

MA 28: Keynote Talk by Ivan Schuller

Time: Wednesday 14:00–14:45

Location: H 0105

Keynote Talk

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A Comprehensive Study of Exchange Bias: Towards a universal explanation. — ●IVAN SCHULLER — Physics Department and Center For Advanced Nanoscience, UCSD, La Jolla, Ca. 92093, USA

Magnetic nanostructures produce interesting new phenomena and novel applications when the physical size becomes comparable to relevant magnetic length scales.

In the *Exchange Biased* configuration in which a ferromagnetic nanostructure is in contact with an antiferromagnet a variety of unusual phenomena arise; the reversal mode of the ferromagnet changes in a substantial fashion, the superparamagnetic transition temperature is strongly affected and there is a noticeable change in the mi-

croscopic spin configuration. I will describe a comprehensive study, in which we studied these phenomena in nanostructured ferromagnets prepared by MBE and sputtering combined with lithography and self-assembly. These experiments include magnetotransport, magnetization, Magneto-Optic Kerr effect, neutron and synchrotron scattering, and ultrafast pump-probe measurements. I will present a general explanation of the origin of exchange bias which emerges from many experiments taken together.

Work done in collaboration with R. Morales, M. Velez, O. Petravic, I. V. Roshchin, X. Batlle, J. M. Alameda, M. Kovylyna, M. Erekhinsky, J. E. Villegas, A. Labarta, A. Porat, and S. Bar-Ad. Work supported by the US Department of Energy and US Air Force Office of Scientific Research.