Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

DNA mobility in nanofluidic systems ALENA KARPUSENKO, NC State University, SHUANG FANG LIM, ROBERT RIEHN — Nano-scale devices are attractive candidates for rapid and inexpensive biological analysis. Particular focus has been the analysis of DNA, studied in both nano-pores and nanofluidic channels. DNA is linearized and stretched to about 60 % of its contour length by confinement to channels with a cross-section of 100×100 nm^2 and hundreds of microns long. Here we study the motion of dsDNA through mazes of nanofluidic channels, and in particular the dependence of average drift velocities on the size and shape of the molecules. We find interesting relationships by comparing the average displacement for different molecules when driven by electric fields. We propose separation techniques for DNA molecules with different topologies using specific fluidic systems and driving schemes.

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Date submitted: 21 Nov 2009 Electronic form version 1.4