

Abstract Submitted
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Influence of the antiferromagnet spin structure on exchange bias.

R. MORALES¹, ZHI-PAN LI, Physics Department, University of California San Diego, La Jolla, CA, USA, J. M. ALAMEDA, Departamento de Física, Universidad de Oviedo, Oviedo, Spain, IVAN K. SCHULLER, Physics Department, University of California San Diego, La Jolla, CA, USA — The exchange bias phenomenon (EB) is known by a shift of the hysteresis loop along the magnetic field axis (H_{EB}). In ferromagnet/antiferromagnet (FM/AF) thin films EB originates from the exchange interaction between FM and AF spins at the interface. Therefore, some theoretical models consider the EB as a purely interfacial phenomenon, but some experimental results are incompatible with these models. In this work we investigate the influence of an internal AF spin structure on EB. FM1/AF/FM2 trilayers have been prepared with dissimilar FM1 and FM2 coercivities, so the sample can be cooled down below the AF Néel temperature with parallel or antiparallel FM magnetizations. It has been observed that H_{EB} changes drastically from the parallel to the antiparallel cooling configuration for AF thicknesses $t_{AF} < 200\text{nm}$ while it hardly varies for $t_{AF} > 300\text{nm}$. This result demonstrates that the internal spin structure of the AF is a key point to the understanding of EB. Work supported by US-DOE and European Marie-Curie-OIF.

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