

### Lateral displacement and conformational change of DNA molecule in a microbend

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Understanding and controlling flow patterns of polymer molecules in micro- or nano-fluidic geometries is indispensable for the establishment of inventive devices related to lab-on-a-chip and micro total analysis system ( $\mu$ -TAS). For several decades, many researchers have steadily explored dynamics such as the conformation and properties of polymer chains through theoretical considerations and experimental observations, especially, dynamics of DNA molecule in complex flows. In this study, we have investigated the lateral displacement and conformational change of single DNA molecule in a microchannel with 90° bend by using Brownian dynamics (BD) simulation and commercial CFD package, FLOW-3D. Also, our findings characterize various effects of effective shear rate and channel width on the migration and conformation of DNA molecule.