

Abstract Submitted
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Soft x-ray coherent
diffraction imaging on magnetic nanostructures¹ XIAOWEN SHI, JAMES LEE, SHRAWAN MISHRA, DANIEL PARKS, TOLEK TYLISZCZAK, DAVID SHAPIRO, SUJOY ROY, STEVE KEVAN, Lawrence Berkeley Natl Lab, SOFT X-RAY SCATTERING AT ALS, LBL TEAM, STXM TEAM AT ALS COLLABORATION, SOFT X-RAY MICROSCOPY GROUP AT ALS COLLABORATION — Coherent soft X-rays diffraction imaging enable coherent magnetic resonance scattering at transition metal L-edge to be probed so that magnetic domains could be imaged with very high spatial resolution with phase contrast, reaching sub-10nm. One of the overwhelming advantages of using coherent X-rays is the ability to resolve phase contrast images with linearly polarized light with both phase and absorption contrast comparing to real-space imaging, which can only be studied with circularly polarized light with absorption contrast only. Here we report our first results on high-resolution of magnetic domains imaging of CoPd multilayer thin film with coherent soft X-ray ptychography method. We are aiming to resolve and understand magnetic domain wall structures with the highest obtainable resolution here at Advanced Light Source. In principle types of magnetic domain walls could be studied so that Neel or Bloch walls can be distinguished by imaging.

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