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ABSTRACT

Effect of Salt Concentration on Electric Potential of Macro-ions

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Electric charges and electrostatic interactions are ubiquitous in soft-matter and biological systems. Soft materials are typically composed of macromolecules such as polymers, colloids and proteins which often acquire surface charges when dissolved in a polar solvent like water. Charged macromolecule, called macro-ions, such as micelles, DNA, dendrimers and other nanoparticles are important in Gene therapy, drug delivery, and other applications in biotechnology. In our study the effect of salt concentration on the electrostatic interaction in asymmetric electrolyte is investigated using Poisson-Boltzmann (PB) model. From our study we conclude that by increasing salt concentration, the surface electric potential of the macroion and the Debye screening length should decrease, and these effects should increase by increasing the valence of the counter-ions.