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Dynamic Magneto-Optical Kerr Imaging of Perpendicular Anisotropy Artificial Spin Ice Geometries[1] ROBERT FRALEIGH, PAUL LAMMERT, VIN CRESPI, NITIN SAMARTH, Department of Physics and Materials Research Institute, The Pennsylvania State University, University Park, Pennsylvania 16802, USA, IAN GILBERT, PETER SCHIFFER, Department of Physics and the Federick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801, USA — We present a spatially resolved magneto-optical Kerr imaging study on the magnetization reversal, as a function of applied field, of patterned arrays of perpendicular anisotropy single domain islands. Patterns are made of large collections of CoPt multilayer islands with frustrated (Kagome, triangular) and unfrustrated (square, hexagonal) geometries. Field induced switching is imaged with a Kerr imaging apparatus equipped with an objective lens that allows for diffraction limited spatial resolution as low as 250nm and imaging acquisition as fast as 12 frames/second. The magnetization reversal process is probed by varying lattice spacing, geometry, and artificial defects in the patterned arrays.

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