Anisotropy Magnetoresistance(AMR) Effect in the Co-TbN two-phase system

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Two-phase magnets are a new class of phase separated magnetic materials. In materials with two magnetic phases it is possible to have exchange coupling at the phase boundary when the two phases are in intimate contact. A two-phase magnet Co-TbN, which consists of TbN particles in a Co matrix, showed the giant magnetoresistance(GMR) at room temperature. The GMR effect of the Co-TbN system was explained by scattering of spin polarized conduction electrons on antiparallel exchange coupled spins at the phase boundary between TbN particles and the Co matrix1). The recent study examined an AMR effect of two-phase magnet Co-TbN which consists of two phase, HCP Co matrix and highly-ordered TbN precipitates. The Co-TbN exhibited a large AMR effect. The magnetoresistivity ($\delta\rho$) and magnetoresistance ($\delta\rho/\rho$) of Co-TbN thin film is about $\sim 1\times10^{-7}$ Ωcm and ~3 % at room temperature up to the field of 500Oe.

Reference

[1] T.W. KIM , R.J.Gambino & T.R. McGuire , Journal Of Applied Physics, 89(1), 7299(2001)