Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Direct evidence of imprinted vortices in exchange-biased patterned bilayer nanomagnets J.J. KAVICH, Institut Catala de Nanotecnologia (ICN), Barcelona, Spain, G. SALAZAR-ALVAREZ, Department of Materials Science and Engineering, Royal Institute of Technology, Sweden, J. SORT, Departament de Fisica, Universitat Autonoma de Barcelona, Spain, A. POTENZA, Diamond Light Source, Rutherford Appleton Laboratory, UK, A. MUGARZA, S. STEPANOW, Insitut Catala de Nanotecnologia (ICN), Barcelona, Spain, J. NOGUES, P. GAMBARDELLA, Institucio Catalana de Recerca i Estudis Avancats (ICREA), Barcelona, Spain — We investigate the magnetic domain structure in lithographically patterned nanomagnet arrays using element-sensitive circularly polarized XPEEM imaging. ZFC Py/IrMn (FM/AFM) bilayer nanodot (0.5 um – 4um dia.) arrays imaged across the Fe and Ni L edges clearly demonstrate spontaneous formation of vortex states. Magnetic contrast at the Mn L edge resonance indicates that the vortex state is transferred into the underlying AFM layer. The exchange-bias, measured through magneto-optical hysteresis measurements, verifies the AFM nature of the underlying IrMn, suggesting that the imprinted vortex state is confined to the interface by local interactions of the uncompensated interfacial Mn spins with the FM Py layer.

J.J. Kavich
Institut Catala de Nanotecnologia (ICN), Barcelona, Spain

Date submitted: 21 Nov 2008 Electronic form version 1.4