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The influence of temperature on self-organization of cationic polyelectrolyte and anionic surfactant in aqueous-alcohol solutions

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Abstract

The influence of temperature on formation, stability and hydrodynamic properties of polymer-surfactant complexes has been studied for various aqueous-ethanol solutions of poly-4-vinylpyridinium bromide and sodium dodecylsulfate, using potentiometry and dynamic light scattering methods. Temperature has been proven to exert influence on self-organization depending on the composition of aqueous-alcohol media. Increase of temperature results in reduction of critical association concentration, stability of complexes and cooperativity of polymer-surfactant binding in low alcohol content media, polymer-surfactant complexes also demonstrate growth of their hydrodynamic radiuses. When the content of ethanol is above 30 vol.%, the temperature influence is not displayed in polyelectrolyte-surfactant self-organization.