

COMPOSITE NANOSTRUCTURED MATERIALS

Areas of Application

The hydroxyapatite and biopolymer composite materials are to substitute for the hard tissues (bones, joints).

The films and gels are used for treatment of burns and external injuries as hemostatic materials.

The chitosan-based granules, beads, and gels are used to transport biologically active substances, proteins, DNA, drugs, and to normalize internal microflora

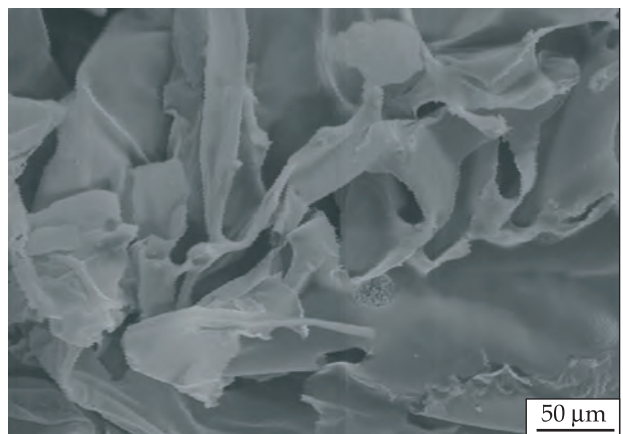
Specification

The materials are manufactured in dense and porous forms. The biomaterials have a good biocompatibility and bioinertness; the porous forms have good osteoconductive properties (the ability to stimulate the growth of bone tissue).

Composite materials as substitute for hard tissues:
polymer matrix: chitosan; mineral component: hydroxyapatite; mineral component to biopolymer matrix, wt. %: 50:50;
size of mineral component crystallite: ~20 nm;
porosity: 0–50%



Porous composite material based on chitosan and calcium phosphate for osteoplasty



Photomicrograph of chitosan hemostatic sponge

Advantages

There are no complete analogs in the domestic market. The foreign analogs, in particular, the chitosan-based hemostatic materials, are much more expensive than those manufactured in Ukraine



Chitosan based gel with silver nanoparticles

Stage of Development. Suggestions for Commercialization

IRL2, TRL4

License for materials manufacture;
support in production organization
and maintenance

IPR Protection

IPR1

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