A survey of conductivity of nanotubes indirectly doped with nitrogen using equations Kramerz-Kronig

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(Received 23 April 2014; in final form 17 June 2015)

Abstract
Doping of carbon nanotubes with nitrogen should provide more control over the nanocarbon electronic structure. In addition to the chemical and arc-discharge alternative methods used nowadays, we suggest ion irradiation as an alternative way to introduce N impurities into nanotubes. The impinging ions can directly occupy the sp² positions in the nanotube atomic network. As an alternative way, nitrogen atoms are introduced due to the same atomic radius. In this work, we studied the defects caused by exposure to N₂ with various energies with the Raman spectroscopy. Kramerz-Kronig analysis determined the optical conductivity σ of multiwall carbon nanotubes. Electrical measurements showed that conductivity of samples increases with enhancement of irradiation of MWCNTs, clearly due to creation of more defects and N-C and irradiation-mediated doping of nanotubes is a promising way to control the nanotubes electronic structure.

Keywords: carbon nanotube, electricity conductor, FTIR, Raman

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