

# Pharmaceutics and Novel Drug Delivery Systems

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## Water-soluble siloxane nanoparticles for the bioimaging

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**A**queous nanosuspensions containing polymer nanoparticles loaded with drugs can be used as drug delivery system. They are able to increase the bioavailability of the compounds which are insoluble or slightly soluble in water. The necessary requirement for such the polymeric systems is the high content and availability of the functional groups which provide a binding with delivered drug. Here we report on the water-soluble nanoparticles functionalized with amide and hydroxide groups. Their preparation is based on the hydrolysis of sol-gel monomers forming hyperbranched polysiloxanes. The aqueous nanosuspensions of the diketonates metalcomplexes and tetraaryl tetracyanoporphyrazine fluorescent pigments stabilized in water solution had been prepared. We believe that the assembling of

gadolinium diketonate complex and tetrapyrrol fluorescent dye within polymeric nanoparticle is a very promising base for a new nanostructured agents for bimodal (fluorescent/magnetic resonance) bioimaging for noninvasive tumor diagnostics. Such the nanoparticles have been found to be potentially efficient T<sub>2</sub> contrasters. We established that the prepared nanoparticles including potential drug are able to form the stable conjugates with blood proteins and the fluorine containing ones preferably bind to lipids. Thus, the developed water soluble nanostructured polymers have a good prospect to be used in biomedicine despite they have no covalent binding to the potential drugs and/or bioimaging agents.

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