

A Green and Economical Vapor-assisted Ozone Treatment Process for Surface Functionalization of Carbon Nanotubes

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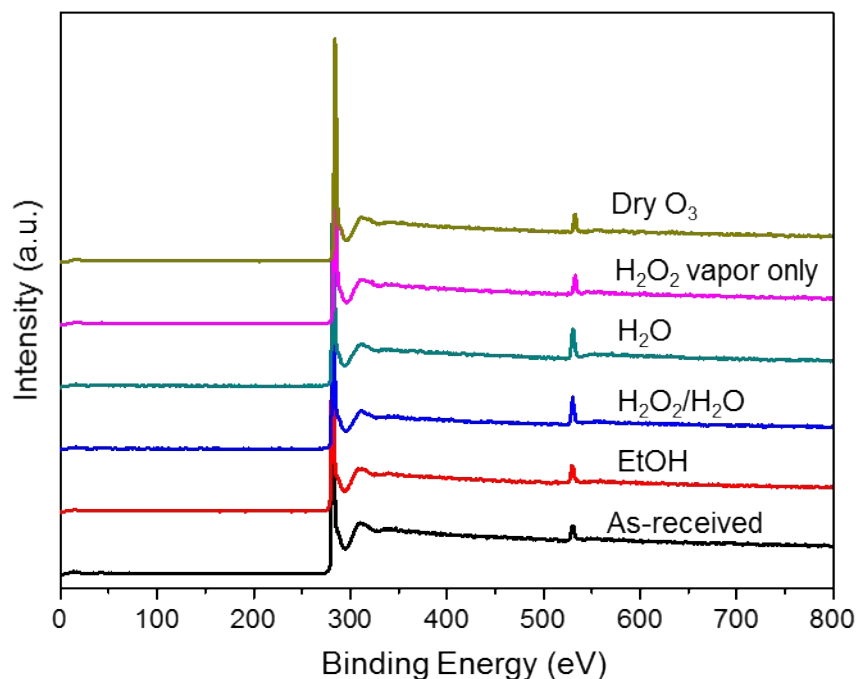


Figure S1 XPS survey spectra over CNT functionalized by ozone under assistance of different solvent vapor.

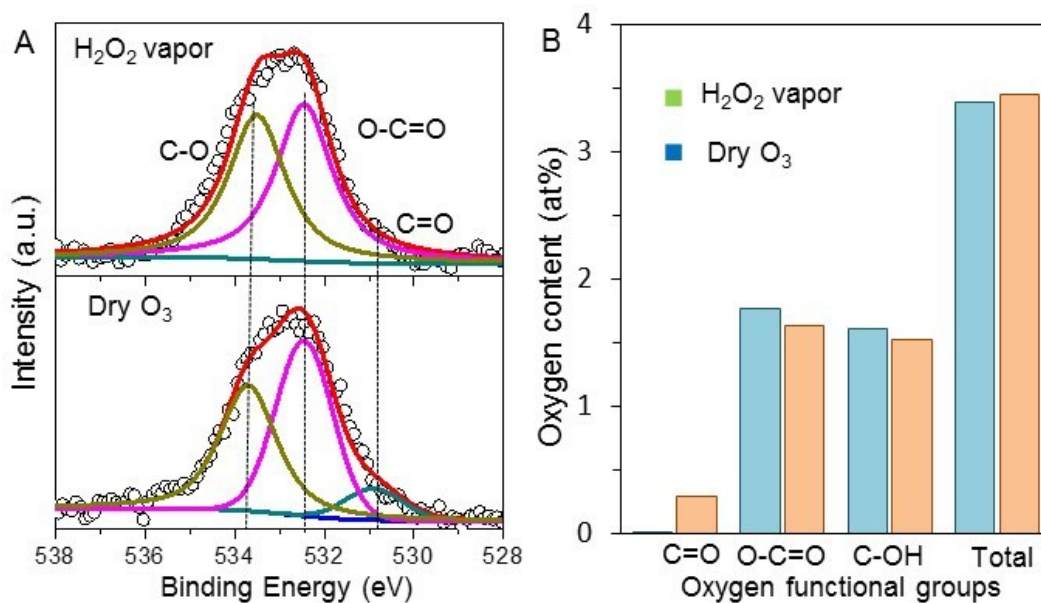


Figure S2 (A) XPS spectra of O1s region for the carbon nanotubes treated by only H₂O₂ vapor without O₃ and dry O₃ gas and (B) the corresponding contents of different oxygen groups.

