

Magnetization Configuration in Magnetic Trilayer System with Out-of-Plane Component Defect

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Abstract: The equilibrium magnetization configuration, the inducing field and the coercive field in trilayer magnetic materials having an out-of-plane anisotropy defect interlayer between two in-plane anisotropy layers are discussed by both analytical and numerical calculations based on a micromagnet approach. It is shown that the above physical parameters strongly depend on the defect layer such as its thickness and exchange stiffness etc., as well as on the applied fields. It is found that there is a special thickness of defect layer, in which the inducing effect begin to occur, and the critical behavior of inducing field in the vicinity of the special thickness is linearly characterized. Particularly, the magnetic hysteresis shows typical soft hysteresis shape, even though the host material is composed of hard magnets, and the coercivity increases with increasing the thickness of the interlayer.

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Key words: magnetic trilayer system, micromagnetics, magnetization configuration, coercive field

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