

**THE INFLUENCE OF He⁺ ION BOMBARDMENT ON
MAGNETIC PROPERTIES OF NiFe/Au/Co/Au MULTILAYERS**

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The influence of helium ion bombardment on magnetoresistance (MR), magnetization reversal and domain structure of sputtered (Ni₂₀Fe₈₀-2nm/Au-2nm/Co-0.6nm/Au-2nm)₁₀ multilayers (MLs) was investigated. The MLs consist of ferromagnetic layers with alternating in-plane (NiFe) and out-of-plane (Co) magnetic anisotropy. The samples were bombarded by He⁺ (30 keV) ions with fluences varied in the range $10^{13} \leq D \leq 3 \times 10^{16}$ He⁺/cm². With increasing fluences of helium ions the following changes in magnetic properties were observed: (i) the saturation field of Co layers exponentially decays what is caused by a transition from the out-of-plane to the in-plane anisotropy of Co layers, (ii) the MR decreases progressively whereas the resistance remains almost constant (up to 4×10^{15} He⁺/cm²), only for higher fluences it strongly increases, (iii) the period of maze stripe domain linearly decreases with $\log(D)$. However, domain structure for $D=3 \times 10^{16}$ He⁺/cm² is hardly visible.

13.4 cm

Subject category :

5. Nano-structure, Surfaces, and Interfaces

Presentation mode :

poster

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9.7 cm