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Effects of the dielectric inhomogeneity in polyelectrolyte solution
ISSEI NAKAMURA, ZHEN-GANG WANG, Division of Chemistry and Chemical Engineering, California Institute of Technology — We study the effects of dielectric inhomogeneity on the statistical properties of polyelectrolyte in solution, developing a new lattice Monte Carlo method based on the bond fluctuation model with a local algorithm for computing the electrostatic interactions. Our theory accounts for the difference in the dielectric properties between the polymer backbone and the solvent. Taking the coil-globule transition of a single polyelectrolyte in solvent as an example, we show that the chain conformation and the degree of counterion condensation are substantially affected by the electrostatic response of the polymer backbone.

Issei Nakamura
Division of Chemistry and Chemical Engineering,
California Institute of Technology

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