

Observation of the "Inverse" spin valve effect in a Ni/V/Ni trilayer system

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Abstract

An experimental study of magnetic and superconducting properties of a trilayer Ni/V/Ni thin film system grown on single-crystalline MgO(001) substrate is reported. The field dependence of the superconducting transition temperature T_c for samples comprising Ni layers with similar values of the coercive field H_c reveals no anomalies. However, in samples with different thicknesses of the nickel layers the difference in H_c amounts up to $\Delta H_c \sim 1.8$ kOe, thus enabling to manipulate the relative orientations of the layers' magnetization by an external magnetic field. Surprisingly, for these samples the T_c for the parallel orientation of the magnetizations of the Ni layers is higher, in a certain magnetic field range, than for the antiparallel one, at odds with theoretical predictions. Possible reasons of this contradiction are discussed. © Pleiades Publishing, Ltd., 2009.

<http://dx.doi.org/10.1134/S0021364009130128>
