Supporting information.

A Reference Material of Single-walled Carbon Nanotubes: quantitative chirality assessment using optical absorption spectroscopy

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Table S1. (n,m) concentrations of S-SWCNTs and M-SWCNTs obtained by fitting the absorption spectrum of the RM8281 sample.

S-SWCNTs	M-SWCNTs	Concentration	d_t/nm	θ /°	E_{11}^S/eV	E_{22}^S/eV	E_{33}^S/eV	E_{11}^M/eV
(6,5)		25%	0.75	27.0	1.29	2.20		
(7,3)		3%	0.70	17.0	1.32	2.49		
(7,5)		12%	0.82	24.5	1.23	1.94		
(8,3)		8%	0.77	15.3	1.32	1.88		
(8,4)		4%	0.83	19.1	1.10	2.12	2.47	
(8,6)		2%	0.95	25.3	1.08	1.75		

(9,1)		2%	0.75	5.2	1.38	1.80		
(9,2)		3%	0.80	9.8	1.11	2.26		
(10,8)		5%	1.22	26.3	0.86	1.44		
(11,0)		6%	0.86	0	1.20	1.71		
(12,1)		3%	0.98	4.0	1.08	1.57		
(14,0)		1%	1.10	0	0.97	1.45		
	(6,6)	7%	0.81	30.0				2.76
	(8,5)	5%	0.89	22.4				2.47
	(9,3)	4%	0.85	13.9				2.40
	(10,7)	4%	1.16	24.2				2.10
	(11,5)	6%	1.11	17.8				2.09

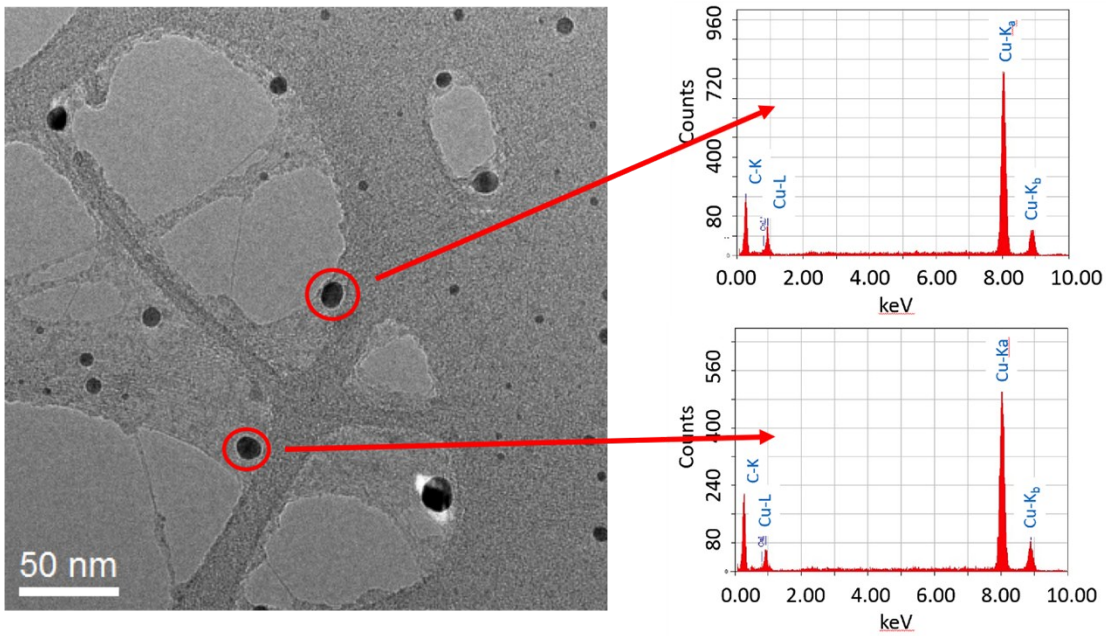

Figure S1. (a) The TEM image of the RM8281 SWCNT sample and (b) the energy dispersive spectra (EDS) of the nanoparticles as indicated. Only carbon (C) and copper (Cu) elements are detected in the EDS analysis, that shows undoubtedly the black dots in the images are Cu nanoparticles originating from the Cu TEM grid after the heat treatment for preparing the sample.

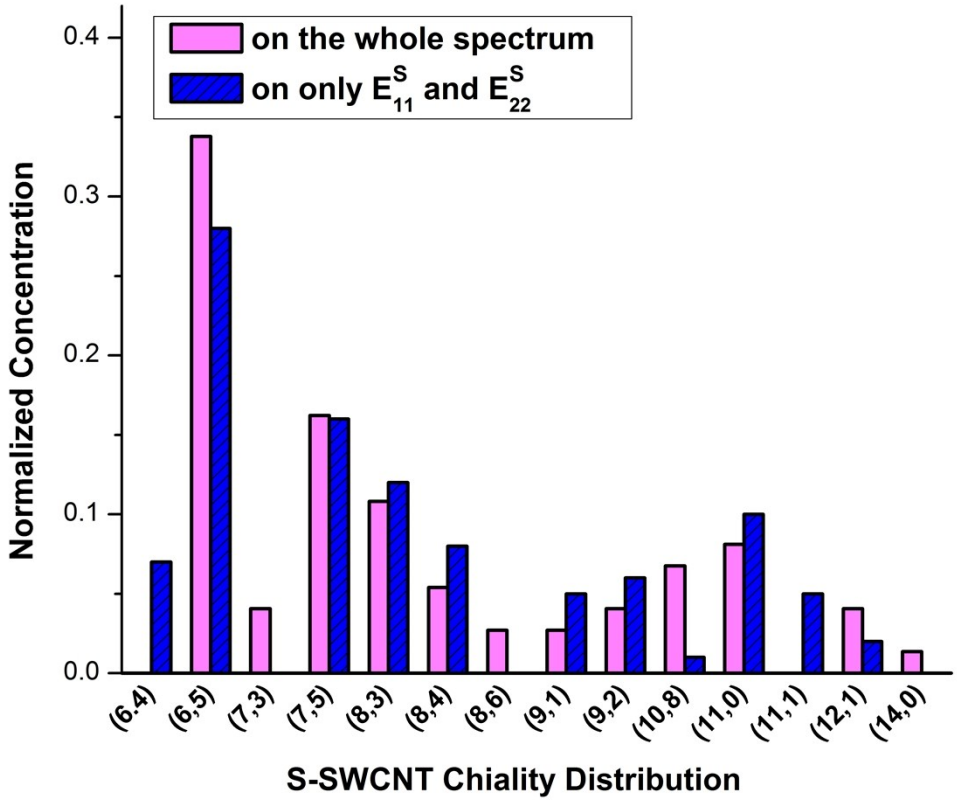

Figure S2. The chirality distributions of S-SWCNTs obtained by fitting (a) the whole spectrum from 0.9 to 3.0 eV (solid pink) and (b) a partial range of the spectrum covering only E_{11}^S and E_{22}^S, i.e., 0.9-2.3 eV (textured blue). For a direct comparison of the above two results, both histograms have been so normalized that the total chirality concentrations of S-SWCNTs measured by each method maintain 100%.