

Formation features, morphology and optical properties of nanostructures via anodizing Al/Nb on Si and glass

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2021

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Keywords: Niobium oxide; Niobium; Aluminum; Oxalic acid; Phosphoric acid; Nanowires; Optical properties; Porous aluminum oxide; Alumina; 2D photonic crystal

Abstract: Using the method of niobia electrochemical anodizing via the porous alumina, three types of nanostructures: skittle-, medusa- and goblet-like niobia embryos were formed. Their morphology and formation boundary conditions were investigated. Established up to 37 V embryos are formed like skittles, in the region from 53 to 100 V medusa-like are formed, and above 150 V – goblet-like. To research the optical column-like niobia nanostructure properties inside porous alumina, embryos 53 V like medusa were formed on a glass substrate and re-anodized to a voltage of 230 V not to leave the metallic niobium. Investigations have shown the complete absorbance of the ultraviolet range and the presence of transmittance, reflectance and absorbance in the visible and infrared range with significant oscillations, which indicates the presence of Fabry-Perot interference.

This article published in: Formation features, morphology and optical properties of nanostructures via anodizing Al/Nb on Si and glass / A. Pligovka [etc all] // Materials Today: Proceedings. – 2021. – Vol. 37. – Part. 4. – P. A8-A15. – <https://doi.org/10.1016/j.matpr.2021.05.263>.

Internet-link for the article:

<https://www.sciencedirect.com/science/article/pii/S2214785321038542>.