

**Translocation of DNA mononucleotides through nanoslits in the presence of an electric field: A Molecular dynamics simulation study**

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**Abstract**

The transport DNA mononucleotides through nanochannels using electric field might be used to distinguish them by comparing their flight times. The movement of DNA mononucleotides in aqueous solutions through nanoslits was studied using non-equilibrium molecular dynamics. In the initial structure the individual mononucleotides were placed in a 89 mM NaCl solution inside a 3.0 nm wide slit delimited by two walls composed of disordered carbon atoms. Our simulation results show that the velocity of a nucleotide is greatly affected by their association with neutralizing ions from the electrolyte. During the steady state translocation the nucleotide velocity in the nanoslit increase nonlinearly with the strength of the electric field.

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