

Abstract Submitted
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Amorphous Gd-Fe-Co as Prospective Material for Perpendicular STT-MRAM¹ MANLI DING, JOSEPH POON, JIWEI LU, University of Virginia, TIM MEWES, University of Alabama — A number of Rare-Earth-Fe-Co alloys are known to have strong magneto-crystalline anisotropy, giving rise to out-of-plane easy magnetization in thin films. Since Gd is in the L=0 state and there is no spin-orbit coupling, Gd alloys are favored to have low Gilbert damping. The Gd ferromagnetic sublattice couples antiferromagnetically with the Fe(Co) ferromagnetic sublattice. Perpendicular anisotropy exists near the compensation point, where the magnetization is small. Two magnetization compensation ranges are found in GdFeCo, with one existing at high Gd content and one at low Gd content. At higher Gd%, a high coercive field ~ 5 kOe and a low Gilbert damping ~ 0.03 are measured. At lower Gd%, a much lower coercive field ~ 300 Oe is measured. High temperature treatment causes a degradation of the perpendicular anisotropy.

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