

Abstract Submitted  
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**Analysis of Electric Properties of DNA Nucleotides**<sup>1</sup> R. ZIKIC, X.-G. ZHANG, P.S. KRSTIC, J.C. WELLS, M. FUENTES-CABRERA, ORNL — Calculation of the quantum tunnelling conductance through the DNA nucleotides between gold nanoelectrodes and analysis of the corresponding molecular spectra reveals that the tunneling conductance at low electric bias can be separated into two simple and approximately independent factors. The first is an exponential factor due to the potential barrier between the molecule and the electrode. The second factor is different for each molecule, but follows a universal form that can be expressed in terms of the bending angle of the DNA base relative to the sugar-phosphate group. This factor is also oscillatory indicating interference and resonance effects inside the molecule. Distinguishable conductances of Adenine (A), Cytosine (C), Guanine (G), and Thymine (T) are correlated to their differences in geometric dimensions.

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Predrag Krstic  
Physics Division, ORNL

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