Abstract Submitted
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Confined stripe structure in periodically grooved NdCo Films with perpendicular magnetic anisotropy[1] JOSE I. MARTIN, AURELIO HIERRO-RODRIGUEZ, ROSALIA CID, GABRIEL RODRIGUEZ-RODRIGUEZ, MARIA VELEZ, LUIS M. ALVAREZ-PRADO, JOSE M. ALAMEDA, Depto. Fisica, Universidad de Oviedo and CINN (CSIC - U.Oviedo - P.Asturias), Spain — Magnetic multilayers are broad research field with many interesting phenomena depending on interlayer coupling. Also, since the development of nanolithography techniques, magnetic nanowires and dots have been intensively investigated [1]. Recently, as a combination of these two fields, the concept of magnetic lateral superlattice has emerged: continuous magnetic films with a lateral modulation of their magnetic properties at submicrometric length scale [2]. In this work, we have fabricated amorphous Nd-Co films with perpendicular magnetic anisotropy and a periodic thickness modulation by e-beam lithography and ion milling. Lateral periods range from 2 μm - 500 nm and groove depths from 10 to 30 nm. MFM and Kerr magnetometry have been used for characterization. Lateral patterning modifies the interplay between magnetostatic energy, perpendicular and in plane anisotropy and exchange interaction resulting in confined magnetic stripe structures. The different regimes that appear depending on the size of the periodic thickness modulation relative to the magnetic stripe period will be discussed. [1] J.I Martin et al, JMMM, 256 (2003) 449 [2] S. P. Li et al, PRL 88 (2002) 087202; N. Martin et al, PRB 83 (2010) 174423

Jose Martin
Depto. Fisica, Universidad de Oviedo and CINN
(CSIC - U.Oviedo - P.Asturias), Spain

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