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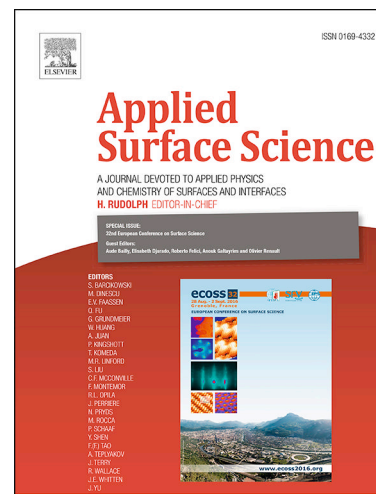
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Visible light-induced antibacterial effects of the luminescent complex of hydroxyapatite and 8-hydroxyquinoline with gray titania coating

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Abstract

The aim of this study is to observe visible light-induced antibacterial effects of the luminescent complex of hydroxyapatite and 8-hydroxyquinoline with gray titania coating. Plasma-sprayed Hydroxyapatite (HAp) coating has been widely used as bonding between alveolar bones with dental implants. However, bacterial infection on the surfaces of dental implants has recently been reported and conventional antibacterial technologies cannot last long-term use. Therefore a novel technology using the complex of hydroxyapatite and 8-hydroxyquinoline(8-Hq) with gray titania was proposed, which can be activated by visible light. Ti₂O₃ powder was used in a plasma-spraying process to fabricate visible-light-sensitive titania coating. The plasma-sprayed HAp/Ti₂O₃ was characterized by Raman Spectroscopy, FTIR and XRD. Its photo catalytic activity was evaluated using chemiluminescence observation and antibacterial property was evaluated by optical density measurement(OD), colony forming unit(CFU_s) and fluorescent microscope observation. The plasma-sprayed Ti₂O₃ powder revealed that its phase changed to TiO₂(Rutile) though the color of the plasma-sprayed Ti₂O₃ powder

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