

Abstract Submitted
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Brownian Dynamics modeling of electrophoretic dsDNA-molecule separation using nanofluidic devices¹ GHASSAN FAYAD, NICOLAS HADJICONSTANTINOU, MIT — We present a Brownian Dynamics model of electrophoretic separation of short (up to 7 persistence lengths) dsDNA molecules in nanofluidic devices. Our formulation uses the Worm-Like-Chain model with hydrodynamic interactions. Our simulation results are in good agreement with the experimental results of Fu et al. [*Phys. Rev. Lett.*, **97**, 018103, 2006] for realistic values of all physical parameters. We also find good agreement between our simulation results and the theoretical model of Li et al. [*Anal. Bioanal. Chem.*, **394**, 427, 2009] who proposed an asymmetric separation device that operates under the effect of an alternating electric field.

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