

Abstract Submitted
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E-beam lithography patterning of Co/Pd multilayer pillars below 50 nm in diameter RYAN COMES, Engineering Physics, University of Virginia, RICHARD KASICA, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, GERARD HENEIN, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, JIWEI LU, STUART WOLF, Department of Materials Science and Engineering, University of Virginia — Co/Pd multilayer superlattice structures are among the most popular thin film systems for use in future bit patterned media. Multilayer Ta(9 nm)/Pd(7)/{Co(0.3)/Pd(0.3)} \times 15 films were deposited on a Si(111) substrate by combined RF and DC magnetron sputtering. The films were characterized by x-ray reflectivity, x-ray diffraction, and a vibrating-sample magnetometer and found to exhibit perpendicular anisotropy. Additional films were made with a 30 nm sputtered nanocrystalline Si capping layer which serves as an etch stop [1]. These films were patterned into pillars with diameters of less than 50 nm using e-beam lithography. We present results of the lithographic process and analysis of the Co/Pd nanopillars which are formed.

[1] Jung-Sub Wi, et al. “Electron beam lithography of Co/Pd multilayer with hydrogen silsesquioxane and amorphous Si intermediate layer.” *J. Vac. Sci. Technol. B*, 24(6), 2616, Nov/Dec 2006.

Ryan Comes
Engineering Physics, University of Virginia

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