

Abstract Submitted
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Antiferromagnetic Domain Wall Engineering in Chromium Films JONATHAN LOGAN, HYEKYUNG KIM, University of Chicago, ERIC ISAACS, Argonne National Laboratory, OLEG SHPYRKO, University of California, San Diego, DANIEL ROSENMANN, Center for Nanoscale Materials, Argonne National Laboratory, ZHONGHOU CAI, Advanced Photon Source, Argonne National Laboratory, RALU DIVAN, Center for Nanoscale Materials, Argonne National Laboratory — We have engineered an antiferromagnetic domain wall by utilizing a magnetic frustration effect of a thin iron cap layer deposited on a chromium film. Through lithography and wet etching we selectively removed areas of the Fe cap layer to form a patterned ferromagnetic mask over the Cr film. Removing the Fe locally removes magnetic frustration in user-defined regions of the Cr film. We present x-ray microdiffraction results confirming the formation of an antiferromagnetic spin-density wave propagation domain wall in Cr. This domain wall nucleates at the boundary defined by our Fe mask. We have characterized the region surrounding the domain wall using x-ray microdiffraction and microfluorescence with a resolution of 1 micron.

Jonathan Logan
University of Chicago

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