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# Electrochemical Construction of Micro-nano Spongelike Structure on Titanium Substrate for Enhancing Corrosion Resistance and Bioactivity

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**Abstract:** Surface structures of medical implants generally play a crucial role in tissue growth and healing while implanted into a living body. The surface design and modification of implants can effectively promote its biocompatibility and integration ability. In this study, a hierarchically superhydrophilic structure on titanium surface with a nano-spongelike titania layer on the micro-roughened titanium surface was constructed through dual acid etching and electrochemical treatments. It is shown that the structure of micro/nano-spongelike TiO<sub>2</sub> provides not only better corrosion resistance and less oxygen vacancies, but also much higher ability of biomineralization after immersion in simulated body fluid (SBF) for 14 days. It is evident, by the cell culture for the different samples, that the micro-nano spongelike

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