Amplification of Single Walled Carbon Nanotubes from Designed Seeds: Separation of Nucleation and Growth

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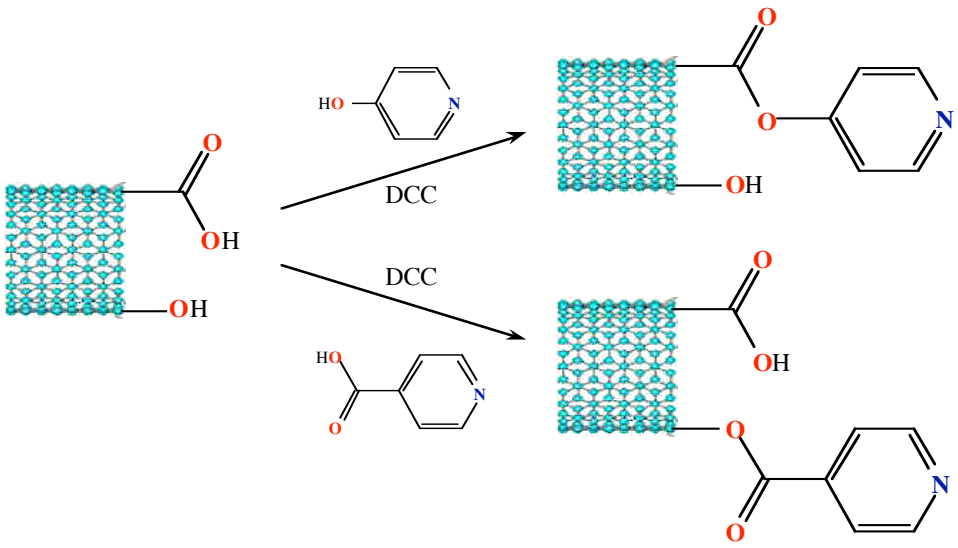
Supplementary Material



Scheme S1. Pyridine functionalization of SWNT ends via DCC catalyzed coupling reaction with 4-hydroxypyridine or isonicotinic acid.

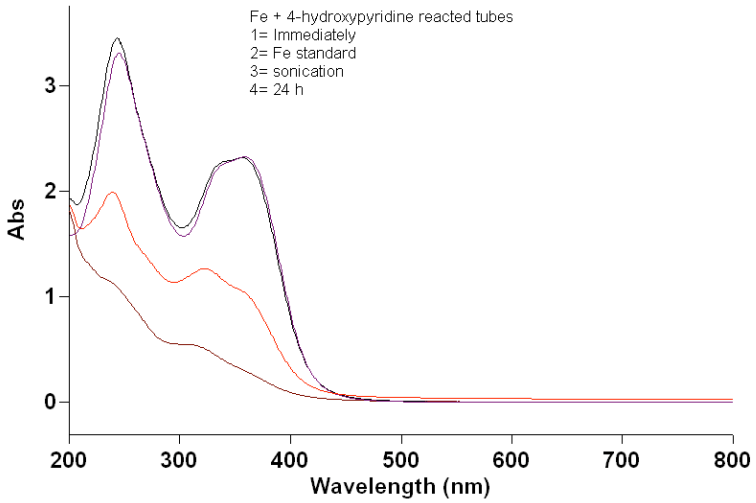


Figure S1. UV-vis spectra of $Fe(NO_3)_3$ in the presence of 4-hydroxypyridine coupled to SWNTs (DD-SWNT-py).

(a)  (b) 

(c) 

Figure S2. Pictures of the hot stage used for DD-SWNT-py-FeMoC growth runs: (a) entire apparatus, (b) close up of the hot stage, and (c) close-up of the button heater.

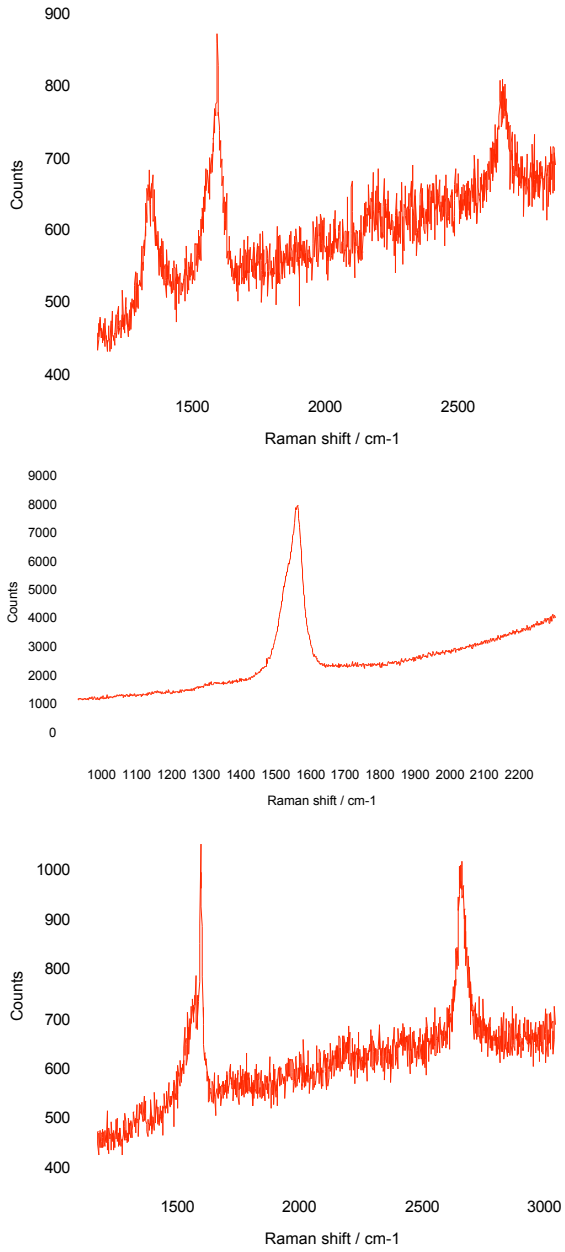


Figure S3. Raman spectra of DD-SWNT-py-FeMoC (top) at room temperature, (middle) after heating to 200 ºC, and (bottom) after growth.

