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Antiferromagnetic Domain Size Measurement in $Fe_{0.70}Zn_{0.30}F_2$/Co Bilayers[1] DAVID LEDERMAN, HONG-TAO SHI[2], Dept of Physics, West Virginia University, MICHAEL FITZSIMMONS, Los Alamos National Laboratory — The size of the antiferromagnetic domains of an epitaxial (110) $Fe_{0.70}Zn_{0.30}F_2$ dilute Ising antiferromagnetic layer 68 nm thick with a polycrystalline Co overlayer 27 nm thick was studied via neutron diffraction. The sample's exchange bias changed sign from negative to positive as the temperature was increased, with the switching temperature, at which the exchange bias was zero, occurring at $T = 20$ K. The width of the (100) antiferromagnetic peak of the $Fe_{0.70}Zn_{0.30}F_2$ layer was significantly narrower at the switching temperature than at either $T = 5.5$ K or $T = 30$ K. This result is consistent with models that predict an inverse relationship between the antiferromagnetic domain size and exchange bias.

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