Contribution ID: **36** Type: **Poster**

Vortex chirality observation in trilayer disks of Fe/Al/Co using X ray resonant magnetic scattering

Thursday, 8 September 2022 19:35 (20 minutes)

X ray Resonant Magnetic Scattering (XRMS) was used to understand the magnetic behavior of a 2-dimensional square array of trilayer ellipsoidal disks of submicrometer size (800 nm) deposited on Si. The disks were made of Fe (14 nm)/Al (3 nm)/Co (17 nm) by magnetron sputtering and lithographied by laser interferometry. The experiment was done in MARES end-station, in BL29 at the ALBA synchrotron. Thanks to the chemical and chiral symmetry sensitivity of XRMS [1], not only the magnetic hysteresis loops of the Cobalt and the Fe layers were distinguished, but also their chiral asymmetries. The hysteresis loops obtained at different Bragg angles far from the specular direction were investigated, demonstrating the sensitivity of the experimental technique to accurately determine the chirality of the vortex and their creation and annihilation fields in each of the two layers. The technique was applied in combination with magnetic reflectivity in the same end-station, which gave information about the quality of the magnetic interfaces, crucial to understand the magnetic interaction between layers.

[1] J. Díaz, P. Gargiani, C. Quirós, C. Redondo, R. Morales, L. M. Álvarez-Prado, J. I. Martín, A. Scholl, S. Ferrer, M. Vélez and S. M. Valvidares. "Chiral asymmetry detected in a 2D array of permalloy square nanomagnets using circularly polarized x-ray resonant magnetic scattering". Nanotechnology 31-2, pp.025702-025702. DOI:10.1088/1361-6528/ab46d7

Would you like to participate in the Poster Prize competition?

No

Primary author: DIAZ FERNÁNDEZ, Javier Ignacio (Universidad de Oviedo)

Co-authors: Dr ALVAREZ-PRADO, Luis Manuel (Universidad de Oviedo); Dr VÉLEZ, María (Universidad de Oviedo); Dr VALVIDARES, Manuel (Sincrotrón ALBA); Dr MONTOYA, Isaac (Universidad del Pais Vasco); Dr REDONDO, Carolina (Universidad del Pais Vasco); Dr MORALES, Rafael (Universidad del Pais Vasco)

Presenter: DIAZ FERNÁNDEZ, Javier Ignacio (Universidad de Oviedo)

Session Classification: List of posters presented during the conference