

# Carboxyl Functionalization of N-MWCNTs with Stone-Wales Defects and Possibility of HIF-1 $\alpha$ Wave-diffusive Delivery

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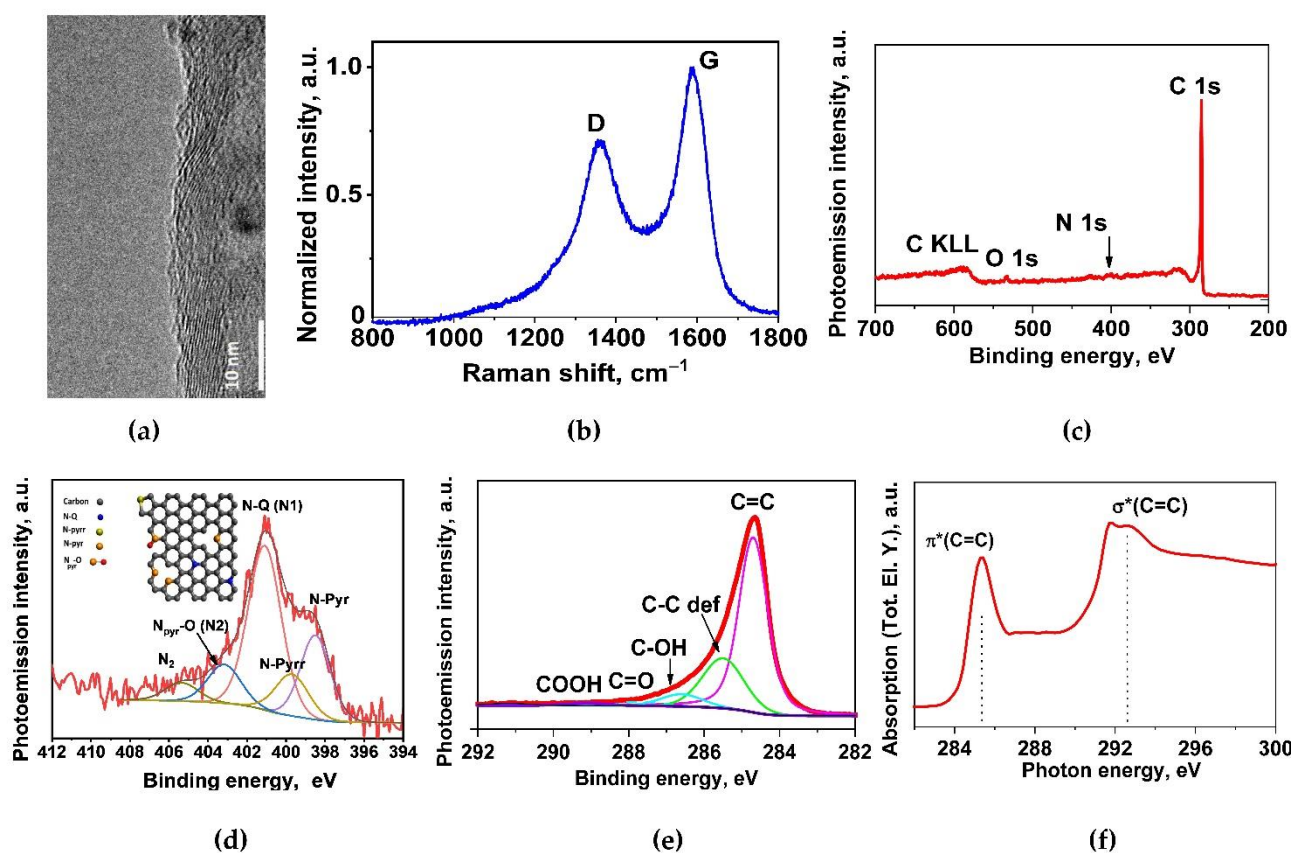
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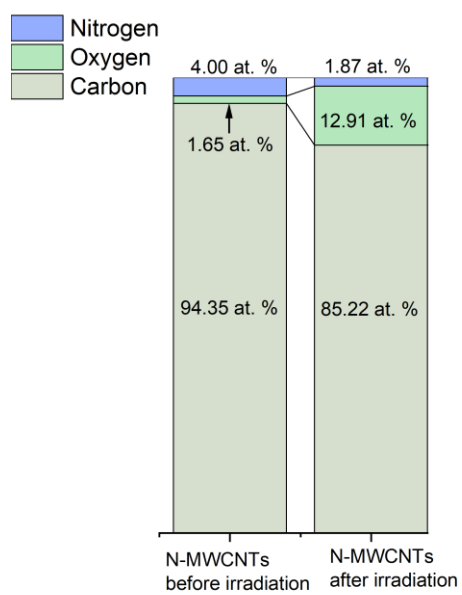
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**Figure S1.** Experimental data on atomic and electronic structure of N-MWCNTs before irradiation: (a) TEM, (b) normalized and baseline corrected Raman spectra, (c) survey and (d) core-level N1s (N-Pyr – nitrogen in pyridinic configuration; N-Pyrr – nitrogen in pyrrolic configuration; N<sub>2</sub> – molecular nitrogen), (e) C1s PE spectra of N-MWCNTs, and (f) their NEXAFS C1s spectrum.



**Figure S2.** Diagram of atomic concentration from survey PE spectra for initial and irradiated N-MWCNTs