

# Formation and corrosion properties of Ni-based composite material in the anodic alumina porous matrix

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**Abstract:** Ni nanopillars (Ni NPs) composite material formation technology embedded in porous anodic alumina by electrochemical deposition is presented in this paper. The morphological and structural properties of the composite material were investigated using scanning electron microscopy, atomic force microscopy, X-ray diffraction. The corrosion resistance of the nanocomposite materials has been studied by potentiodynamic polarization curves analysis and polarization resistance method. The composite represents the array of vertically ordered Ni NPs with the identical size in alumina matrix. XRD investigation indicates that Ni NPs are polynanocrystalline material with 18 nm crystallite size. It has been shown that Ni NPs and the composite material have sufficient corrosion resistance in a 0.9% aqueous NaCl solution. Porous alumina is the neutral and protective component of the composite. These

nanocomposite materials can be excellent candidates for practical use in electronics, sensorics, biomedicine.

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