Effect of nanostructured TiH2 on the formation of multimeshworked and nanoporous TiO2 by cathodic-anodization treatment

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Abstract

Cathodic-anodization process was performed to treat titanium sheets to improve biocompatible performance Grazing incident X-ray diffraction, transmission electron microscopy, scanning electron microscopy and electrochemical measurement were used to evaluate the influence of hydrogen on the formation of nanoporous TiO2 Multimeshworked and nanoporous TiC>2 was observed after treatment with cathodic-anodization process. The nanoporous oxide layer is hard to form without nano-TiH2. The nano-TiFfe plays an important role in forming multimeshworked and nanostructured TiC>2 layer. Hydrogen charging by cathodization is believed to enhance the formation of nanoporous oxide film and thus promote biocompatibility.