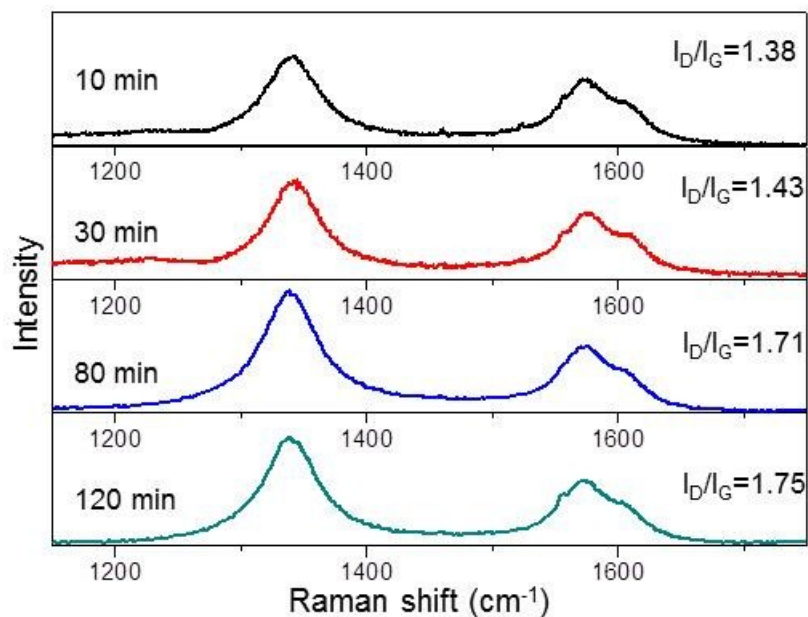


Figure S3 Raman spectra of CNTs treated by O₃ assisted by H₂O varied along with reaction duration.

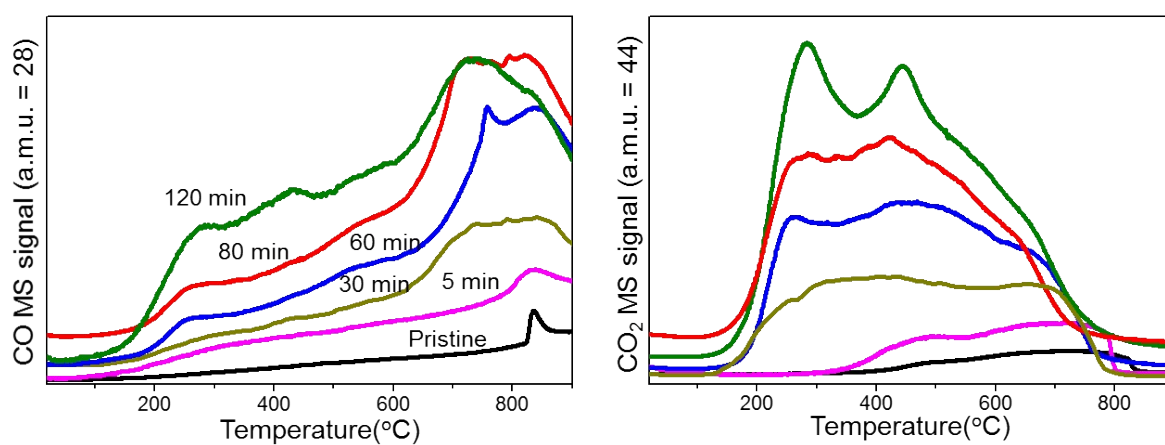


Figure S4 CO ($m/z = 28$) and CO₂ ($m/z = 44$) mass signal of the temperature-programmed desorption of ozone treated carbon nanotubes assisted by water vapor under different reaction time.

