

# Study of metal pillar nanostructure formation with thin porous alumina template

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**Abstract:** In the present paper, the nickel pillared nanostructure fabrication by electrochemical deposition of Ni into the pores of thin porous anodic alumina is considered. The main characteristics of these structures, obtained by scanning electron microscopy and atomic-force microscopy, are presented. Information on geometrical parameters of porous host and pillar nanostructure elements has been obtained. The influence of the barrier layer thinning at the pore bottom on nucleation and growth of the ordered metal nanopillars is discussed. The process of functional layer formation based on thin aluminum and Al<sub>2</sub>O<sub>3</sub> films with incorporated nickel pillars is analyzed. This process may be used for fabrication of advanced high density magnetic memory devices.

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