

- **Nanocomposites and nanomaterials**

**Defects of different genesis of MCNTs and their effect on properties**

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Shown that in the process of elastic deformation of the array of multiwalled CNTs with edge dislocations several effects is appear: for small deformations observed two stage races electric conductivity to several orders of magnitude, and for large deformations occur as a result of periodic oscillations of quantum size effects. It was determined that edge dislocations in the CNT cut path carrier transport inside CNT lead to an increase in the order of the radial  $\sigma(\rho)$  and lower coefficient of thermoelectric power  $\alpha$  2 times and radiation defects formed during  $\gamma$  (1.2 MeV) and  $\beta$  (2 and 21 MeV)- irradiation, “capture” of the  $\pi$ -electrons, changes the electrical conductivity, and always increases  $\alpha$ . Defects of different genesis rejects form of the CNT from the straight and forms a topological disorder, which changes the electrical conductivity and increases the coefficient of thermal electromotive force, but their combined effect reduces this disorder as a result of the interaction of defects leads to the annihilation of defects and/or “healing”. Radial conductivity increases to 20 times when CNT added to the metal particles with smaller work function than the work function of the nanotubes. This is due to the transition of electrons from the metal in the CNT, whose mobility is three orders of magnitude greater than in metals.