MAGNETIZATION DISTRIBUTION IN ULTRATHIN MAGNETIC FILM NEAR PHASE REORIENTATION WITH REGARDS TO THE SECOND MAGNETIC ANISOTROPY CONSTANT

W.Stefanowicz[a], A.Maziewski[a], V.Zablotskii[a,b]

[a]Institute of Experimental Physics, University of Bialystok, Lipowa 41, 15-424 Bialystok, Poland

[b]Institute of Physics ASCR, Na Slovance 2, 18221 Prague 8, Czech Republic

9.7 cm

Wide scale thickness and field-driven evolution of magnetization distributions in ultrathin magnetic films was recently studied[1]. It was shown that the sinusoidal-like domains appearance shifts the reorientation phase transition (RPT) aside the smaller values of Q (=K1/2Ms^2) the relation between anisotropy and demagnetizing energies). Here, by micromagnetic simulations and analytically we study the magnetic states of laterally infinite ultrathin films of different values of Q and K2 (the second anisotropy constant). We show that influence of positive K2 results in a prolongation of the stability region of the sinusoidal domain structure and in an additional shift of Q determining the RPT. The metastability states coexistence of the in-plane and perpendicular magnetic phases, were studied for negative values of K2. Domains sizes and domain phases liability boundaries were determined.

[1]M. Kisielewski, A. Maziewski, T. Polyakova, and V. Zablotskii. Phys. Rev. B 69, 184419 (2004).

13.4 cm

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Corresponding author :
W.Stefanowicz

Address for correspondence :
Institute of Experimental Physics
University of Bialystok, Lipowa 41
15-424 Bialystok, Poland

Email address :
vstef@uwb.edu.pl