Abstract Submitted
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Towards magnetic 3D x-ray imaging[1] PETER FISCHER, CXRO/LBNL Berkeley CA, R. STREUBEL, IFW Dresden Germany, M.-Y. IM, CXRO/LBNL Berkeley CA, D. PARKINSON, ALS/LBNL, Berkeley CA, J.-I. HONG, DGIST Daegu Korea, O.G. SCHMIDT, D. MAKAROV, IFW Dresden Germany — Mesoscale phenomena in magnetism will add essential parameters to improve speed, size and energy efficiency of spin driven devices. Multidimensional visualization techniques will be crucial to achieve meso-science goals. Magnetic tomography is of large interest to understand e.g. interfaces in magnetic multilayers, the inner structure of magnetic nanocrystals, nanowires or the functionality of artificial 3D magnetic nanostructures. We have developed tomographic capabilities with magnetic full-field soft X-ray microscopy combining X-MCD as element specific magnetic contrast mechanism, high spatial and temporal resolution due to the Fresnel zone plate optics [1]. At beamline 6.1.2 at the ALS (Berkeley CA) a new rotation stage allows recording an angular series (up to 360 deg) of high precision 2D projection images. Applying state-of-the-art reconstruction algorithms it is possible to retrieve the full 3D structure. We will present results on prototypic rolled-up Ni [2] and Co/Pt tubes and glass capillaries coated with magnetic films and compare to other 3D imaging approaches e.g. in electron microscopy [3].

[1] P. Fischer, Mat. Sci & Eng. R72 81 (2011)
[2] R. Streubel et al., doi:10.1002/adma.201303003.
[3] C. Phatak et al, Ultramicroscopy 109 264 (2009)

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