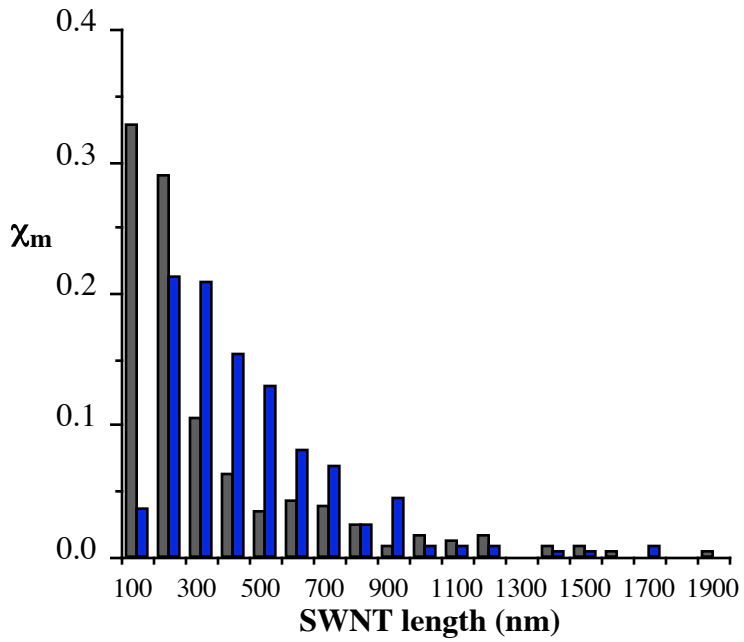


Figure S4. Plot of SWNT length after growth (■) as compared the DD-SWNT-py-FeMoC "SWNT-cat" seeds (■) showing the lack of change in the length of the longer (> 1000 nm) "SWNT-cat" suggesting that these are inactive.

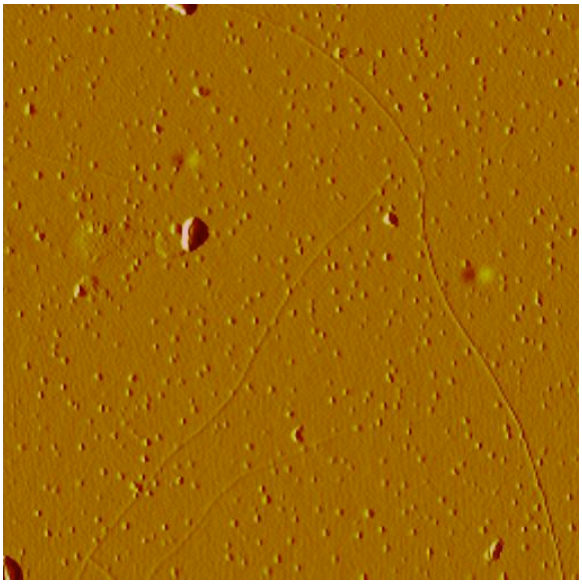


Figure S5. AFM image of VLS grown SWNTs from FeMoC:pyz (1:25) showing the pore growth yield from the catalyst in the absence of a seed. Image is 2 μm x 2 μm. From our prior results: D. Ogrin, R. Colorado, Jr., B. Maruyama, M. J. Pender, R. E. Smalley, and A. R. Barron, *Dalton Trans*., 2006, 229-233.

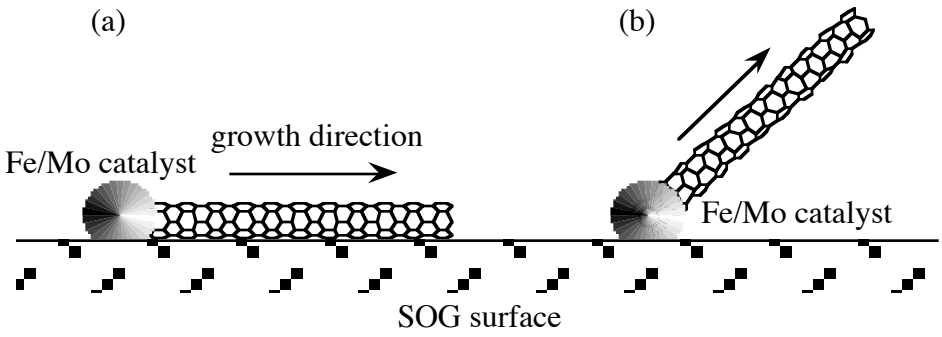


Figure S6. Schematic representation of supported catalyst SWNTs growth in which the SWNT grows parallel to the surface (a) or out from the surface (b). Adapted from D. Ogrin, R. Colorado, Jr., B. Maruyama, M. J. Pender, R. E. Smalley, and A. R. Barron, *Dalton Trans.*, 2006, 229-233.