STRUCTURE OF SPUTTERED PERMALLOY/NOBLE METAL MULTILAYERS WITH GMR EFFECT

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We report on structure of Py/NM multilayers, where Py = $Ni_{83}Fe_{17}$ and NM = Cu, Ag and Au, obtained by face to face and magnetron sputtering onto various substrates. Although both Py and NM crystallize in fcc structures, they differ in the lattice constant and solubility. The multilayers showed GMR effect for appropriate thicknesses of the NM spacer. The structures of our films were investigated by the low and high angle X-ray diffraction. The analysis of spectra revealed a high structural quality of multilayers. The samples were well textured polycrystalline films with very good periodicity in the direction perpendicular to the film plane and crystallites with a coherence length larger than the modulation wavelength. The differences observed in the low and high angle spectra for multilayers with various nonmagnetic spacer are discussed in relation to the GMR effect.

9.7 cm

13.4 cm

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