

Electronic Supplementary Information (ESI)

Sample	2D/G Mode Intensity	
	633 nm	532 nm
AsRec	0.2166	0.1879
HCl	0.2289	0.1973
H ₂ O ₂	0.1047	0.2536
HNO ₃	0.1394	0.2093
Air	0.1627	0.1876
Steam	0.2093	0.1617
NaNp/DMAc	0.1768	0.2037
EChem	0.1767	0.1797

Figure S1. Raman 2D/G mode intensity ratio from 10 averaged spectra (Figure S2)

Purification	D/G Ratio	Standard Deviation	N
As Received	0.0310	0.027	1306
HCl	0.0369	0.025	1672
HCl/H ₂ O ₂	0.1070	0.076	910
HNO ₃	0.0203	0.008	1212
Air	0.0908	0.071	1326
Water Vapour	0.0301	0.019	1088
NaNp/DMAc	0.0202	0.005	1404
Electrochemical	0.0280	0.038	1115

Figure S2. Raman D/G mode intensity ratio data from statistical Raman Spectroscopy.

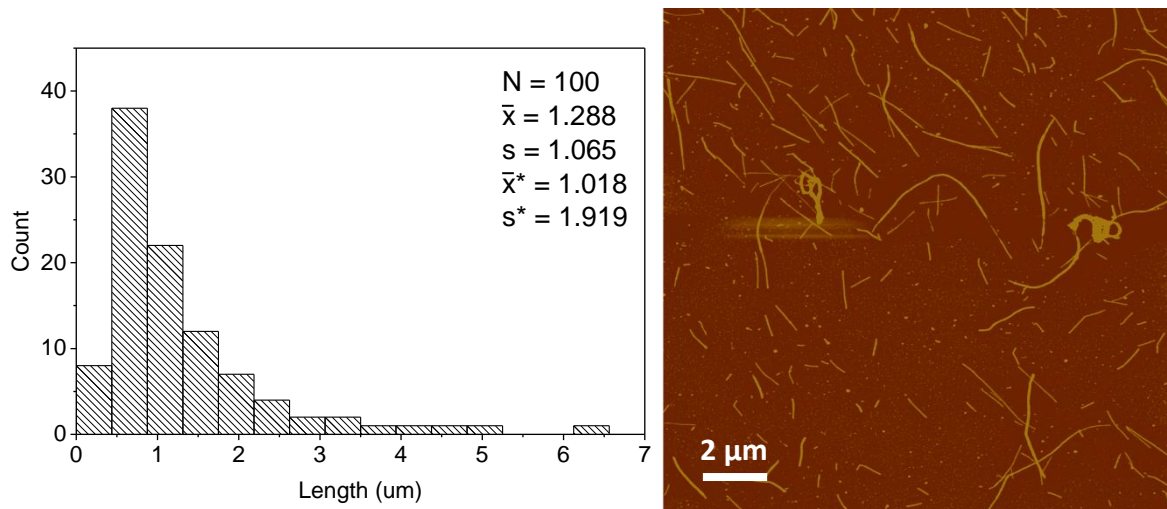


Figure S3. AFM micrograph and length distribution of as-received Tuball SWCNTs. Means and standard deviations for both Gaussian (\bar{x} , s) and lognormal (\bar{x}^* , s^*) fitting are provided with the latter calculated with 25 bins between 0-7 μm.

