

Supporting Information

Single-Walled Carbon Nanotube/Polystyrene Core-Shell

Hybrids: Synthesis and Photoluminescence Properties

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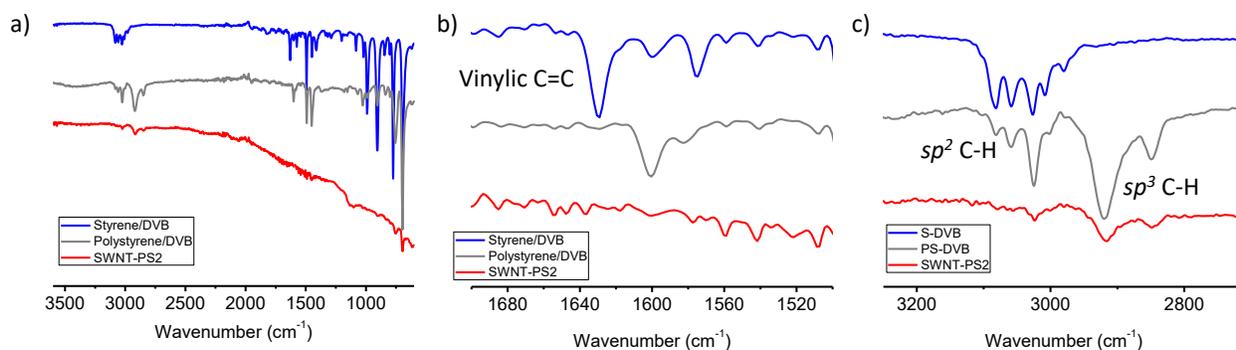


Fig. S1 (a) IR spectra of a mixture of Styrene/DVB (blue), of the Polystyrene/DVB synthesized as reference (grey) and of **SWNT-PS2** (red). (b, c) enlargement of the C=C region (1500-1700 cm⁻¹) and the C-H region (2700-3250 cm⁻¹). The spectra (b) show that the band at ~1630 cm⁻¹ attributed to the vinyl C=C bonds of styrene and DVB disappear after polymerisation (blue and grey curves). The spectra of nanotube derivatives are quite difficult to interpret since SWNTs exhibit generally featureless spectra. In the 2800-3100 cm⁻¹ region (c), it is interesting to note the presence of the stretching band due to *sp*³ C-H in **SWNT-PS2**.

