

## ENCAPSULATION OF INORGANIC PARTICLES BY BIOCOMPATIBLE POLYMERS

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Investigation of nanostructures self-organization via chemical or physical interaction in polymer matrixes, in particular at synthesis of magnetic sensitive materials, is one of fundamental task of nanotechnology. Biocompatible nanocomposites attract scientific attention due to their application as sensors, carriers of drug or biologically active substrates.

Structure of biocompatible nanocomposites is one of main factors of their functionality. That's why studying of such materials, in particular mechanisms of magnetic particles formation inside polymer (monomer) media and component interaction in system (polymer, magnetic particles, silica particles, drug) is important for further development of this scientific direction.

At the first stage of investigation composites based on chitozan or 2-hydroxyethylmethacrylate were synthesized. The silica modified with nanoparticles of silver or ferruginous oxides were used as fillers.

Synthesis of silver nanoparticles was carried out in result of interaction between silver nitrate solution and silica modified with functional groups that possess reducing properties. After reduction procedure silica with attached to surface silver particles or in mixture were dried at 20 or 120 °C. Obtained composites were studied by UV-Vis spectra. Presence of surface plasmon band in visible region at 400 nm provided evidence for silver nanoparticles formation.

Nanoparticles of ferric oxides were synthesized from salt aqueous solution in presence of modified silica with additional bubbling of ammonia.

The polymer composites were obtained by drop-by-drop technique with and without fillers. Chitozan spheres were obtained at pH 3 or pH 10. It provided different state of amino groups of chitozan and macromolecules with correspondingly pseudospherical or linear shape.

Composites based on 2-hydroxyethyl methacrylate were synthesized by technique that excludes using of organic solvents. Structure of obtained samples was investigated with spectral methods. Developed techniques were applied for synthesis of composites with immobilized medication.