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Misalignment of ferromagnetic and antiferromagnetic easy axes in exchange-coupled bilayers ROBERTO RODRIGUEZ, Pontificia Universidad Católica de Chile, ALEXANDRE OLIVEIRA, Universidade Federal do Rio Grande do Norte, HENRRY VEGA, SEBASTIAN MICHEA, Pontificia Universidad Católica de Chile, ANTONIO AZEVEDO, Universidade Federal de Pernambuco — In this work we studied the exchange bias phenomenon existing at ferromagnetic (FM)/ antiferromagnetic (AF) bilayers, which were fabricated by oblique sputtering deposition. Sputtering deposition induces strong uniaxial anisotropy in ferromagnetic films with its easy axis perpendicular to the plane of incidence. Sputtering deposition of magnetic thin films with a magnetic field applied parallel to the substrate can also produce a high uniaxial anisotropy. Our samples were grown with a magnetic field applied perpendicular to the easy axis created by the oblique deposition. For this reason, we created a competition between both anisotropy mechanisms: sputtering shadowing effects and magnetic field applied during deposition. A misalignment between the FM and AF easy axes was investigated using Magneto Optical Kerr Effect (MOKE) and Ferromagnetic Resonance techniques. In order to interpret MOKE results we used a phenomenological approach, based on Stoner-Wohlfarth model, which takes into account all relevant free energy contributions. Thus, we compared results from two different techniques. By means of our model it was possible to use the theoretical angular dependence of hysteresis loop shift to explain the experimental one. It should be stated that in MOKE measurements we found out hysteresis loops similar to the usual uniaxial anisotropy hard axis, but shifted by a field value.

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