

Abstract Submitted
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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 Spectroscopy¹ 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/SiO₂/[Co 0.8 nm/Fe 1.6 nm] \times 32/W (2nm) and (S2) Si/SiO₂/[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.

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