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Coercivity enhancement in $(Co/CoO)_n$ superlattices SRINIVAS POLISETTY, CHRISTIAN BINEK, University of Nebraska-Lincoln — The temperature dependence of the coercivity is studied in $(Co/CoO)_n$ periodic multilayer thin film superstructures below and above the exchange bias blocking temperature. The ferromagnetic Co thin films are grown with the help of MBE at a base pressure of 10E-10 m.bar whereas antiferromagnetic CoO thin films are grown from in-situ oxidized Co. The thicknesses of these films are monitored by reflection high energy electron diffraction (RHEED). A mean-field theory[1] is outlined which provides an analytic and intuitive expression for the enhancement of the coercivity of the ferromagnet which experiences the exchange coupling with a neighboring antiferromagnet. An experimental approach is developed allowing to determine the interface susceptibility of an individual antiferromagnetic pinning layer by systematic change in the thickness of the antiferromagnet thin films in various sets of superlattice samples measured at different temperatures, respectively. The experiment enables us to separate out the intrinsic coercivity from the contribution induced by exchange coupling at the interface. It is the goal of our study to evidence or disprove if it is simply this susceptibility of the reversible interface magnetization creating the spin drag effect and by that the coercivity enhancement. Financial support by NSF through CAREER DMR-0547887, NRI and Nebraska MRSEC. [1]G. Scholten, K. D. Usadel, and U. Nowak, Phys. Rev B. **71**, 064413 (2005).

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