

**Magnetic properties of  $(\text{Ni}_{80}\text{Fe}_{20}/\text{Au}/\text{Co}/\text{Au})_N$  multilayers with different number of repetitions**

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The influence of the Ti-8nm/Au-30nm buffer layer and the number of repetitions  $N$  on the magnetic properties of sputter deposited  $(\text{Ni}_{80}\text{Fe}_{20}\text{-}2\text{nm}/\text{Au}\text{-}2\text{nm}/\text{Co}\text{-}0.8\text{nm}/\text{Au}\text{-}2\text{nm})_N$  ( $1 \leq N \leq 15$ ) multilayers (MLs) was studied. Magnetization reversal process was investigated for external magnetic field applied either perpendicular ( $H_{\perp}$ ) or parallel ( $H_{\parallel}$ ) to the sample plane using vibrating sample magnetometer and magnetoresistance measurements. The MLs are characterized by in-plane and perpendicular anisotropy of NiFe and Co layers, respectively. However, for MLs deposited directly on Si the in-plane anisotropy of the first Co layer is observed. This drawback is eliminated in the MLs deposited on the buffer layer. The evolution of magnetization reversal of Co layers is observed with increasing  $N$ . For  $N \leq 3$  the magnetization reversal in  $H_{\perp}$  is characterized by a rectangular hysteresis loop. However, for larger  $N$  the shape of hysteresis loop with low remanent magnetization and high saturation field strength is observed. The influence of  $N$  on the magnetic structure of NiFe/Au/Co/Au MLs is similar to that observed in Au/Co MLs [1].

[1] M. Tekielak et al., IEEE Trans Magn., 44, 2860 (2008)

9.7 cm

13.4 cm

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