

MD.17.

Title	Process for fabrication of magnetic nanostructures
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**Description
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The invention refers to the technology for fabrication of nanostructured materials, especially to methods of magnetic nanostructures obtaining, which can be used in microelectronics, spintronics or data storage.

The novelty of the technological process lies in the combination of two technological steps for producing arrays of magnetic nanotubes. An inorganic nanotemplate consisting of arrays of semiconductor nanowires is prepared in the first step by anodization of a GaAs wafer with crystallographic orientation (001) or (111)B in aqueous HNO₃ electrolyte. The produced nanowires are coated with a magnetic metal layer in the second step via electroplating in the galvanostatic regime.

The axis of the obtained arrays of magnetic nanotubes is oriented either in the direction perpendicular to the substrate surface in the case of using GaAs wafers with (111)B orientation, or in the direction parallel to the substrate surface in the case of GaAs wafers with (001) orientation.

The advantages of the proposed process as compared to other existing processes consist in obtaining of arrays of nanotubes with controlled anisotropic magnetic properties, due to their orientation both in the plane perpendicular to the surface of the substrate, or in the plane of the substrate, as well as in the simplicity of the technological process of electrochemical deposition of the magnetic metal, which is performed in a single technological step, since the GaAs semiconductor template is conductive and does not require any prior deposition of a thin conductive gold layer.

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