

The Osmotic Pressures of Aqueous Globular Proteins

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The osmotic pressures are investigated for aqueous protein solutions at various sodium chloride concentrations at $\text{pH}7.2 \pm 0.2$. Bovine serum albumin(BSA) and ovalbumin solutions in moderate ionic strength were estimated by using the generalized Lennard-Jones(GLJ) pair potential function and counterion condensation theory. The GLJ potential including the hard-sphere and square-well contributions is represented to the temperature-dependent function from simulation data of compressibility factor. The counterions which are in direct contact with one or more charged groups on proteins are modeled to the electrostatic contribution interpreting the binding attractive interaction at high ionic strength. Further improvement of modeling has reasonable agreement with experimental osmotic pressure in a comparison with other models.