

Preparation of media using AlN-CoPt multilayers and AAO

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Granular media has governed the information storage since its beginning, whether in the form of longitudinal magnetic recording (LMR) media or current perpendicular magnetic recording (PMR) [1]. However, superparamagnetism arises as the magnetic anisotropy energy (K_uV) decreases due to shrinkage of grain [2]. A possible way to continue the ruling of granular media is to increase the thickness of grains to compensate reduced thermal stability, resulting from the smaller grain size [1]. CoPt-AlN multilayers [3] separated by AlN insulator layers were first deposited on silicon wafer as a precursor and then annealed at different temperature. The as-deposited CoPt-AlN shows in-planemagnetic anisotropy. After annealing at 700 °C, they show partially perpendicular anisotropy and high coercivity of 3kOe.

In addition to previous work of patterning media with nanosphere lithography and block copolymer,, we started to explore the potential of with anodic aluminum oxide(AAO) as template to fabricated CoPt and Co/Pd based patterned media [4]. 25nm period (1 Tbps) of anodic alumina has been fabricated.

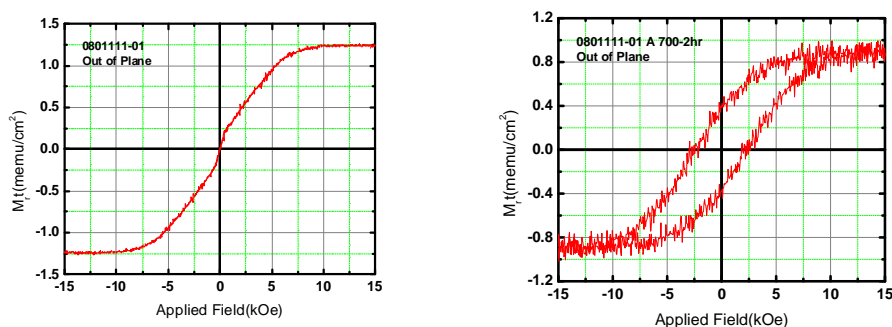


Fig 1 M_t -H loops (out of plane) of CoPt-AlN (a) as deposited; (b) Annealed at 700 °C for 2 hours.

Reference

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