

Abstract Submitted
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Resonant X-ray Scattering Studies of Positively Exchange Biased Co/FeF₂ S. ROY, M. DORN, S.K. SINHA, O. PETRACIC, Z.P LI, I.V. ROSHCHIN, R. MORALLES, X. BATLLE, I.K. SCHULLER, Dept. of Physics, University of California-San Diego, K. CHESNEL, J.B. KORTRIGHT, Lawrence Berkeley National Lab., S. PARK, M.R. FITZSIMMONS, Los Alamos National Lab. — We here report on our element sensitive resonant soft x-ray scattering studies on a positively exchange biased MgF₂/FeF₂/Co/Al sample at T = 20 K performed using circularly polarized incident X-ray beam. The data is analyzed in the Distorted Wave Born Approximation and the depth dependent magnetic density profiles of pinned and unpinned moments in both the ferromagnet and the antiferromagnet is quantitatively determined. Co and FeF₂ were found to be antiferromagnetically coupled and the net magnetization in the ferromagnet has a structure near the Co/FeF₂ interface. Diffuse scattering measurements indicated stripe-like domain structure with oppositely directed moments in Co and Fe at the interface that are correlated to interface roughness. Work of I.K.S is supported by DOE.

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