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Broad-Band FMR of Patterned Square Arrays of Square Permalloy Antidots[1] VINAYAK BHAT, University of Kentucky, JOSEPH SKLENAR, JOHN KETTERSON, Northwestern University, LANCE DELONG, University of Kentucky — We have used electron beam lithography to pattern 25-nm-thick Permalloy films with square arrays of square antidots of size D = 300, 400, 500 and 700 nm and same lattice constant d = 1000 nm, using a lift-off technique. Broadband FMR[2] was used to observe localized modes[3,4] showing four-fold rotational symmetry for in-plane DC magnetic field. We have studied FMR spectra spanning the ferromagnetic hysteresis regime around 250 MHz, up to the saturation regime ending near 14 GHz, and observe the appearance and disappearance of various FMR modes, especially at frequencies below 7 GHz. We have observed history-dependent modes below 3 GHz that may be associated with domain walls.

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[2]C. C. Tsai et al., Rev. Sci. Instrum **80**, 023904 (2009)
[3]C. T. Yu, M. J. Pechan, and G. J. Mankey, Appl. Phys. Lett. **83**, 3948 (2003)
[4]Minghui Yu et al., J. Appl. Phys **101**, 09F501 (2007)

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