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## Preparation and properties of chitosan/nano-diamond solutions and films

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Chitosan is a de-acetylated derivative of chitin, a naturally abundant polysaccharide, which is found in the exoskeleton of crustaceans and insects and in fungi cell walls. Application of chitosan in tissue engineering and regenerative medicine has a great potential due to its excellent biocompatibility, biodegradability and antimicrobial activity. Nano-diamonds were firstly produced by detonation technique, and they have good biocompatibility and mechanical properties. Nano-diamonds could be incorporated in chitosan to enhance its mechanical properties for use in bone tissue engineering. Carboxyl groups, appearing on the surface of nano-diamonds during the synthesis and purification processes, provide an effective ionic binding with chitosan amino groups. Properties of chitosan/nano-diamond solutions and films prepared using solution casting method depend on the individual features of the components and uniformity of the nanoparticles distribution. The purpose of this study is to find the relationship between the rheological properties of the chitosan/nano-diamond solutions in different acids, the way of nano-diamond incorporation to the solution and the mechanical properties, morphology, and structure of the composite films.

### Biography

Arina A Sukhova is currently conducting Doctoral Research at the Institute of Macromolecular Compounds of the Russian Academy of Sciences under the supervision of Dr. Yury A Skorik. She has completed her MS in Biotechnology in 2010 from the St. Petersburg Chemical Pharmaceutical Academy. Her current research interests involve nano-composites based on biopolymers.

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