

Brownian dynamics simulations of a single DNA molecule for tube like motion

강승태, 윤병준*

포항공과대학교 화학공학과 콜로이드 연구실

(bjyoon@postech.ac.kr*)

Brownian dynamics simulation is widely used for describing behaviors of an individual DNA molecule. A DNA molecule is represented by the bead-spring model that beads affected by hydrodynamic force are connected to springs. Being in porous media such as agarose gel, DNA molecules are influenced by constraint force from the porous media. As a result of the constraint force, DNA molecules do tube-like-motion in the porous media. This simulation applies the proper constraint force which makes DNA molecules behave in tube-like-motion, explains the motion of DNA molecules under applied electric field, and predicts electrophoretic mobility of DNA molecules in the porous media more precisely.