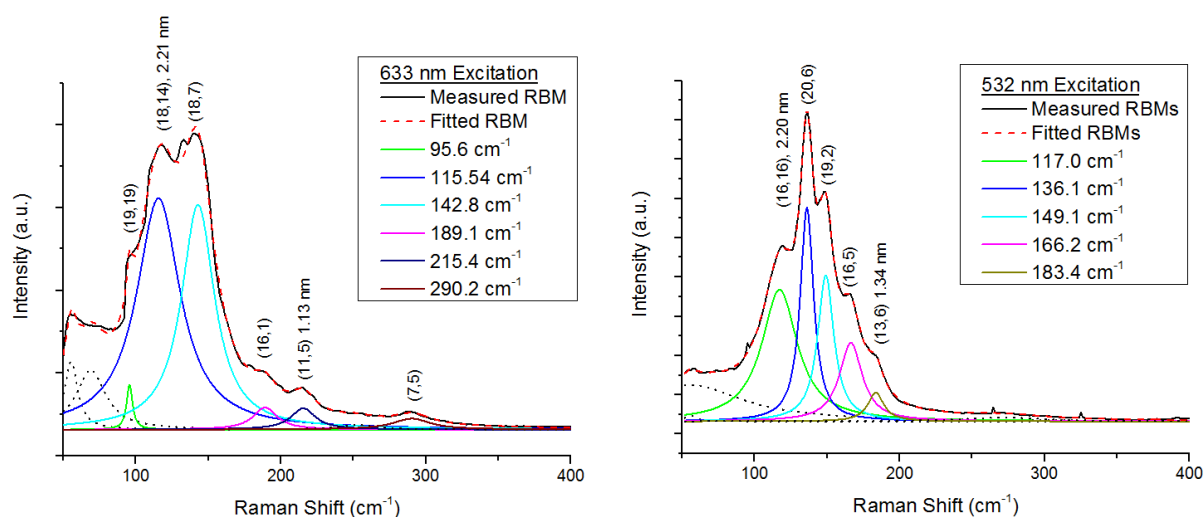


Figure S4. RBM region of Raman spectrum of as-received Tuball SWCNTs with 633 nm and 532 nm excitations (from 25 averaged spectra each). Spectra fitted as Lorentzian peaks (OriginPro multipeak fitting); peaks assigned to background effects are shown as dashed black lines. Chirality assignments were performed using $c1 = 223$ and $c2 = 10$ from Fantini *et al.*¹ Only diameters identified in both spectra (i.e. 2.2-1.3 nm) are used to estimate the approximate diameter distribution of Tuball SWCNTs.

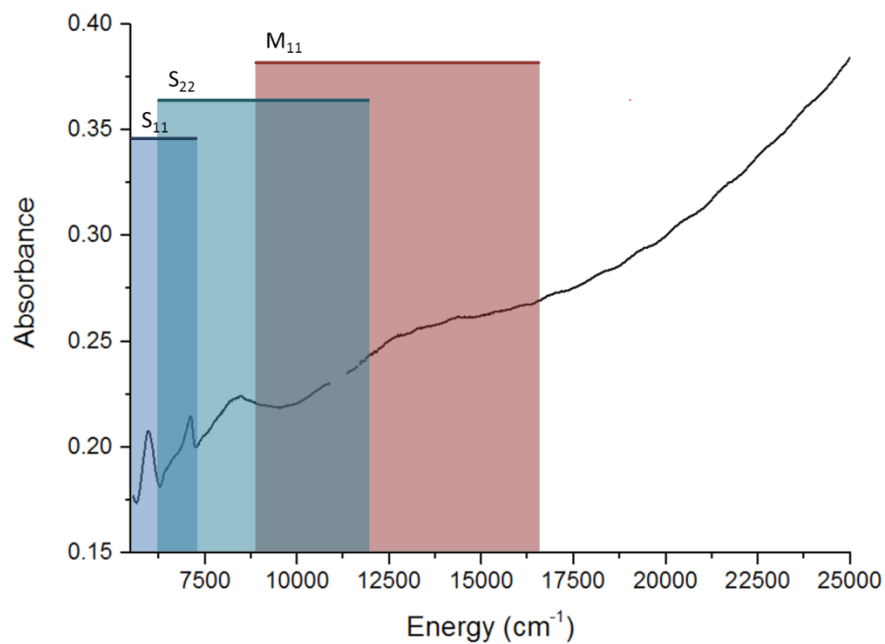


Figure S5. NIR-Vis spectrum of As received Tuball SWCNTs (D_2O , 1 wt% sodium deoxycholate, sonicated 20%@750W for 15 min, centrifuged 31,500 g , 80 min). Shaded regions indicate region of optical transitions of SWCNTs with diameters between 1.3 nm to 2.2 nm. Region of 10869-11350 cm^{-1} omitted for clarity due to equipment noise.

