

DISORDERED POLYELECTROLYTES IN CONFINED GEOMETRIES

Varazdat Stepanyan

Yerevan State University, Yerevan, Armenia

DNA and RNA are charged biopolymers commonly found in confined environments, such as protein capsids, nanofibers, etc. Their primary structure is essentially disordered. They also interact short-range (disorder) and long-range (electrostatic), allowing the use of the mean-field approach. We find the conformation statistics of this biopolymer as a solution to a nonlinear Schroedinger equation, and analyze the effects of confinement size and disorder strength. At a critical size, the biopolymer undergoes a conformational transition accompanied by a change in pressure and adsorption. After this transition, the system shows higher adsorption to the confining walls and negative total pressure.