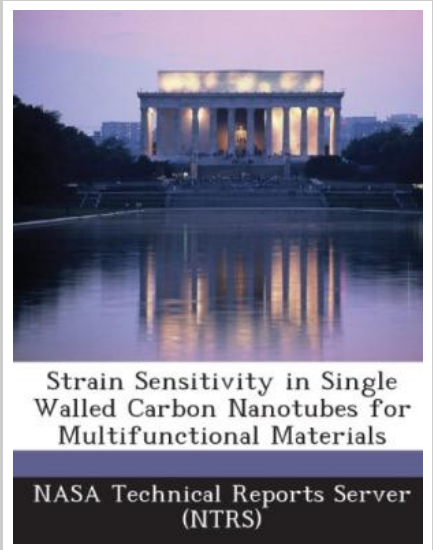

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Strain Sensitivity in Single Walled Carbon Nanotubes for Multifunctional Materials (Paperback)

By -

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Single walled carbon nanotubes represent the future of structural aerospace vehicle systems due to their unparalleled strength characteristics and demonstrated multifunctionality. This multifunctionality rises from the CNT s unique capabilities for both metallic and semiconducting electron transport, electron spin polarizability, and band gap modulation under strain. By incorporating the use of electric field alignment and various lithography techniques, a single wall carbon nanotube (SWNT) test bed for measurement of conductivity/strain relationships has been developed. Nanotubes are deposited at specified locations through dielectrophoresis. The circuit is designed such that the central, current carrying section of the nanotube is exposed to enable atomic force microscopy and manipulation in situ while the transport properties of the junction are monitored. By applying this methodology to sensor development a flexible single wall carbon nanotube (SWNT) based strain sensitive device has been developed. Studies of tensile testing of the flexible SWNT device vs conductivity are also presented, demonstrating the feasibility of using single walled HiPCO (high-pressure carbon monoxide) carbon nanotubes as strain sensing agents in a multi-functional materials system.

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