Abstract Submitted
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Ferromagnetic resonance study of ion irradiated Co/Ni multilayers with perpendicular magnetic anisotropy J-M BEAUJOUR, A. KENT, New York University, D. RAVELOSONA, Universite Paris Sud, E. FULLERTON, University of California, Y. SAMSON, C. BEIGNE, CEA Grenoble — Ferromagnetic resonance (FMR) spectroscopy was used to investigate the effect of helium ion-irradiation on the magnetic properties and the magnetization dynamics of Co/Ni multilayer films. The anisotropy in these materials is associated with interfaces, which can be systematically disordered with light ion-irradiation without inducing major structural changes to the films. [Pd/Co]×2|[8ÅNi/1.4ÅCo]×3|Pd|Co|Pd| have been exposed to He^+ irradiation with fluence up to 10^{15} ions/cm^2 [1]. FMR was conducted with a broad band coplanar waveguide up to 30 GHz. The resonance field and the FMR linewidth were determined as a function of frequency for dc magnetic fields in-plane, out-of-plane and for selected field angles. The perpendicular anisotropy decreases linearly with fluence, and at a particular fluence the direction of easy magnetization switches from perpendicular to in-plane. The Gilbert damping constant of the films irradiated at the higher and lower fluence is about the same: $0.03 \leq \alpha \leq 0.04$. However, the linewidth exhibits a non-monotonic dependence on fluence, with a maximum at intermediate fluence. We will discuss this effect as well as possible explanations in terms of the changes in interface structure as a function of fluence. [1] Stanescu *et al.*, J. Appl. Phys. (2008).

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