Supporting Information

Layer-by-Layer Electrostatic Self-Assembly of Single-Wall Carbon Nanotube Polyelectrolytes

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Langmuir

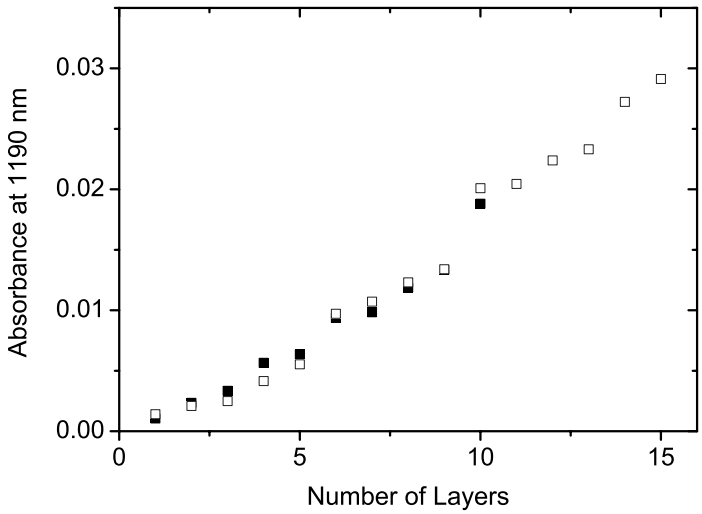

Figure S1. SWNT**1**/SWNT**3** multilayer growth up to 10 (solid squares) or 15 (open squares) layers. The deposition time was 60 min (solid squares) or 30 min (open squares). The concentration of NaBr was 0.1 M in the SWNT**1** solution and 0 M in the SWNT**3** solution.

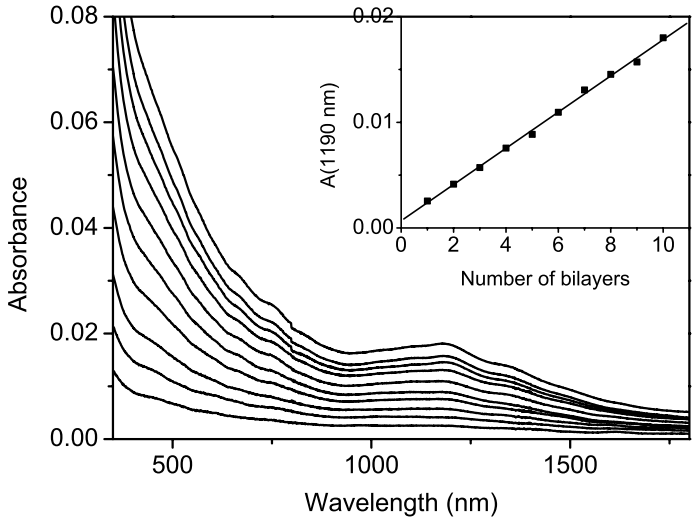

Figure S2. Growth of a SWNT**1**/PAH multilayer up to 10 bilayers. The concentration of NaCl was 0.1 M for the PAH solution and 0 M for the SWNT**1** solution. pH of the PAH solution was 3.1.

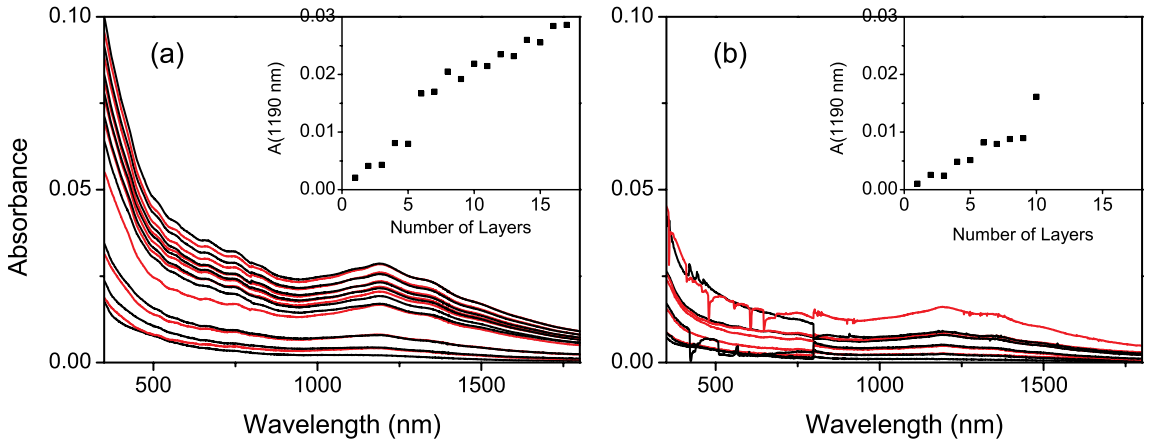

Figure S3. Growth of (a) SWNT**1**/SWNT**3** and (b) SWNT**1**/SWNT**4** multilayers without added electrolyte. Odd layers shown in black and even layers in red.

