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## The Influence of Titania-Zirconia-Zirconium Titanate Nanotube Characteristics on Osteoblast Cell Adhesion

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### Abstract

Studies of biomaterial surfaces and their influence on cell behavior provide insights concerning the design of surface physicochemical and topography properties of implant materials. Fabrication of biocompatible metal oxide nanotubes on metallic biomaterials, especially titanium alloys such as Ti50Zr *via* anodization, alters the surface chemistry as well as surface topography of the alloy. In this study, four groups of TiO<sub>2</sub>-ZrO<sub>2</sub>-ZrTiO<sub>4</sub> nanotubes that exhibit diverse nanoscale dimensional characteristics (i.e., inner diameter  $D_i$ , outer diameter  $D_o$  and wall thicknesses  $W_t$ ) were fabricated *via* anodization. The nanotubes were annealed and characterized using scanning electron microscopy (SEM) and 3D profilometry. The potential applied during anodization influenced the oxidation rate of titanium and zirconium; thereby resulting in different nanoscale characteristics for the nanotubes. The different oxidation and dissolution

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