**Supplementary material for the manuscript:**

# Stoichiometric control of single walled carbon nanotubes functionalization

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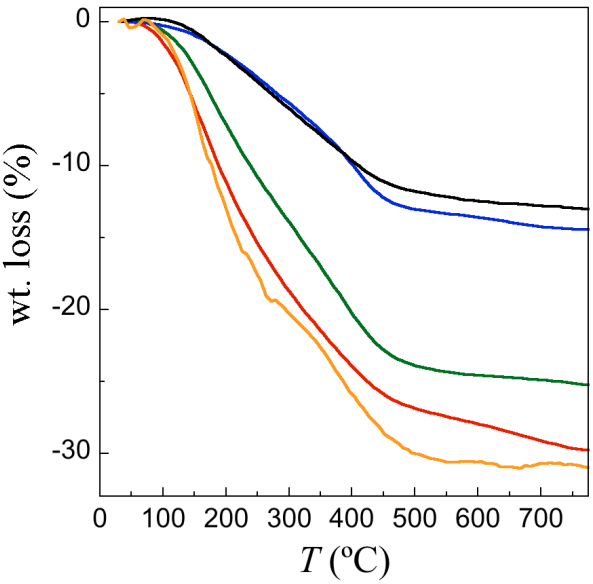


**Figure S1.** Thermogravimetric curves for pristine SWCNTs (black line) and several decanoyl acid-functionalized SWCNTs obtained from reduced salts with various stoichiometries.

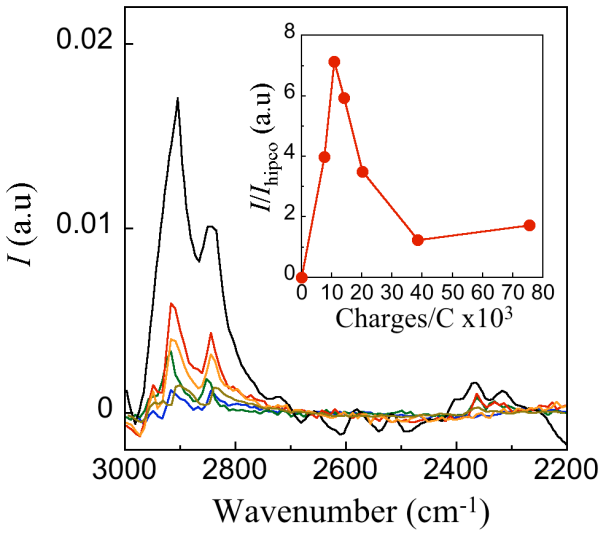


**Figure S2.** C-H stretching mode area of selected Infra-Red spectra of decanoyl acid-functionalized SWCNTs. The inset shows the variation of the intensity of the corresponding strongest C-H band as a function of the initial salt charges/C ratio.

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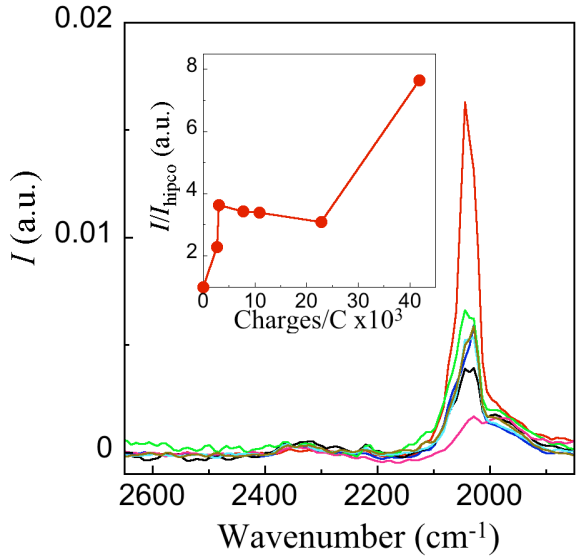


**Figure S3.** C-N stretching mode area of selected Infra-Red spectra of SWCNTs functionalized with 4'-cyano[1,1'-biphenyl]-4-oxypentyl. The inset shows the variation of the intensity of the corresponding band as a function of the initial salt charges/C ratio.

