COERCIVITY OF ULTRATHIN MAGNETIC FILMS WITH PERPENDICULAR ANISOTROPY

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9.7 cm

The calculation of the temperature dependence of the domain wall (DW) coercivity of ultrathin magnetic films with perpendicular anisotropy is reported. In this case, the magnetization reversal is supposed to occur through DW motion. The proposed model takes into account thermal bending fluctuations of the DW, which is pinned by crystal defects such as grain boundaries. The application of an external magnetic field, perpendicularly to the film, favors bending of DW between neighboring defects. Under strong enough field and high enough temperature the local DW bending becomes too large and the DW jumps locally to a new position. One of the DW extremities becomes pinned at another close defect. By this way, the DW movement in such ultrathin magnetic films can be analyzed. A fitting procedure, applied to recently published experimental data on the field induced DW velocity in Au/Co films [1], allows to find out realistic values of the involved parameters.

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[1] A. Kirilyuk et al., J. Magn. Magn. Mat., **171**, 45 (1997)

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