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Collective Magnetic Behavior of Geometrically Frustrated Arrays with Perpendicular Anisotropy Y. PAN, K.K. KOHLI, R. FRALEIGH, A.L. BALK, D. FINKEL, S. ZHANG, J. LI, I. GILBERT, P.E. LAMMERT, R. MISRA, V.H. CRESPI, P. SCHIFFER, N. SAMARTH, Dept. of Physics, Penn State University, University Park PA 16802, M. ERICKSON, C. LEIGHTON, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN 55455 — We use the magneto-optical Kerr effect (MOKE) to study the global and local magnetic behavior of geometrically frustrated arrays of single domain ferromagnetic islands with perpendicular anisotropy. MOKE measurements over macroscopic length scales probe the global properties of arrays with different lattice geometries and island spacings. The variation of switching field as a function of island spacing gives us insight into the influence of local frustration on the collective magnetic response of the arrays. The experimental results are compared with mean field calculations. Finally, we use spatially resolved Kerr microscopy to probe nucleation and domain propagation in the magnetization reversal process. Supported by U.S. Department of Energy Award DE-SC0005313. Lithography performed with the support of the National Nanotechnology Infrastructure Network

Nitin Samarth
Dept. of Physics, Penn State University, University Park PA 16802

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