

Supporting Information

for

Plasma fluorination of vertically aligned carbon nanotubes: functionalization and thermal stability

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Additional experimental information.

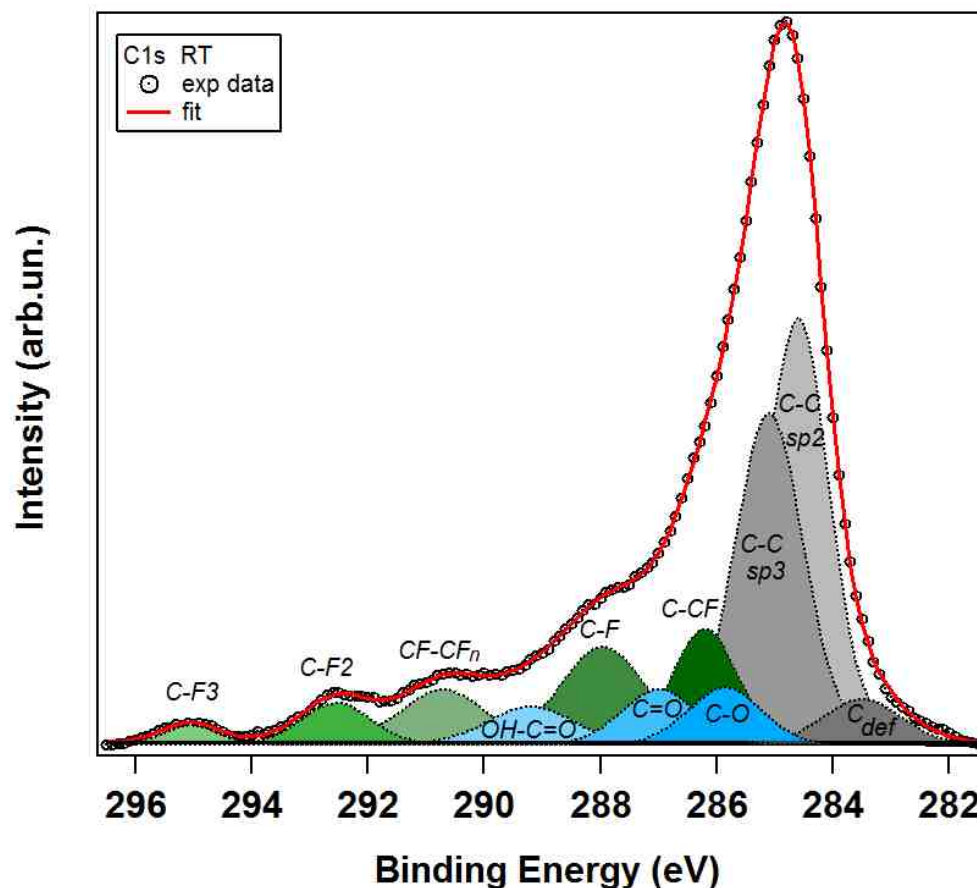


Figure S1: XPS curve fitting of as-functionalized vCNT referred to room temperature (RT) case in the article. The C_{1s} experimental data recorded after the fluorination are represented by black markers, the curve fitting is the red line over imposed. The grey scale colored curves are fitting components related to carbon-carbon bond (C_{def} usually associated to ion induced defective carbon, C-C bonds in sp^2 and sp^3 configurations), the blue ones are related to carbon bound to oxygen (C-O, C=O, OH-C=O), while carbon bound to fluorine atoms are reported as green scale curves (C-CF, C-F, CF-CF_n, C-F₂ and C-F₃).

	F1s				O1s			
RT	9.0%	32.3%	33.8%	24.9%	12.4%	25.2%	52.1%	10.3%
BE (eV)	688.7	687.4	685.8	684.3	533.8	532.5	531.0	529.8
FWHM (eV)	1.8	2.1	1.9	2.1	2.0	1.6	1.6	1.8
150 °C	9.5%	47.6%	36.3%	6.6%	12.7%	30.5%	55.4%	1.4%
BE (eV)	688.7	687.3	686.0	684.4	533.7	532.4	531.2	529.2
FWHM (eV)	1.6	2.0	2.1	1.7	1.9	1.7	1.5	1.3
300 °C	9.4%	75.7%	14.9%	-	13.0%	18.8%	68.2%	-
BE (eV)	688.7	687.3	685.7	-	533.9	532.7	531.5	-
FWHM (eV)	2.0	1.9	2.1	-	1.7	1.4	1.5	-
430 °C	5.5%	83.8%	10.7%	-	8.6%	17.0%	74.4%	-
BE (eV)	688.7	687.4	685.7	-	534.1	532.7	531.7	-
FWHM (eV)	2.4	1.9	1.8	-	1.5	1.4	1.6	-
540 °C	12.6%	59.0%	28.4%	-	5.6%	16.6%	77.8%	-
BE (eV)	688.8	687.3	685.8	-	534.1	532.8	531.8	-
FWHM (eV)	2.3	2.1	2.0	-	1.2	1.3	1.5	-
900 °C	-	-	-	-	-	23.1%	76.9%	-
BE (eV)	-	-	-	-	-	532.7	531.4	-
FWHM (eV)	-	-	-	-	-	1.7	1.8	-

Table S1: Summary of the peak fitting analysis of F_{1s} and O_{1s} core level spectra recorded from functionalized sample (RT) and for all heating steps (150 °C, 300 °C, 430 °C, 540 °C, 900 °C). Relative area values (%), position of the components (BE, binding energy) and full width at half maximum (FWHM) are listed.