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Antiferromagnetism in $\text{BaF}_2/\text{Fe}_x\text{Ni}_{1-x}\text{F}_2$ bilayers FELIO PEREZ, TRENT JOHNSON, DAVID LEDERMAN, West Virginia University, MULTI-FUNCTIONAL MATERIALS LABORATORY TEAM — A series of crystalline BaF_2 /epitaxial (110) $\text{Fe}_x\text{Ni}_{1-x}\text{F}_2$ samples were deposited on MgF_2 (110) via molecular beam epitaxy. The Fe concentration x was determined from x-ray diffraction measurements of the [110] lattice parameter. The actual thickness of each layer and the roughness of each interface were determined by fitting x-ray reflectivity data. The antiferromagnetic ordering of samples with $x = 0.04, 0.27, 0.40, 0.46, 0.50,$ and 0.85 were studied and compared with $\text{BaF}_2/\text{NiF}_2$ ($x=0$) and $\text{BaF}_2/\text{FeF}_2$ ($x=1$) bilayers, via standard magnetometry measurements. A significant enhancement of the Néel temperature in alloys and evidence of spontaneous magnetization along c -axis were found.

Felio Perez
West Virginia University

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