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Nanostructures based on poly(aspartic acid) and bovine albumin by self-assembling procedure

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In the last decades, considerable attention has been dedicated to study of interactions between polymer-polymer pair and interpolymer complexes. In this contest, the self-assembling procedure for preparation of functional nanostructure based on linear polyampholyte polypeptide, poly(aspartic acid) (PAS) and a globular protein, bovine serum albumin (BSA), have been studied. The main interest was to identify the formation of an interpenetrated complex between a natural protein and a synthetic polymer in order to design materials suitable for biomedical applications, such as carriers for drug delivery. From the viscometric investigation of PAS/BSA/water ternary systems, it was observed that, for x^* value near 0.5, the maximum of intermolecular interactions among the two polymeric partners take place. This statement is sustained by the strong raise of the hydrodynamic radius in the same area of composition. Dielectric spectroscopy data also provide the higher compatibility of PAS with BSA protein molecules and confirm the best conditions for a stable interpolymer complex formation by self-assembling at the PAS/BSA molar ratio x^* of 0.542 in aqueous solution. Thus, it is quite important for having desired properties - chemical and biological - the setting and fulfillment of the conditions for achieving the non-covalent forces to make highly functional nanoscale compounds.

Biography

Loredana E Nita is currently a Senior Researcher at Petru Poni Institute of Macromolecular Chemistry, Romania. She has completed her PhD in Chemistry in 2007 at Petru Poni Institute of Macromolecular Chemistry. She has published more than 100 papers in reputed journals and is a member in Editorial Board of some reputed journals. She participated in more than 15 Romanian Projects and 5 European Projects.

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