

**STUDY OF ELECTRON TRANSITIONS ON DNA/SWNT SELF-ASSEMBLED HYBRID
NANOSTRUCTURE AND IMPACT LENGTH OF SWNT ON NANO STRUCTURE
CONDUCTIVITY**

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Abstract

In this report, single-walled carbon nanotubes (SWNTs) with variety of length directed by self- complimentary single strand of DNA that functionalized by amine groups. DNA/SWNT hybrid Nano structure synthesized with Covalent bond between amine group of DNA and carboxylic group of SWNT. For synthesis self-assembled DNA/SWNT hybrid nanostructure two single-stranded 10 mer oligonucleotide (ssDNA), probe 1 and prob1', was immobilized via an amine group linked on end of oxidized and shortened SWNT with different length. In addition of 22 mer oligonucleotide as linker DNA to mix of SWNT-DNA hybrid Nano structure solution, wire shape DNA/SWNT hybrid Nano structure is fabricated. Electrical conductivity of DNA/SWNT hybrid Nano structure that dependent on the length of the carbon nanotubes is studied by impedance spectroscopy technic. After fabrication of DNA/SWNT hybrid Nano structure coat surface of graphite electrode by this structure and study conductivity of these structure by Impedance spectroscopy. Impedimetrically characterized of this structure in the presence of the redox system ferri/Ferro cyanide before and after coat electrode by solution consist of DNA/SWNT hybrid Nano structure. Impedance spectra and equivalent circuit of this structure with the variety Length of SWNT showed that the resistance of structure was change after DNA combination.

Keywords: Hybrid, self-assembly, Nano structure, SWNT- DNA, electron transitions.

Author did not supply full text of the paper/poster.