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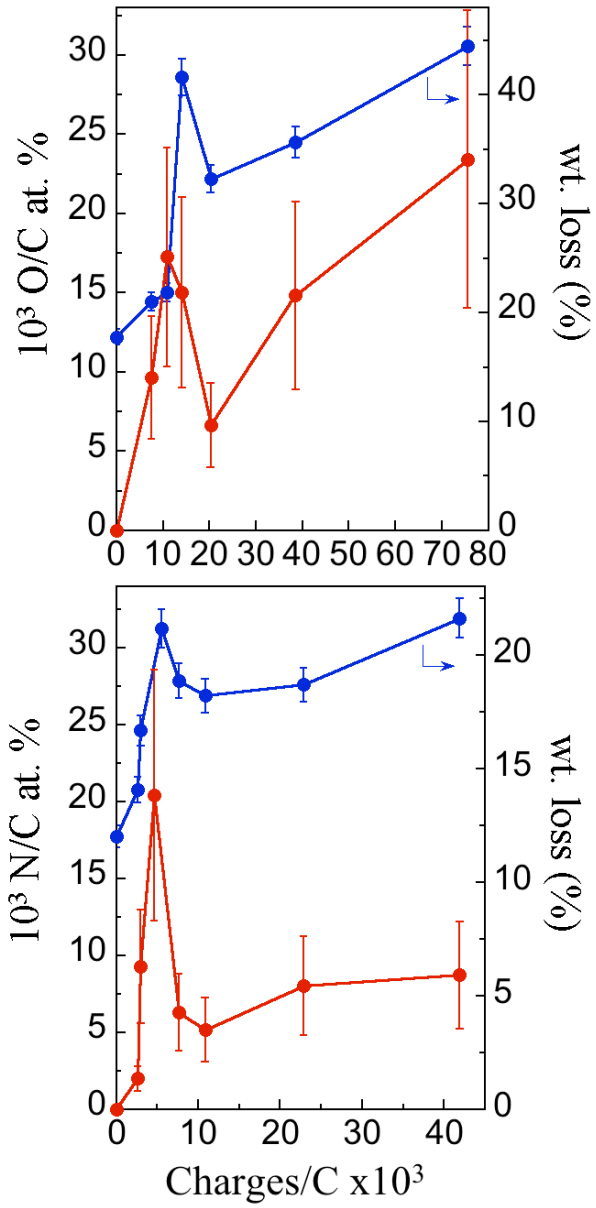


**Figure S4.** Variation of the O/C (top) or N/C (bottom) atomic ratio deduced from XPS data (red dots) and of the weight loss observed at 650 ºC (blue dots) for pristine and functionalized SWCNTs as a function of the number of charges per 1000 carbons of the initial salt. Top: SWCNTs functionalized with decanoyl acid; the O/C ratio has been corrected for that of the pristine SWCNTs. Bottom: SWCNTs functionalized with 4'-cyano[1,1'-biphenyl]-4-oxypentyl.

