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ADVANCED BIOTECHNOLOGIES FOR OBTAINING BIODEGRADABLE COLLAGEN BASED ”CORE-SHELL/HOLLOW” STRUCTURAL NANO - SIO2 COMPOSITE AND ITS APPLICATIONS FOR DRUG

D. Simion, M. Apetroaei, C. Gaidau, M. Simion, G. Vasile, L. Cruceru, L. Pascu, C. Ciprian, M. Apetroaei, V. Schroder
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ABSTRACT
The aim of the paper is to create new biomaterials- biodegradable protein (Collagen)- based ”Core-Shell/Hollow” structural nano- SiO2 composite and to find applications for drug delivery system. These surfactant based composites can used for biomedical field, for ensure health and improvement of life quality. Biocompatibility between drugs and substrates (membranes, matrices, polymer films, hydrogels, creams, capsules, pearls, powders, nanoparticles) is a very important issue for the optimal prescription of different treatments for the human body and maintaining health. It was obtained biomaterials by immobilizing drugs on various polymeric substrates, establishing the optimal conditioning formula, both in the preparation phase and in the adsorption phase of active components on the substrate. These are structured nanoparticles which contain a core from one material (or hollow) and a protective shell from another material, with sizes ranging between: 20 and 200 nm. The basic composition for both the core and the shell can be changed, providing a wide range of properties and applications (e.g. nanosensors, dyes). “Core-Shell/Hollow” structures are synthesized in two stages: the core is synthesized through conventional polymerization in emulsion and then it is incubated with a secondary emission, containing monomers and initiators, synthesizing the shell. The droplet fusion process and monomer migration determine core occurrence in the second emulsion, on which shells are formed by polymerization. Protein/”Core-Shell/Hollow” and SiO2 nanoparticle structures, with applications in controlled drug release systems are a new trend in biomedicine and a challenge for experts in the field.

Keywords: biopolymer, "Core-Shell" composites