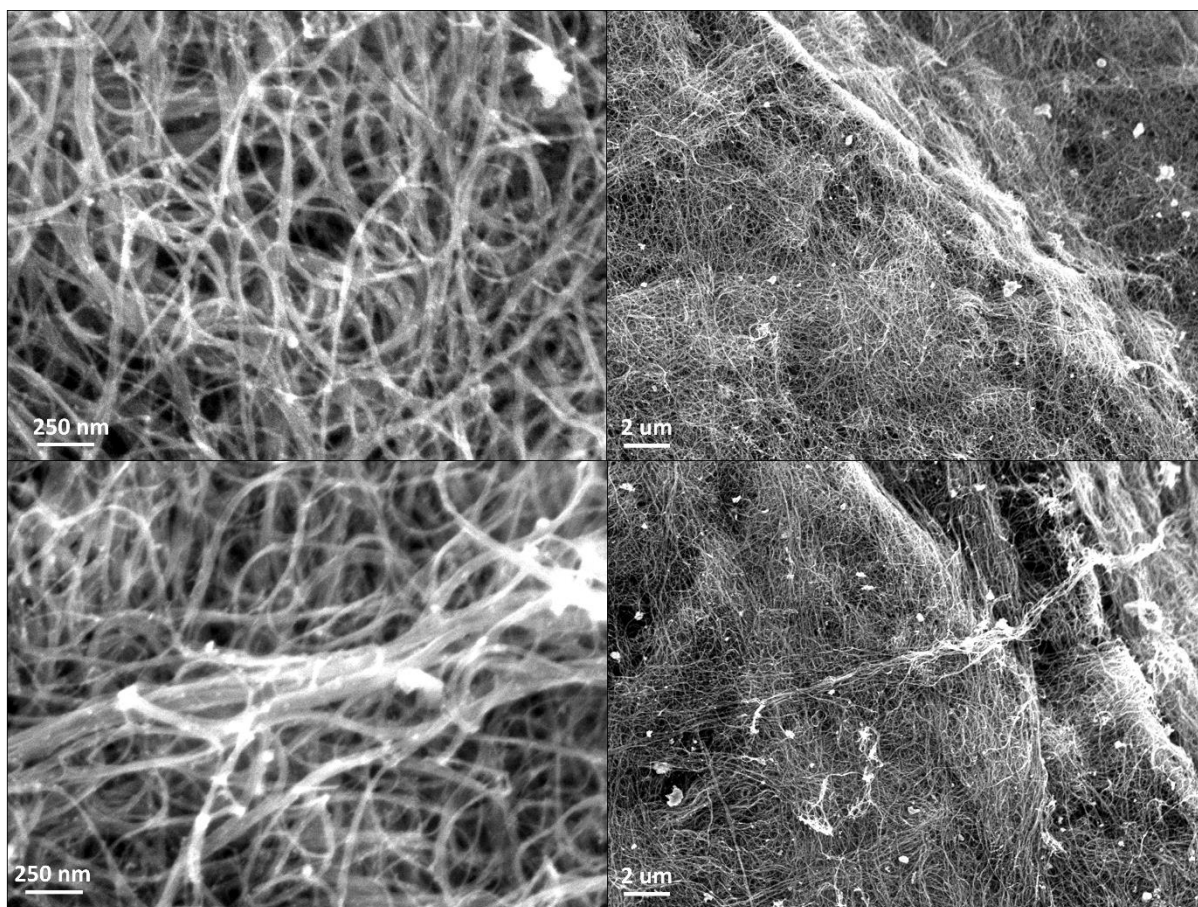


Figure S6. Additional SEM micrographs of as-received SWCNTs.

