

## عنوان مقاله:

THE EFFECT OF SURFACE PREPARATION OF TITANIUM SUBSTRATE ON MORPHOLOGY AND STRUCTURE OF ANODIC TITANIUM OXIDE NANOTUBE ARRAYS

## محل انتشار:

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## نویسندگان:

N. S. PEIGHAMBARDUST - *Department of Materials Engineering, Sahand University of Technology, Tabriz, Iran*

F. NASIRPOURI - *Department of Materials Engineering, Sahand University of Technology, Tabriz, Iran*

E. MOSLEHIFARD - *Department of Prosthodontics, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran*

## خلاصه مقاله:

In this work, we employed two surface polishing methods including mechanical polishing and electropolishing, to prepare the pure titanium substrate before anodic oxidation. It is aimed to understand the effect of different surface characteristics on the structure, tube morphology and ordering of titanium oxide nanoporous films. We performed potentiostatic anodic oxidation of pure titanium foils prepared by the two polishing methods under 60V in ethylene glycol, 4% wt HPO, and 0.25% wt HF at 30°C to obtain titanium oxide nanotubular structure. Morphology of the TiO<sub>2</sub> nanotube arrays was studied using field emission scanning electron microscopy (FESEM). Current transients were recorded during the potentiostatic anodization. We find that anodic oxidation of titanium after electropolishing produces the most homogeneous TiO<sub>2</sub> nanotubes with a high ordering degree across the surface. FESEM images show that TiO<sub>2</sub> nanotube formed after electropolishing surfaces exhibits a smooth surface at the top of the grown film.

## کلمات کلیدی:

TiO<sub>2</sub> nanotube; Anodizing; Electropolishing; Mechanical polishing

## لینک ثابت مقاله در پایگاه سیویلیکا:

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