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Effect of proton irradiation on the magnetic and magneto-transport properties of TbFeCo metglass NATTAWUT ANUNIWAT, MANLI DING, JOSEPH POON, JIWEI LU, University of Virginia, BRAD WEAVER, Naval Research Laboratory — The ferrimagnetism in amorphous rare-earth transition metal alloys is well known, and has recently been investigated for applications in perpendicular magnetic random access memory (p-MRAM), which is considered to be a universal memory technology due to the low power dissipation and the non-volatility. The amorphous TbFeCo thin films were deposited by rf magneton sputtering. The as-deposited film exhibited a low saturation magnetization (M_S $\sim$100 emu/cc) and a high perpendicular anisotropy (K_U $\sim 10^6$ erg/cc). Hall-bar devices were fabricated for characterizing the magneto-transport behaviors. Both thin film samples and Hall bar devices were exposed to 2 MeV-energy protons with incremental fluences. Magneto-transport and standard magnetic measurements are employed to investigate defects/displacement damages. The magneto-transport suggests that compensation temperature of the film decreases after irradiations. The changes in saturation moments and coercive fields will be discussed as a function of total fluence, which may be related to structural damages.

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