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Influence of Under-layers morphology on Structural and Magnetic Properties of Sputtered Co₈₁Pd₁₉ Film.

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Sputtered Co₈₁Pd₁₉ films with thickness of about 60 nm were deposited on various under-layers (Al, Co, Cr, Cr and Ni) and on glass substrate. Structural, morphological and magnetic properties of Co₈₁Pd₁₉ films were investigated. All of prepared films showed CoPd (FCC) phase in (111) plane. Co (HCP) phase in (200) direction was observed in the films deposited Al, Cr and Ni under-layer and on glass substrate whereas the film on Co-under-layer exhibited Co (HCP) phase in (201) plane. AFM images revealed that the film on Al and Co under-layers exhibited the maximum roughness with highest grain size and the minimum roughness with lowest grain size, respectively. Both parallel and perpendicular maximum coercive field were found in the film on Ni under-layer and the film on Co-under-layer film showed the highest saturation magnetization both in-plane and out-of-plane measurements. These results confirmed that the structural and magnetic properties of sputtered Co₈₁Pd₁₉ film was affected by under-layer surface roughness and morphology by virtue of particle size and distribution on the under-layer film surface.

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