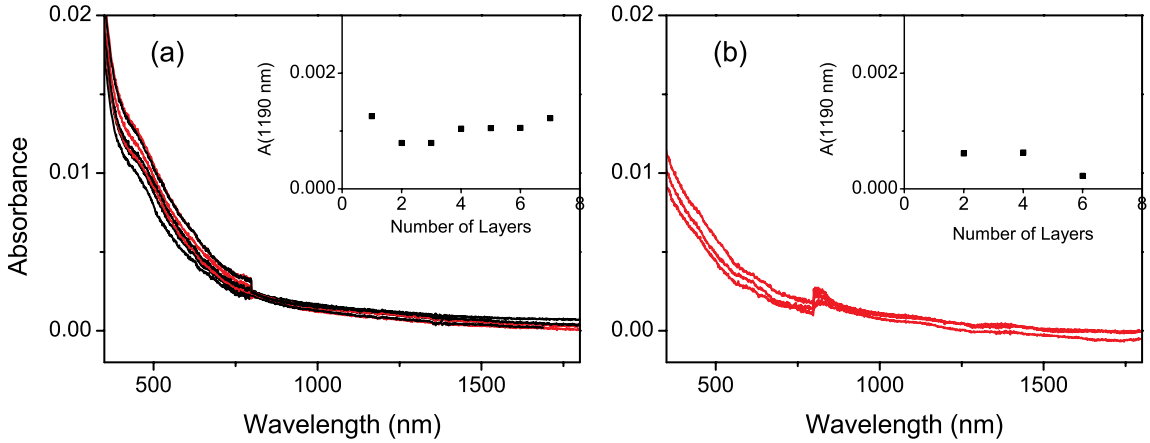

Figure S4. Control deposition of (a) SWNT**1**/SWNT**1** and (b) PSS/SWNT**1** multilayer on an APTES-primed (positively charged) glass surface. Odd layers shown in black and even layers in red. Salt (0.1 M NaBr) was added only to the PSS solution.

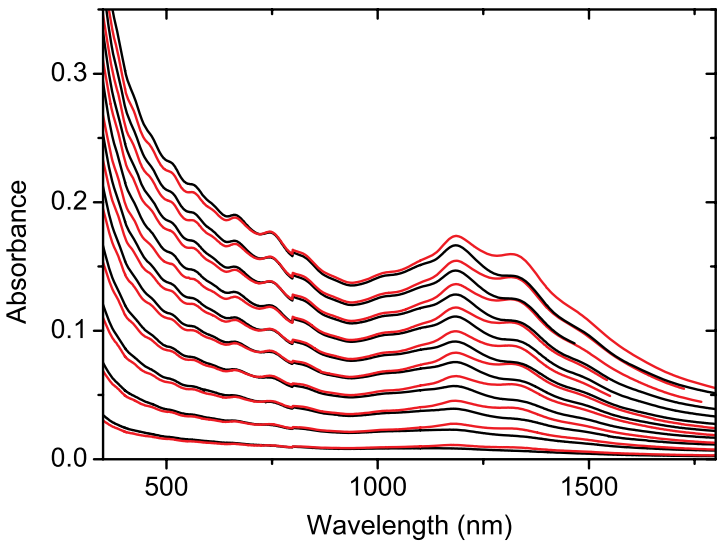

Figure S5. Growth of a SWNT**1**/PDADMA multilayer up to 20 layers. Spectra were measured after each layers, odd layers shown in black and even layers in red. The concentration of NaBr was 0.1 M and pH 6.2 for both deposition solutions.

