

Nanocomposites and nanomaterials

Influence of the solution pH on the adsorption of ionic polyamino acids and their copolymers at the solid – liquid interface

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Polymers adsorption at the solid–liquid interface is a very sophisticated process depending on various factors but at the same time this phenomenon finds numerous applications in many industrial branches as well as in human activities [1]. The interactions between the adsorbent and the particular copolymer blocks are decisive for macromolecular substance binding on the solid particles surface. The structure of the polymer adsorption layer formed at the solid–liquid interface also depends on the forces present between the segments belonging to different macromolecules. As a result, complex aggregates may be formed on the solid surface [2]. Additionally, the key role in the ionic copolymers adsorption phenomena is played by the solution pH, which affects the binding mechanism [3].

The solution pH impact on the adsorption process of the block copolymers on the colloidal silica surface was investigated. All polymeric chains consist of the poly(ethylene glycol) (PEG) fragment and the suitable ionic polyamino acid segment (poly-L-lysine or poly-L-aspartic acid). Despite different polymer chain structures, the analyzed substances are characterized by similar molecular weight.

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