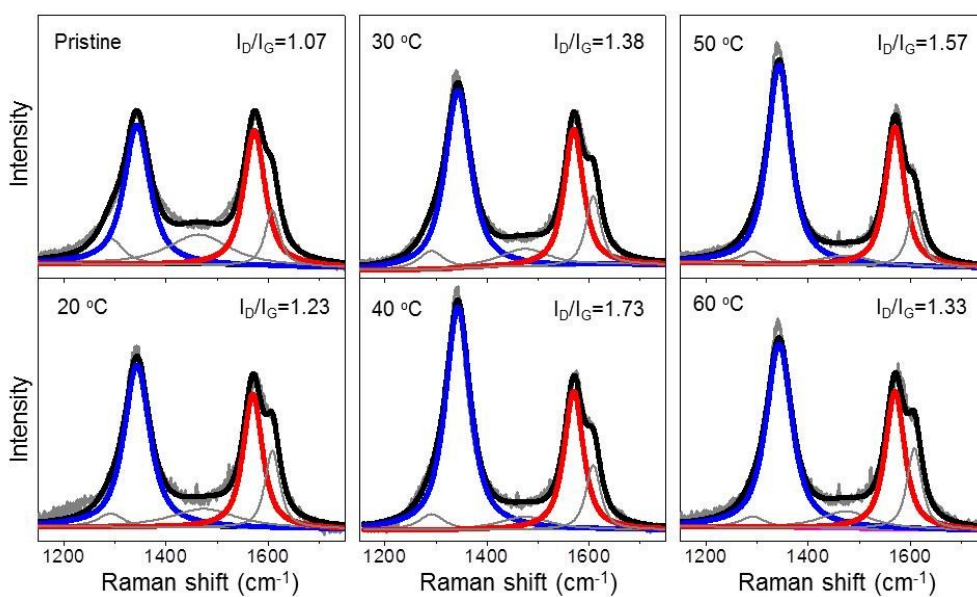


Figure S5 Raman spectra of CNTs treated by O_3 assisted by H_2O at different reaction temperature.

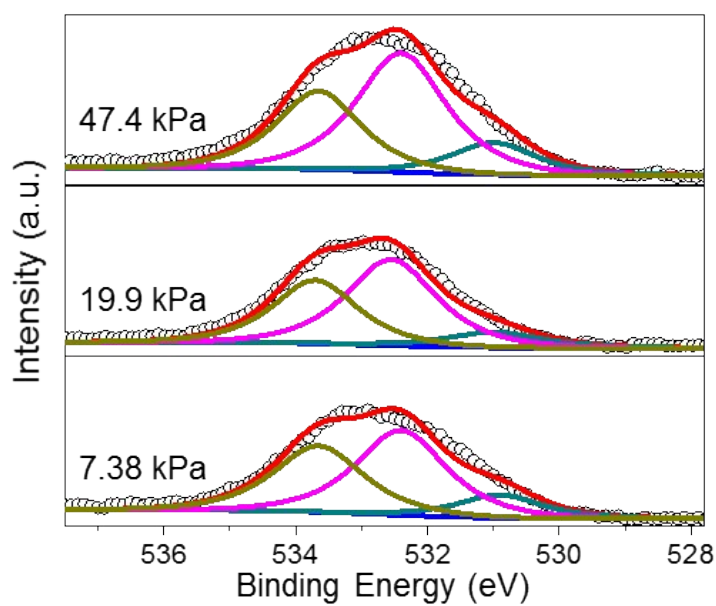


Figure S6 XPS survey of O1s region over CNT functionalized by ozone under different partial pressure of water vapor.

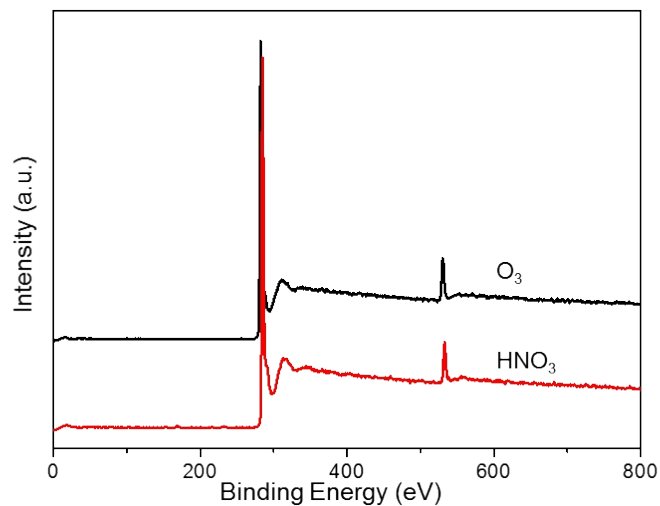


Figure S7 XPS survey spectra over CNT functionalized by ozone and conventional concentrated HNO₃.

