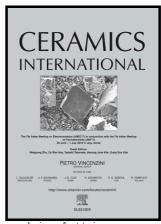
### Author's Accepted Manuscript

Biocompatibility, corrosion resistance and antibacterial activity of TiO<sub>2</sub>/CuO coating on titanium

Xiaojing He, Guannan Zhang, Xin Wang, Ruiqiang Hang, Xiaobo Huang, Lin Qin, Bin Tang, Xiangyu Zhang



www.elsevier.com/locate/ceri

PII: S0272-8842(17)31864-3

DOI: http://dx.doi.org/10.1016/j.ceramint.2017.08.196

Reference: CERI16150

To appear in: Ceramics International

Received date: 15 August 2017 Revised date: 24 August 2017 Accepted date: 24 August 2017

Cite this article as: Xiaojing He, Guannan Zhang, Xin Wang, Ruiqiang Hang, Xiaobo Huang, Lin Qin, Bin Tang and Xiangyu Zhang, Biocompatibility, corrosion resistance and antibacterial activity of TiO<sub>2</sub>/CuO coating on titanium, *Ceramics International*, http://dx.doi.org/10.1016/j.ceramint.2017.08.196

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

#### **ACCEPTED MANUSCRIPT**

# Biocompatibility, corrosion resistance and antibacterial activity of TiO<sub>2</sub>/CuO coating on titanium

Xiaojing He, Guannan Zhang, Xin Wang, Ruiqiang Hang, Xiaobo Huang, Lin Qin, Bin Tang, Xiangyu Zhang\*

College of Materials Science and Engineering, Taiyuan University of Technology, 79 Yingze West Street, Taiyuan 030024, P. R. China

\*Corresponding author. zhangxiangyu@tyut.edu.cn

#### **Abstract**

In this work, TiO<sub>2</sub>/CuO coating was prepared on titanium (Ti) by combination of magnetron sputtering and annealing treatment. The microstructure, biocompatibility, corrosion resistance and antibacterial property of TiO<sub>2</sub>/CuO coating were investigated in comparison with pure Ti and TiO<sub>2</sub> coating. The results show that TiO<sub>2</sub>/CuO coating is mainly composed of TiO<sub>2</sub> and CuO. In vitro cytocompatibility evaluation suggests that no obvious toxicity appears on the TiO<sub>2</sub>/CuO coating, and the coating stimulates the osteoblast spreading and proliferation. Compared with Ti and TiO<sub>2</sub> coating, TiO<sub>2</sub>/CuO coating exhibits improved corrosion resistance and antibacterial ability against S.aureus. This study is the first attempt to apply the combination of magnetron sputtering and annealing treatment to introduce the Cu into TiO<sub>2</sub> coating for surface modification of Ti-based implant materials, which may provide a research foundation for further development of bioactive multifunctional coatings to meet the better clinical demand.

**Keywords:** Implant materials; TiO<sub>2</sub>/CuO coating; Biocompatibility; Corrosion resistance; Antibacterial property.

#### Download English Version:

## https://daneshyari.com/en/article/5437246

Download Persian Version:

https://daneshyari.com/article/5437246

<u>Daneshyari.com</u>