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Exchange Bias of Single-Crystalline $Fe_xZn_{1-x}F_2$/Co Bilayers
DAVID LEDERMAN, HONGTAO SHI[1], West Virginia University — The exchange bias of polycrystalline Co films grown on epitaxial, 67 nm thick single-crystalline films of (110) $Fe_xZn_{1-x}F_2$ was measured as a function of Fe concentration. A set of samples was grown with a pure, 1.0 nm thick FeF_2 layer at the interface, and another set was grown without the interface layer. Unlike previous measurements of *twinned* $Fe_xZn_{1-x}F_2$ films, the exchange bias of samples with the pure interface layer remains constant as the Fe concentration is decreased from $x = 1.0$ to $x = 0.35$. A decrease in samples without the pure interface layer was also observed, which can be explained by a weakening of the Co/$Fe_xZn_{1-x}F_2$ exchange interaction as the Fe concentration is decreased. These results imply that, at least in highly anisotropic systems like FeF_2, the proposed domain state model does not explain the experimental data.

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