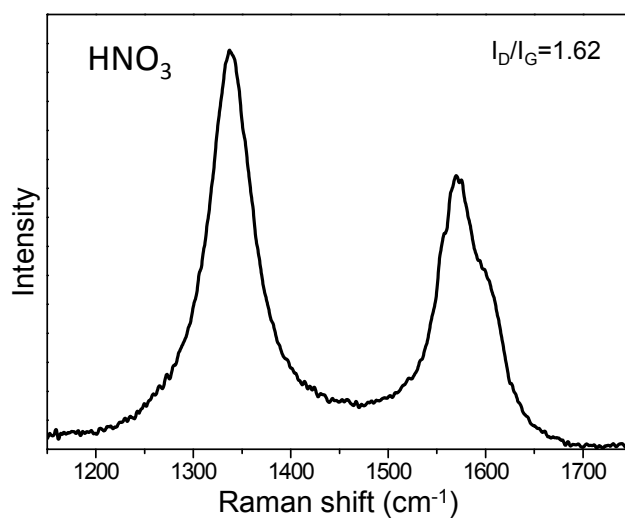


Figure S8 Raman spectra of CNT treated by HNO₃ under 120 °C for 2 h.

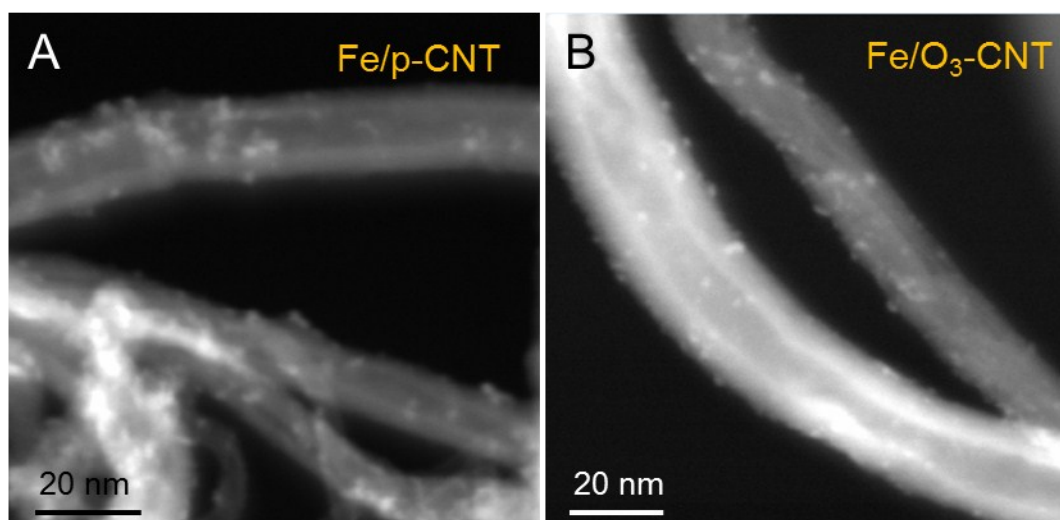


Figure S9 STEM images of (A) Fe/p-CNT and (B) Fe/O₃-CNT after calcination under air at 260 °C for 4 h.

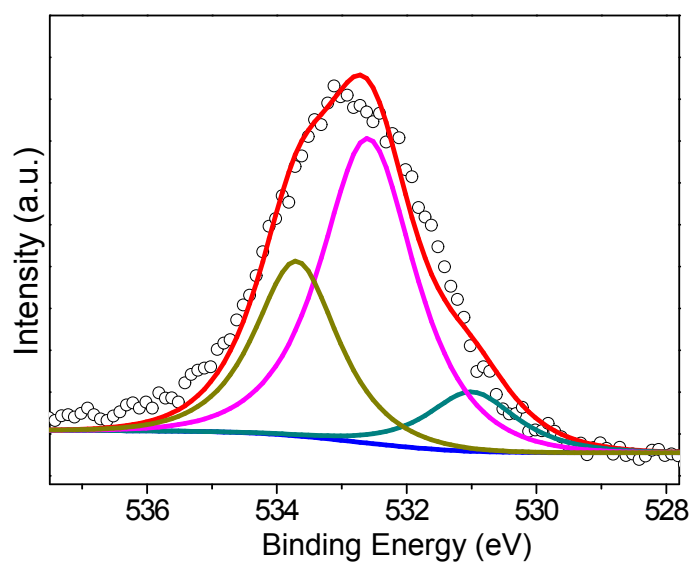


Figure S10 XPS survey and O1s spectrum of CNT after ozonolysis generated by air.