

Laser forming of oxide nanoporous coatings on glass for investigation of the protein adhesion

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On the basis of the results of our previous studies, we have developed a technique for creating a complex microrelief on the surface of a titanium alloy, designed to improve the osseointegration of implants. In the present research, it was found that as a result of laser ablation, a nanoporous coating is formed on the surface of the microrelief, which promotes the adhesion of proteins. In this study, we used the method of laser formation of a nanoporous coating by deposition of evaporated titanium on the glass surface to exclude the effect of microrelief on the number of attached proteins. We have developed three laser modes to create different nanoporous oxide coatings. The physicochemical characteristics of the obtained coatings have been investigated. A comparative study of the precipitation of proteins from the culture medium by electrophoresis was carried out. The study was supported by the Russian Science Foundation (project No. 20-62-46045). The authors are grateful to V D Kalganov (the Interdisciplinary Resource Center for Nanotechnology of Saint Petersburg State University) for conducting scanning electron microscopy studies of the samples.