C-V measurements of a nano device made of PPy-DNA nanowire

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The present study reports the fabrication of assembly of DNA-templated polypyrrole (PPy-DNA) nanowire arrays for device characteristic. Photolithographic technique was used to put nano-assembly of Cr/Au inside SiO2 of thickness 200 nm on Si substrate. This arrangement serves as probe contact for C-V measurement. Atomic Force Microscope (AFM) was used to study the surface topography, connection, and uniformity of nanowires interconnects electrodes. The C-V measurements done on the PPY-DNA nanowire show that the nanowire has bistabe molecular states, which is equivalent to logic states 0 and 1 or spin up-down and spin up-up magnetic moments in the magnetic spin orientation. Temperature dependence measurements also show that the capacitance of PPy-Au decreases as the temperature increases while resistivity decreases exponentially as temperature increases from room temperature to 380 K. This study is very useful in the making of low cost nano floating gate, memory FET's, Shchottky diodes ultrafast and ultra-high density memory devices.