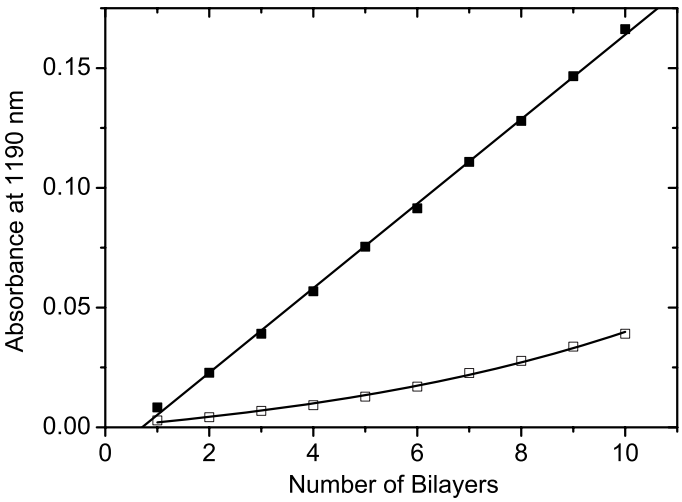

Figure S6. S_{11} peak absorbance (1190 nm) as a function of the number of bilayers for SWNT**1**/PDADMA multilayers. The ionic strength (adjusted with NaBr) in the SWNT**1** solutions was either zero (open symbols) or 0.1 M (solid symbols). Lines are shown as a guide to the eye.

Table S1. Ellipsometric Thickness and Volume Fraction of SWNT Multilayers

sample[a,b]	ionic strength[c] (M)	layers	thickness[d] (nm)	volume fraction[d,e]
SWNT**1**/PDADMA[a]	0.1	5	8.7 (9.7)	0.55 (0.42)
		10	17.1 (20.0)	0.41 (0.33)
		15	19.9 (23.5)	0.39 (0.31)
SWNT**2**/PDADMA[a]	0.1	5	8.5 (9.7)	0.53 (0.44)
		10	14.0 (17.5)	0.44 (0.32)
		15	17.0 (19.9)	0.40 (0.32)
PSS/SWNT**4**[a]	0	5	nd[f] (9.7)	nd (0.44)
		10	10.0 (13.5)	0.44 (0.28)
		15	21.3 (32.2)	0.30 (0.22)
SWNT**2**/PDADMA[b]	0	29	9.9 (7.9)	0.23 (0.29)
SWNT**2**/PDADMA[b]	0.1	29	36.0 (19.5)	0.32 (0.31)
SWNT**1**/SWNT**3**[a]	0	5	6.6 (nd)	0.50 (nd)
		10	8.0 (9.7)	0.47 (0.40)
		15	11.6 (13.2)	0.43 (0.32)
SWNT**1**/SWNT**3**[a]	0.1	5	6.2 (nd)	0.51 (nd)
		10	10.2 (11.6)	0.43 (0.33)
		15	14.2 (16.1)	0.35 (0.29)
SWNT**2**/SWNT**3**[a]	0.1	5	4.2 (nd)	0.55 (nd)
		10	7.6 (8.9)	0.49 (0.40)
		15	14.5 (15.9)	0.39 (0.31)
SWNT**2**/SWNT**3**[b]	0.1	15	8.8 (11.0)	0.27 (0.28)
	0.2	15	9.6 (10.5)	0.30 (0.28)
SWNT**1**/SWNT**4**[b]	0.1	60	59.3 (55.0)	0.33 (0.33)
		75	94.1 (84.8)	0.34 (0.30)

[a] On gold. [b] On glass. [c] Concentration of NaBr used with SWNT**1** or SWNT**2**. With PDADMA and PSS ionic strength was always 0.1 M, with SWNT**3** and SWNT**4** it was zero. [d] Variable angle of incidence or spectroscopic ellipsometry (in parenthesis). [e] Volume fraction of inclusions (graphite) in the model (fitting parameter). [f] Not determined.

