

Fabrication of magnetic micro- and nanostructures by scanning probe lithography

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Abstract

Planar magnetic structures based on cobalt nanofilms have been obtained by scanning probe lithography. It has been shown that ferromagnetic nanoparticles with different domain structures can be formed by local oxidation of a cobalt film on a graphite substrate with the use of a conductive probe of an atomic force microscope (AFM). Using AFM nanoengraving of polymethylmethacrylate, masks were formed to obtain microcontact pads connected by cobalt nanowires with a width of 250-1400 nm and a thickness of 10-30 nm on the silicon dioxide surface. The topography and magnetization structure of the obtained samples were controlled by atomic and magnetic force microscopy. © Pleiades Publishing, Ltd.

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