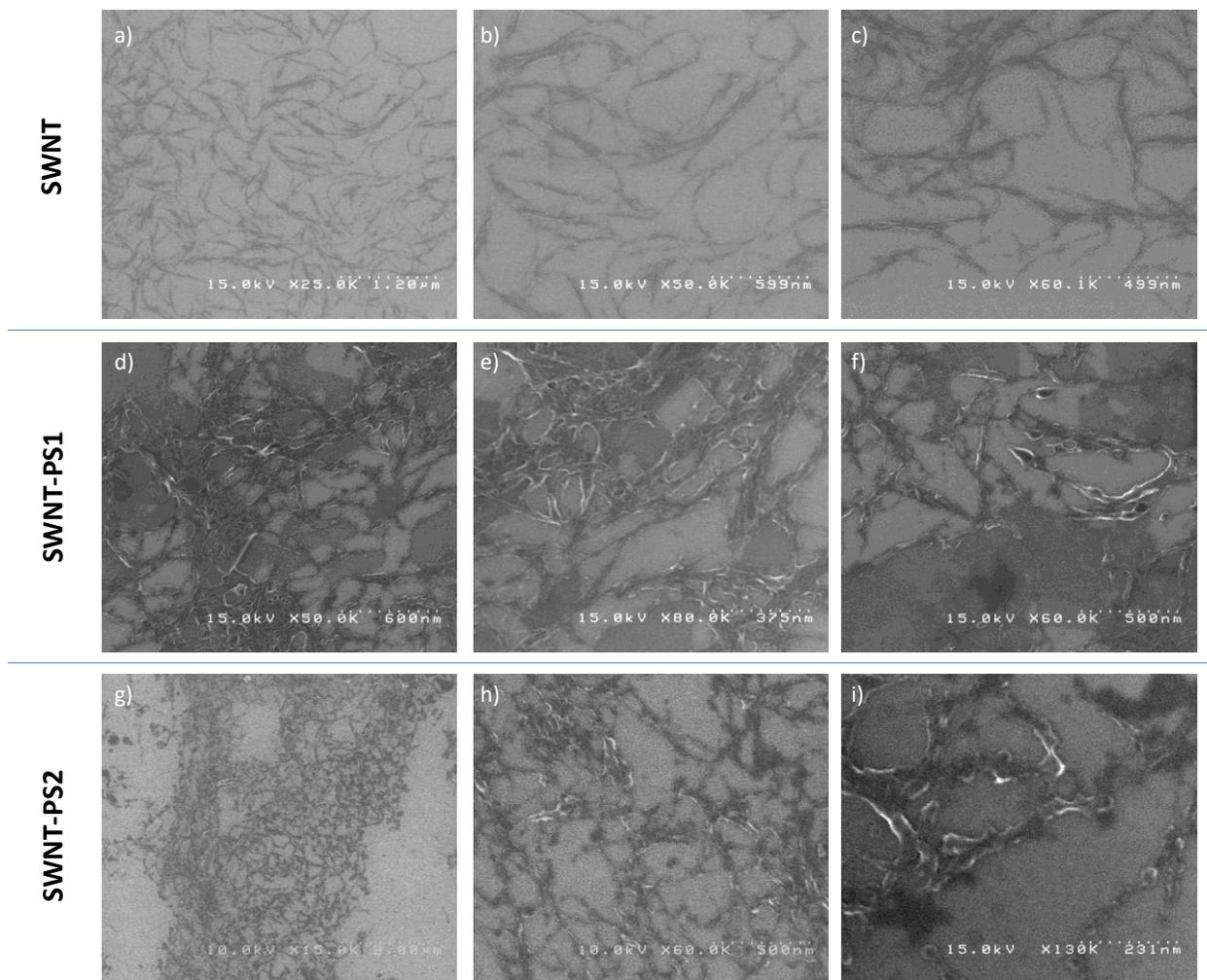


Fig. S2 SEM images of **SWNT** (a-c), **SWNT-PS1** (d-f) and **SWNT-PS2** (g-i) deposited from THF on Si/SiO₂ substrates. Images (a) to (c) taken for **SWNT** show the presence of thin bundles of nanotubes. Images (d) to (f) for **SWNT-PS1** show that polystyrene is present around the nanotubes and also deposits on the silicon substrates; in fact the polymer can be partially removed from the nanotubes in THF and then is deposited on the substrates during the drying process. Images (g) to (i) present additional micrograph for **SWNT-PS2**; the polymer is essentially located around the nanotubes because the cross-linked polystyrene obtained after the second polymerisation permit to maintain the structures.