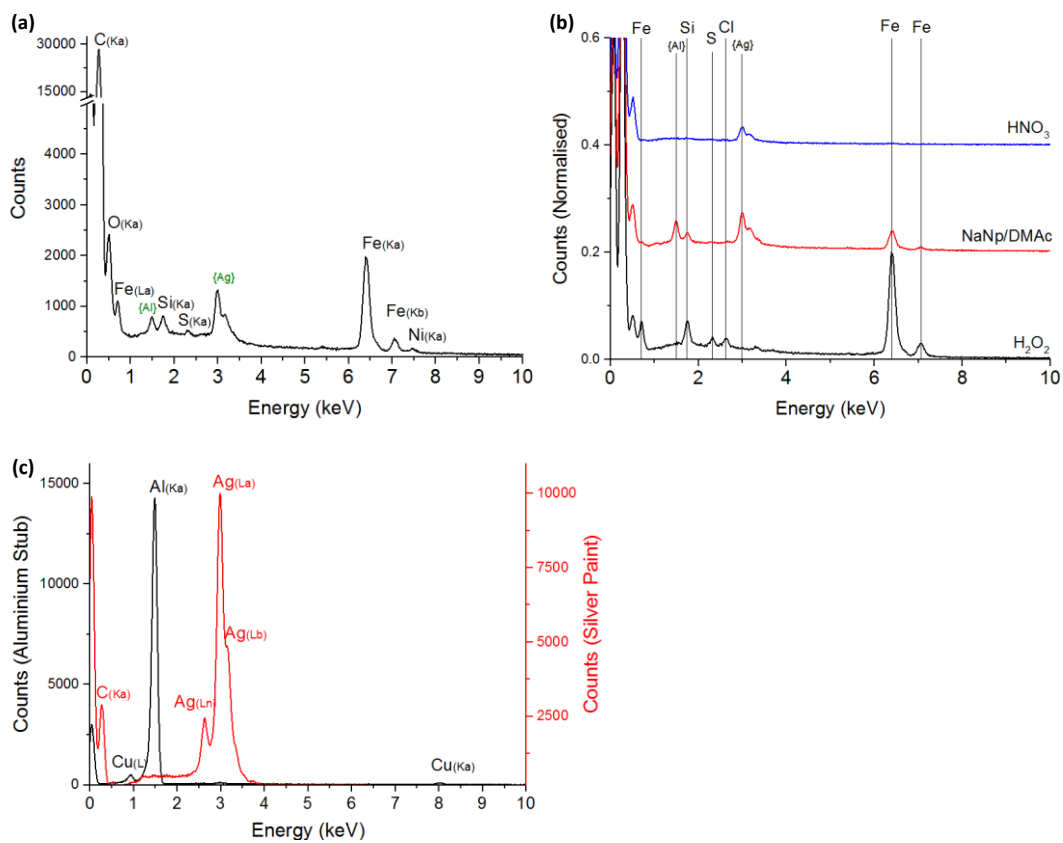


Figure S7. EDX Spectra. (a) As received Tuball SWCNTs; (b) Purified SWCNTs normalised to the carbon peak; (c) Controls for aluminium stub and silver paint used in sample preparation.

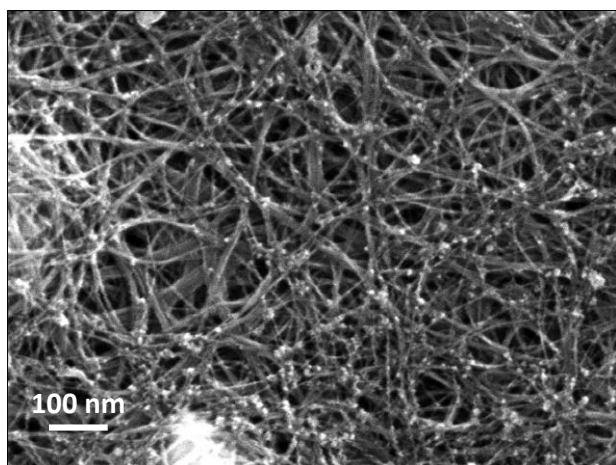


Figure S8. SEM micrograph of material removed during DMAc/NaNp purification

1. C. Fantini; A. Jorio; M. Souza, *et al.*, *Physical review letters*, **2004**, 93 (14), 147406.