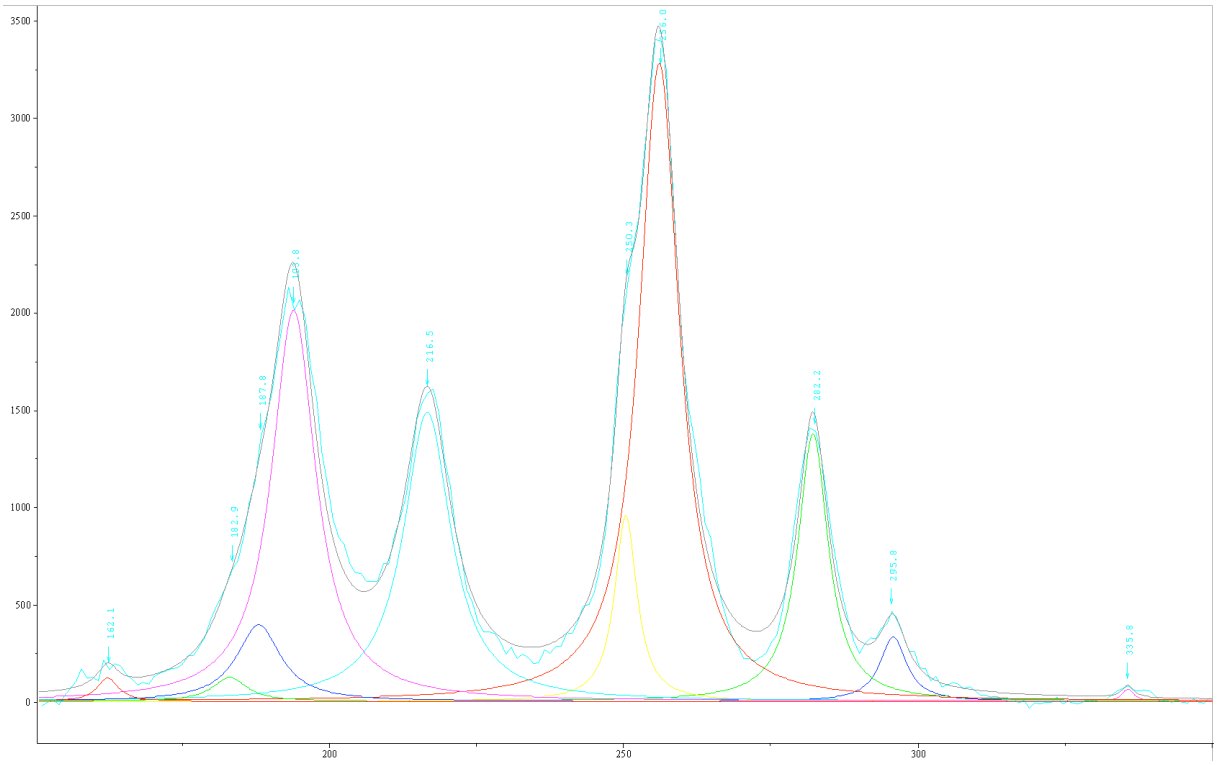


**Figure S5.** Experimental data and best fit with a set of Lorentzians for the RBM region of the Raman spectrum of decanoyl acid-functionalized SWCNTs (charges/C x$10^3$ of the initial salt of 10.8) at 632 nm. The Y axis depicts counts/s while the X axis represents the Raman shift (in $cm^{-1}$).

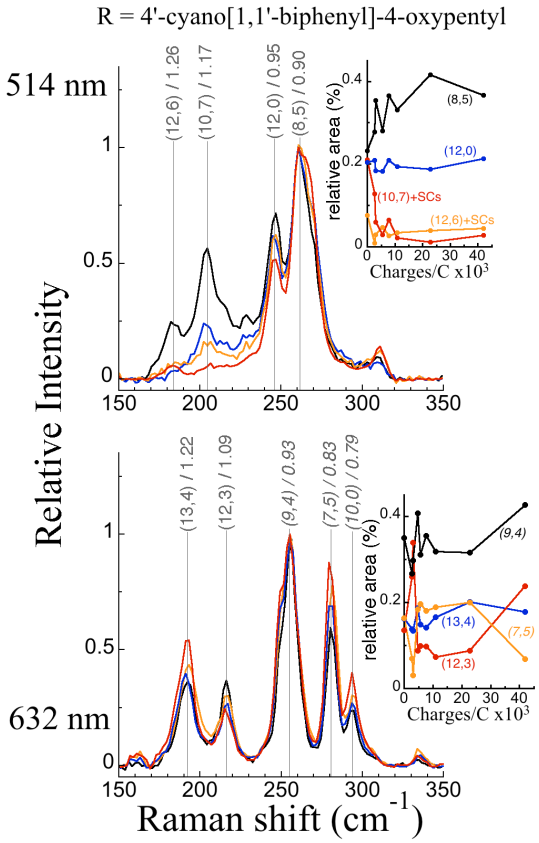


**Figure S6.** RBM area of the Raman spectra at 514 (top) and 632 (bottom) nm excitation of pristine SWCNTs (black lines) and a selection of functionalized SWCNTs with 4'-cyano[1,1'-biphenyl]-4-oxypentyl. Main RBM bands are given in the format indices (n, m) / diameter in nm, in italics for semi-conducting ones. Normalization of the spectra is with respect to the metallic (8,5) band for spectra at 514 nm and to the semi-conducting (9,4) band for spectra at 632 nm. The insets give the variations of the fraction of the total RBM area for the main RBM bands for all charges per 1000 carbons of the initial salt.