

Development and applications of antibacterial laser-induced Ti-oxide films

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The report presents perspective technologies for the functionalization of the materials' surface. The enhancement of bactericidal properties for titanium surfaces is reached by local laser treatment. This possibility is ensured due to the photogeneration of singlet oxygen in titanium dioxide film formed by laser-induced heterogeneous oxidation. One more function of such a surface is coloration and identification of different products caused by the interference effect in the oxide layer formed. In addition to imparting antibacterial properties, the possibility of creating biocompatible and osteoinductive surfaces is shown. Using local laser ablation, a special microgeometry of the surface is formed following by the change of its chemical composition. These and other laser technologies for surface functionalization are being developed by the Institute of Laser Technologies at ITMO University.

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