

MAGNETIC PHENOMENA IN AMORPHOUS FILMS WITH LARGE SCALE INHOMOGENEITIES

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Abstract

In the production of amorphous films, certain processes usually cause inhomogeneities which may be a variation of the density and/or chemical composition. These variations can affect essentially the physical behaviour of the materials used. The effects of the following types of inhomogeneities were investigated: 1) super network (columnar structure), 2) composition inhomogeneities in plane, 3) composition inhomogeneity in depth. The role of the super network on the macroscopic magnetic anisotropy was investigated in evaporated and sputtered Gd—Co amorphous films by magnetic, electron microscopic and backscattering methods. The domain wall motion was investigated in sputtered amorphous Gd—Co films with a compensation surface perpendicular to the film plane. Magnetic and Hall effect measurements were performed on evaporated Gd—Co films with a compensation layer due to the concentration gradient in depth. Special spin wave resonances were observed in amorphous Gd—Co films in which the concentration changes as a quadratic function of depth.