Surface Treatments of Titanium Biomaterials by Anodization
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Abstract: The surface was transformed to porous titanium oxide by the anodization of pure titanium. Titanium was anodized in non-aqueous and aqueous electrolytes at different potentials between 5 V and 150 V. Various electrolytes were composed of ethylene glycerol, H$_2$SO$_4$, NH$_4$F and H$_2$O. We obtained titania nanotube arrays on the micro pore of titanium. Micro pores and nanotubes were obtained by anodization at high potentials and low potentials, respectively. Morphologies of nanotubes and micro pore were characterized by FE-SEM. The unique surface structure is very attractive to electrical and medical applications such as gas sensor, biosensor, dental implant and stent.

Keywords: TiO$_2$, Nanotubes, Anodization, Glycerol

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