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Biography

S K Srivastava is working as an Associate Professor and Head at Department of Physics, CIT Kokrajhar India. Moreover, he is serving the institute as Dean (R&D). He is recipient of Early Carrier Research Award 2017; given by Ministry of Science and Technology (DST-SERB), Government of India. He is principle investigator of two projects. He has a strong interest to work in material science with a special emphasis to magnetic materials for wide range of applications. He has published more than 50 papers and has delivered several invited talks in India and abroad.

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BIT PATTERNED MEDIA- PROBING MAGNETIC PROPERTY USING EHE MEASUREMENT

There is a frantic race to increase the storage density of hard disk drive (HDD) due to its huge applications. The recording media used for making conventional HDD is made up of multilayers thin film or magnetic alloys, which naturally forms nanometer-scale grains and each recorded bit is stored across hundreds of these magnetic grains. Although, the conventional perpendicular media is being used in current recording technology, but it is expected to lose its fuel in next few years due to a phenomenon called super-paramagnetism (thermal stability of recorded bit). Recently, one alternative potential way has been proposed, so called bit patterned media (BPM). In such bit patterned media, each artificially fabricated magnetic nanostructure can store an individual bit rather than using hundreds of naturally formed small grains to store single bit. Ordered arrays of isolated magnetic nanostructures are of considerable interest to increase the storage density of hard disks beyond the current perpendicular media. In such bit patterned media (BPM), each artificially fabricated magnetic nanostructure can store an individual bit. We developed a novel non-lithographic method to fabricate perpendicularly magnetized BPM system and we studied Co/Pt bit pattern media. In present talk, the author will discuss few results on Co/Pt bit pattern media, as well as results on CoTb alloys-based bit patterned media. These materials were fabricated using the barrier layer of auto-assembled anodic alumina template (a non-lithographic method) and by depositing either CoPt multilayers or CoTb alloy to form an ordered array of ferromagnetic nanodots, so-called nanobumps. We used extraordinary hall resistance measurements to probe magnetization reversal mechanism and switching field distribution. The role of interdot exchange coupling and dipolar coupling, magnetization reversal process will be discussed.

Note: