

## ELECTRO-ELASTIC COUPLING BEHAVIOR OF CNT-BASED NANOSTRUCTURES

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**Abstract:** The electro-elastic coupling behavior of carbon nanotube (CNT)-based nanostructure is investigated by molecular dynamics method using the adaptive intermolecular reactive bond order (AIREBO) potential. A modified atomistic moment method is used to obtain the distribution of electric charges on CNT-based nanostructures. The deformations of the nanostructures of CNTs with different chirality, diameters and lengths in the electric field are simulated. The electro-elastic coupling behaviors of the nanostructures with different charges are discussed. The results show that electric charges can affect the Young's modulus, fracture and critical stress of the nanostructures. The research can contribute to design various nanodevices and new functional materials based on carbon nanotubes.