetic moments and orbital magnetic moments of Fe and Co in the two multilayer samples.

<sup>1</sup>This research used resources of the Advanced Photon Source, a U.S. Department of Energy (DOE) Office of Science User Facility operated for the DOE Office of Science by Argonne National Laboratory under Contract No. DE-AC02-06CH11357.

Krishnamurthy Vemuru  
George Mason University, Fairfax, Virginia

Date submitted: 13 Nov 2015

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