Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Scanning tunneling spectroscopy (STS) of DNA and G4-DNA molecules[1] DANNY PORATH, Physical Chemistry Department and Center for Nanoscience and Nanotechnology, The Hebrew University, Jerusalem 91904, Israel, ERREZ SHAPIR, HEZY COHEN, Hebrew University, Israel, ALEXANDER KOTLYAR, Tel Aviv University, Israel, ROSA DI FELICE, INFM-CNR, Modena, Italy — Attempts to resolve the energy level structure of single DNA molecules by STS span over the last two decades, thanks to this technique ability to probe the local density of states of objects deposited on a surface. Success was hindered by extreme technical difficulties in stable deposition and reproducibility. By using STS at 78 $^{\circ}$K, for the first time we disclose the energy spectrum of poly(G)-poly(C) DNA molecules deposited on gold. The tunneling current-voltage characteristics and their derivative curves exhibit a clear gap and a peak structure around the gap. By means of ab initio Density Functional Theory calculations the character of the observed peaks is assigned to orbitals originating from the different molecular components. Limited fluctuations in the I-V curves are observed and statistically characterized.

[1]Funding was provided by the EC through contracts IST-2001-38951 ("DNA-Based Nanowires") and FP6-029192 ("DNA-Based Nanodevices").

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Date submitted: 13 Dec 2007 Electronic form version 1.4