

Non-collinear Magnetic Configuration on Multilayered Thin Films

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Non-collinear magnetization configuration of ferromagnetic layers, due to the competition between interlayer coupling energy and magnetic anisotropies of coupled layers, is potential candidate for spintronic applications such as magnetic recording and sensor technologies [1]. In this study, we have revealed the effects of non-magnetic (NM) spacer and Co reference layer thickness in $[\text{Co}/\text{Pt}]_6/\text{NM}/\text{Co}$ multilayer to tailor magnetization directions in non-collinear configuration. Magnetic properties of samples have been investigated by using Magneto-optic Kerr effect and ferromagnetic resonance technique. A micromagnetic simulation based on Metropolis algorithm was employed to determine bilinear coupling between $[\text{Co}/\text{Pt}]_6$ and Co layers and anisotropy constants. It is revealed that controlling of non-collinear states in such systems is possible by variation of thickness of spacer and reference layers and $[\text{Co}/\text{Pt}]_6/t_{\text{NM}}/t_{\text{Co}}$ trilayer system can be used in multilayered magnetic systems.

References:

[1] F. Yildiz *et al.*, Phys. Rev. Lett., **103** (2009) 147203