

CORRELATION PROPERTIES OF WEAKLY CHARGED POLYELECTROLYTES UNDER EQUILIBRIUM ASSOCIATION AND/OR IN ASSOCIATING SOLVENT

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The main result of the fluctuation theory of weakly charged polyelectrolytes developed by the author and Borue [1] (see also Refs [2-5]) was prediction of the order-disorder transitions (microphase separation) of such polyelectrolytes in a solvent, which would be poor for the referent neutral polymer. Therewith, the polymer-solvent interaction has been supposed to be well described in terms of the Flory-Huggins χ -parameter.

The idea to describe the aqueous polyelectrolyte solutions and the very notions of hydrophobicity and hydrophilicity in terms of χ -parameters seems now to be a sort of common knowledge. Meanwhile, it is not so obvious that the properties of polymers (polyelectrolytes) in systems with and without an equilibrium hydrogen bonds' network do not differ essentially due to the corresponding structural effects. To enlighten the issue, a theory of a model equilibrium (annealed) network of labile bonds developed earlier [6,7] has been extended to describe the correlations of fluctuations in such systems [8]. I present some new results that picture clearly the distinctions between the fluctuation effects of associating and non-associating polyelectrolytes in associating and non-associating solvents. In particular, the results by Kramarenko et al [9,10] concerning the effect of the ion pairs and multiplets formation on the spinodal stability of the salt polyelectrolytes' solutions are generalized/

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