

# NANOSTRUCTURED TITANIUM OXIDE (TiO<sub>2</sub>) FILMS PRODUCED ON MICRO-ROUGHENED COMMERCIALY PURE TITANIUM BY ANODIC OXIDATION WITH DIFFERENT VOLTAGES

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## ABSTRACT

Titanium (Ti) and its alloys have been used for dental implants due to their excellent biological compatibility, superior mechanical strength and high corrosion resistance. The nanometer-sized roughness and the chemistry have a key role in the interactions of surfaces with proteins and cells. In this study, commercially pure titanium (cp-Ti) discs were treated by sandblasting and then anodizing. The formation of titanium oxide (TiO<sub>2</sub>) nanoporous on sandblasted titanium substrates was investigated in the electrolytes containing fluoride by electrochemical method. Anodizing was carried out at the constant cell potential ranging from 20 to 60 V at the temperature of 25°C. The nanostructured TiO<sub>2</sub> coatings was characterized using, scanning electron microscopy (SEM), X-ray diffraction (XRD) and X-ray photoelectron spectroscopy (XPS). Sandblasting/anodizing significantly improved the hydrophilicity of Ti.