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Structural and magnetic characterization of Co/NiFe dot arrays using soft x-ray resonant magnetic scattering YONGSEONG CHOI, Department of Materials Science and Engineering, Northwestern University, D.R. LEE, J.W. FREELAND, G. SRAJER, Advanced Photon Source, Argonne National Laboratory, V. METLUSHKO, Department of Electrical Engineering and Computer Science, University of Illinois at Chicago — The field dependence of Co/NiFe dot arrays was studied in a layer-selective way, and structural and magnetic characterizations were conducted. Using x-ray resonant magnetic scattering (measured at the Ni/Co L_3 absorption edges), element-specific hysteresis loops were obtained from the NiFe and Co layers of patterned dot arrays. One dot-array sample was grown with an oxide layer between the NiFe and Co layers, and another was grown without it. The two arrays show different field dependence of NiFe magnetization. These results were compared with the hysteresis loops from single-layered NiFe and Co dot arrays. For structural and magnetic characterization of the dot arrays, soft x-ray resonant magnetic scattering measurements in reflectivity mode were performed with circularly polarized x-rays. The work at Argonne is supported by the U.S. DOE, Office of Basic Energy Sciences, under Contract No. W-31-109-ENG-38.

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