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The effect of the size of the substrate grain made of submicrocrystalline sintered corundum on the bioglass composite structure and certain physico-mechanical properties of the bioglass

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Abstract

Advances in biomedical materials now make it possible to grow constructs outside the body and to use them for repairing tissues. The following properties of artificial bone replacement materials are important: the mechanical ones and the bioactivity. Composite materials are designed to provide a combination of good mechanical properties (corundum) and bioglass (bioactivity), which cannot be achieved with a single phase material. The influence of the mechanochemical treatment of microcrystalline sintered corundum (MCC) substrates on certain physico-mechanical properties of bioglass composites has been investigated. The composites consist of MCC and glass $\text{CaO-P}_2\text{O}_5\text{-SiO}_2$ system. The following methods are used: estimation of the MCC degree reduction size: grain size distribution; description of the morphology and biocomposites structure: SEM, AFM; description of certain physico-mechanical properties: adhesion force.



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