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Microstructure and surface morphology of $\text{Cu}_{70}\text{Fe}_{18}\text{Co}_{12}$ thin films deposited by thermal evaporation technique

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CuFe/CuFeCo Granular alloys and Fe/Cu/Co multilayer systems have attracted considerable attention owing to the fundamental scientific interest in them and their potential applications in magnetic recording devices and magnetic sensors. Usually, granular metallic systems are thin films made from grains of magnetic metals (e.g., Co, Fe, Ni) embedded in an immiscible nonmagnetic matrix (e.g. Ag, Cu or Au) deposited on the appropriate substrate. The phenomenon of giant magnetoresistance (GMR) has been observed in 1992 in granular heterogeneous alloys. CuCo, CuFe and Cu Fe Co electrodeposited systems have attracted much attention due to their magnetoresistive effects at room temperature. In the present contribution, Polycrystallines CuFe and CuFeCo granular thin films were prepared by thermal evaporation process (Physical vapor deposition), from the nanocrystallines CuFe and CuFeCo powder obtained by mechanical alloying After 24 h of milling from elemental powders. The structural proprieties and morphology of nanocrystalline powder mixture and thin film of CuFe and CuFeCo deposited on glass substrate were examined by transmission electron microscopy (TEM) coupled with energy dispersive X-ray spectroscopy (EDX), X ray diffraction (XRD), and surface roughness was determined by atomic force microscope (AFM).

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