

Nucleation-field distribution of the Bloch-wall polarization reversal process

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Complex 180° Bloch walls of alternating polarity have been observed by the interference-contrast colloid technique on single-crystal iron whiskers. Under the influence of an external magnetic field these walls exhibit a conversion into a unipolar configuration. Starting from the completely saturated wall the nucleation of a reverse wall segment requires nucleation fields that approach locally the magnetocrystalline anisotropy field of the crystal. The nucleation-field contour along the wall depends critically upon the surface perfection and the presence of dislocations.