

Nanostructured surfaces

Structure and strength of plasma hydroxyapatite 3D coatings with a new type of porous structure

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The plasma spraying process used for the preparation of nanostructured hydroxyapatite coatings was optimized based on the utilization factor of the sprayed material. We have developed new composite coatings composed of three-dimensional capillary porous titanium coatings and several layers of bioactive materials [1-4]. The plasma coatings contained **75.5%** hydroxyapatite. Hydrothermal treatment was carried out in several modes to increase the content of hydroxyapatite (**98.2%**) and its simplicity. After hydrothermal treatment at 650°C, the coherent domain size in the deposited coating increased from 95 to 122 nm. A procedure for determining the shear strength of porous coatings used for intraosseous implants was developed; the measurements were performed using coatings that were pressed in plastics. The shear strength of the coatings deposited on titanium substrates was found to be 22.7 MPa.

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