Magnetic and magnetostrictive properties in amorphous $(Tb_{0.27}Dy_{0.73})(Fe_{1-x}Co_x)_2$ films

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Abstract: Magnetic and magnetostrictive properties have been investigated for amorphous $(Tb_{0.27}Dy_{0.73})(Fe_{1-x}Co_x)_2$ thin films. An increase in the 3d magnetic moment due to the enhancement of T-T interactions in substituted (Fe, Co) alloys was found. This leads to stronger R-(Fe, Co) exchange energies and then to enhancements of R-sublattice magnetization as well as magnetostriction in these amorphous R(Fe, Co) thin films. In addition, a well-defined in-plane anisotropy is created by magnetic-field annealing for the Co-rich films. A large magnetostriction of $480??10^{-6}$ developed in low fields of 0.3 T was observed for films with x = 0.47 after magnetic-field annealing. The differing roles of Fe and Co atoms on the magnetization process have also been discussed. ?? 2000 American Institute of Physics.

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