

Physics of the Solid State 2014 vol.56 N9, pages 1817-1823

Magnetic force microscopy investigation of the magnetization reversal of permalloy particles at high temperatures

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Abstract

© 2014, Pleiades Publishing, Ltd. The magnetization reversal of an array of permalloy particles formed by scanning probe lithography on the silicon dioxide surface has been investigated in the temperature range from room temperature to 800 K. Using scanning magnetic force microscopy and numerical calculations of the magnetic anisotropy field of a particle at different temperatures, it has been shown that an increase in the temperature leads to a decrease in the external magnetic field required to reverse the magnetization direction of the particle. From the obtained results, it has been concluded that the magnetization reversal of the studied particles is accompanied by the formation of an intermediate state with an inhomogeneous magnetization structure.

<http://dx.doi.org/10.1134/S1063783414090212>
