



2. Anodic Oxidation of Titanium in Acetic Acid for Biomedical Application

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Abstract

Anodic oxidation (AO) is an electrochemical method which used to change the bio-inert (smooth) to bio-active (rough) layer of titanium (Ti) surface. The aim of this study is to evaluate the effect of anodic oxidation on characteristics of Ti in acetic acid (C₂H₄O₂) under various conditions. Anodised Ti were prepared using anodic oxidation method on the surface of Ti films in acetic acid by varying the applied voltage (50 – 350 V) and current density (25, 50 and 75 mA.cm⁻²) for 10 min at room temperature. The anodised Ti films were characterised using digital camera, field emission scanning electron microscopy (FESEM), and atomic force microscopy (AFM). The results show that, roughness of the Ti films was increased with increment of applied voltage and current density. The anodised effects during anodic oxidation process change the surface roughness (porosity) of the Ti surface which meets the biomaterial need as implant material. This characteristic is needed to promote the formation of apatite when soak in simulated body fluid (SBF).

Keywords: Anodic oxidation; Surface modification; Biomaterials.

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