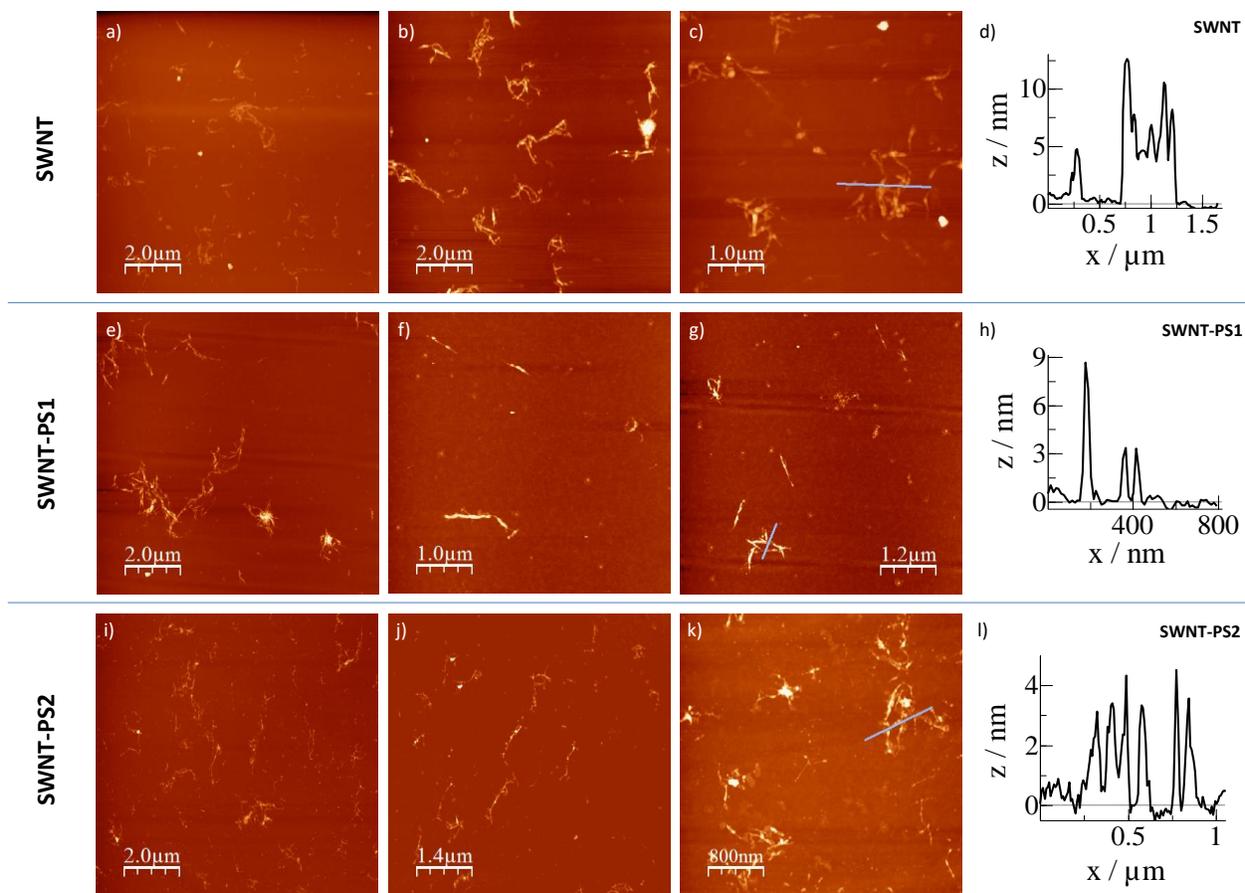


Fig. S3 Example of AFM images at different magnification and height profile of **SWNT** (a-d), **SWNT-PS1** (e-h) and **SWNT-PS2** (i-l) deposited from THF on Si/SiO₂ substrates. Images (a) to (c) show the presence of bundles of nanotubes; these small aggregates are non-homogeneous in diameter as it can be observed on the height profile (d) and also on the statistic of Figure 2d. Images (e) to (g) for **SWNT-PS1** also show the presence of small aggregates; an example of high profile is given on graph (h). Images (i) to (k) show additional examples of AFM micrograph obtained for **SWNT-PS2**; the nanotubes are better dispersed and their diameters are more homogeneous as it can be observed on graph (l) and also on the statistic in Figure 2d.

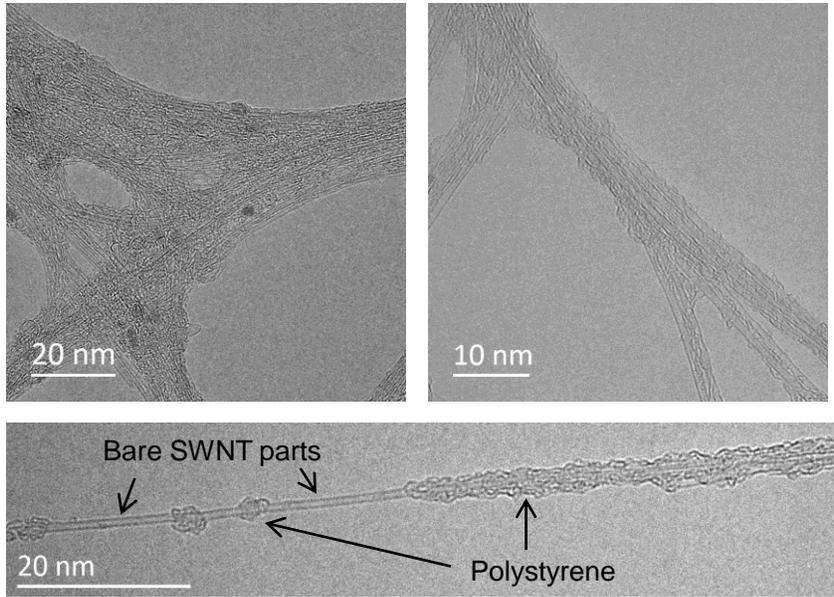


Fig. S4 TEM images of **SWNT-PS1** deposited from THF on Lacey-carbon grids. The images show that the nanotubes are only partially covered by the polymer.

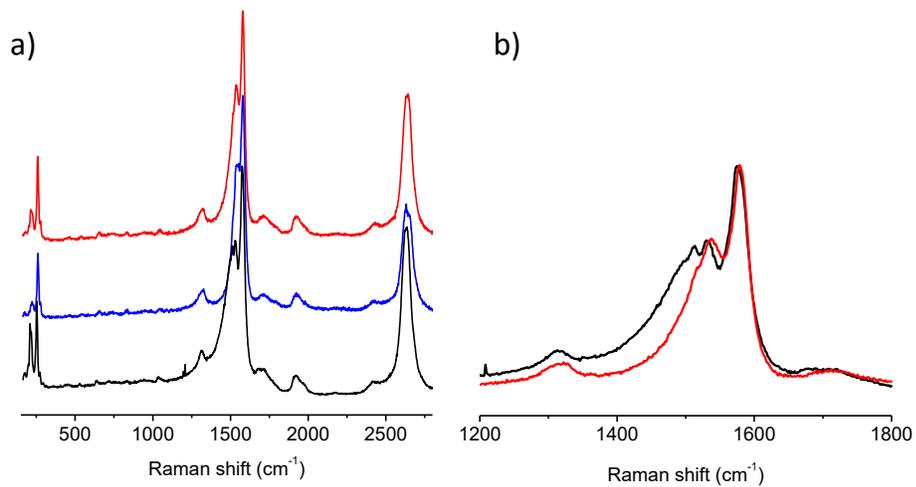


Fig. S5. a) Raman spectra of **SWNT** (black), **SWNT-PS1** (blue) and **SWNT-PS2** (red) recorded at $\lambda_{\text{exc}} = 532\text{nm}$; b) comparison between the width of the G-bands for **SWNT** (black) and **SWNT-PS2** (red).