

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Exchange biased anisotropic magnetoresistance in Co/CoO bilayer¹ S. SAHOO, University of Nebraska-Lincoln, S. POLISETTY, YI WANG, T. MUKHERJEE, XI HE, CH. BINEK — We measured the anisotropic magnetoresistance of a Co(11nm)/CoO bilayer in exchange biased and unbiased states. The bilayer was fabricated on a-Al₂O₃ substrate maintained at 300°C by molecular beam epitaxy at a base pressure of 10⁻¹¹mbar. θ -2 θ X-ray diffraction scans reveal hcp (001) texture of the Co film. No peak associated with the naturally formed CoO top layer was identified. Small angle X-ray reflectivity scans yield the Co and CoO thicknesses as 11 and 2.4nm, respectively. Exchange bias was obtained from field cooled magnetoresistance measurements at various temperatures carried out in a closed cycle cryostat. Exchange bias varies quasi linearly with temperature and vanishes at the blocking temperature, $T_B=97$ K. The latter is less than 2/3 of the bulk Néel temperature allowing to estimate the T=0 antiferromagnetic correlation length of CoO to be 1.84 nm in accordance with the geometrical confinement.

¹This work was supported by NSF through Career DMR-0547887, MRSEC DMR-0213808, and NRI.

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Date submitted: 27 Nov 2007

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