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Humidity Effects on Conductivity of DNA Molecules

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Abstract: We present a model related to the humidity to describe the conductivity of homogeneous DNA molecule, where the hydration of phosphate group and bases are taken into account. The calculated results show the oscillation feature of dI/dV-V curves and the semiconductor behavior of DNA. With the relative humidity increasing, the voltage gap becomes narrow and the maximum of conductance increases nonlinearly. The conductivity of DNA approaches to stabilization when the relative humidity reaches a certain value. These results are in agreement with experimental measurements.

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