

Structure and magnetic properties of Co/Pd multilayers prepared on porous nanotubular TiO₂ substrate

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2017 г.

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Keywords: A. Magnetic materials; Microporous materials; B. Vapor deposition; D. Crystal structure; Surface properties

Abstract: We used porous nanotubular templates of TiO₂ for fabrication of Co/Pd antidot arrays with strong perpendicular magnetic anisotropy. The morphology of porous multilayers followed the features of the initial template demonstrating a pronounced relief consisting of the cells with

periodic pores with small inclination. We confirmed the formation of $\text{Co}_{0.4}\text{Pd}_{0.6}$ alloy at the Co/Pd interface. We observed the conservation of perpendicular magnetic anisotropy in the Co/Pd porous film with coercive field $H_C = 2.7$ kOe, enhanced with respect to the continuous film due to the pinning of magnetic moments on the nanopore edges. From angular dependence of the coercive field H_C we deduced the change of the magnetization reversal mechanism from domain wall motion in the continuous film to the predominantly coherent rotation mechanism in the porous film.

Published in: Journal of Magnetism and Magnetic Materials. – 2017. – Vol. 434 – p. 157-163. – <https://doi.org/10.1016/j.jmmm.2017.03.062>

Internet link:

<http://www.sciencedirect.com/science/article/pii/S0304885317303062>