

Effects of Substrate Materials on Structural and Magnetic Behaviors of Co-Cu Film Prepared by RF-sputtering

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Co-Cu film with thickness of 312 nm on different substrates (glass, A-PET, C-PET, W-PTFE and B-PTFE) was deposited by RF-sputtering. XRD confirms that all deposited films show Co (HCP) phase in 220 plane, Cu (FCC) phase in 111 plane and Co-Cu (FCC) phase in 111 plane. Intensity of the peak is obviously dependent on substrate material. The highest and lowest peak intensities were observed on the films deposited on C-PET and A-PET substrate, respectively. VSM result reveals that all sputtered Co-Cu films display ferromagnetic phase at room temperature. The maximum and minimum saturation magnetizations in both parallel and perpendicular measurements were observed on the film deposited on B-PTFE and glass substrates, respectively. The result implies that the structural and magnetic properties of sputtered Co-Cu film can be importantly improved by the material substrate.

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