

**Domain walls generation and positioning in He<sup>+</sup> ion bombarded  
Co/Au multilayers**

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The generation and controllable movement of a straight domain wall is very interesting for applications in spintronics and information technology (e.g., racetrack memory [1]). We report on aimed manipulation of magnetic structure in sputtered Ti/Au/(Co/Au)<sub>N</sub> ( $t_{\text{Co}} = 0.8$  nm,  $t_{\text{Au}} = 1$  nm,  $N = 1, 2, 3$ ) multilayers. The magnetic properties of Co layers are characterized by the perpendicular anisotropy and intentionally induced coercive field ( $H_C$ ) gradient along a given coordinate in the sample plane ( $dH_C/dx$ ). The value of ( $dH_C/dx$ ) was determined by a precise change of He<sup>+</sup> (10 keV) ions dose ( $D$ ) along the x coordinate ( $dD/dx$ ). We have demonstrated, that in the layered systems with defined ( $dH_C/dx$ ) the domain wall may be positioned by an appropriate choice of magnetic field. Moreover, using alternating magnetic field with decreasing amplitude a stripe-like structure can be generated.

[1] M. Hayashi et al., Science 320, 209 (2008)

← 13.4 cm →

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9.7 cm