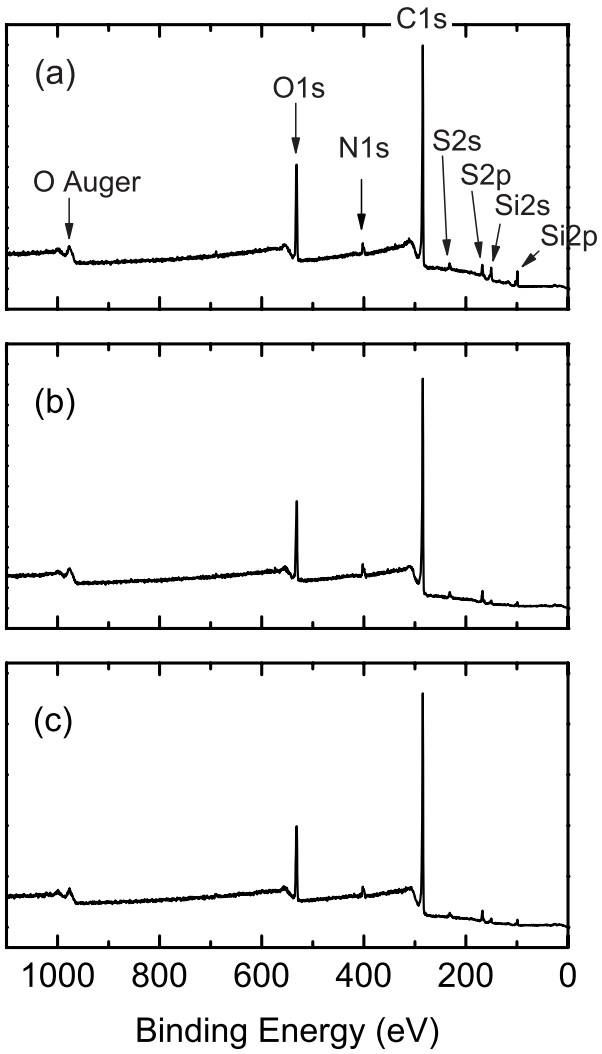

Figure S7. XPS survey spectra of SWNT**2**/PDADMA multilayers with (a) 9 (b) 19 and (c) 29 layers.

Table S2. Atomic composition of multilayers with the structure Si/APTES/(SWNT**2**/PDADMA)$_n$.

SWNT layers	PDADMA layers	C 1s (%)	O 1s (%)	N 1s (%)	N vs. N^+ [a]	S 2p (%)	Si 2p (%)
5	4	72.2	16.5	3.5	0.477; 0.521	3.0	4.8
10	9	75.6	15.9	3.7	0.424; 0.575	3.1	1.7
15	14	77.4	14.5	3.4	0.451; 0.547	2.8	1.9

[a] The relative peak areas for uncharged and charged nitrogen atoms at 399.8 eV and 402.3 eV, respectively, are given as fractions.

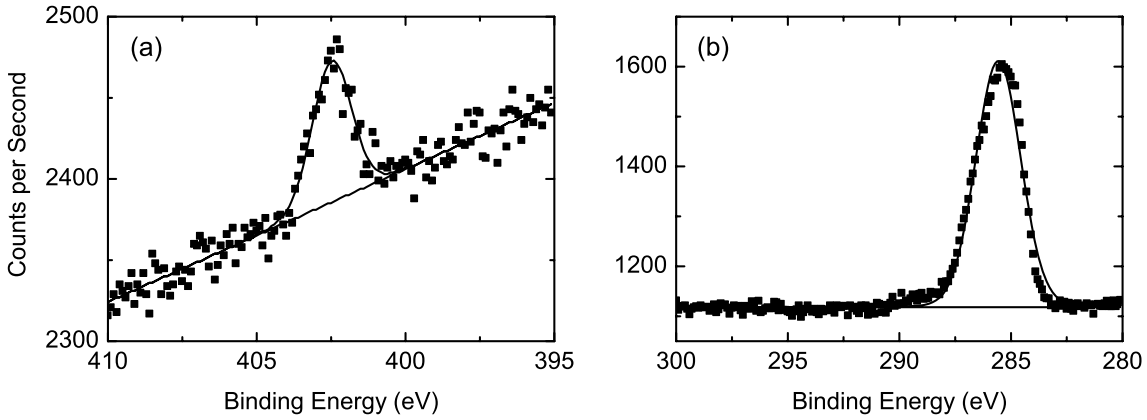

Figure S8. (a) N 1s and (b) C 1s core level spectra of a PDADMABr monolayer on a MESA-primed gold surface.

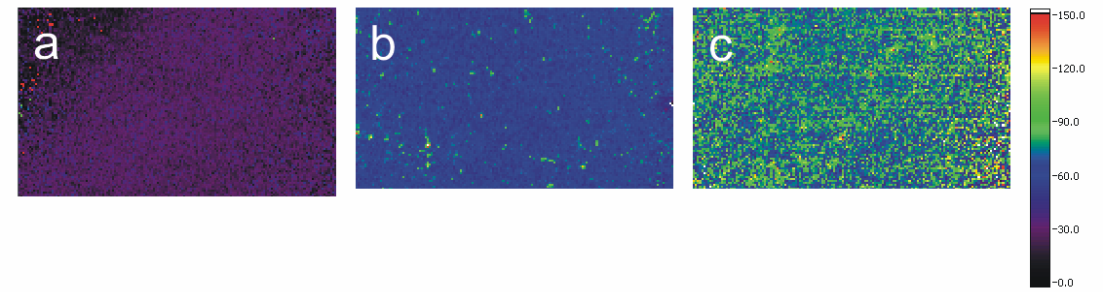

Figure S9. Ellipsometric thickness maps of a) SWNT**2**/PDADMA multilayer with 29 layers, b) SWNT**1**/SWNT**4** multilayer with 60 layers and c) SWNT**1**/SWNT**4** multilayer with 75 layers on an APTES-primed glass surface.

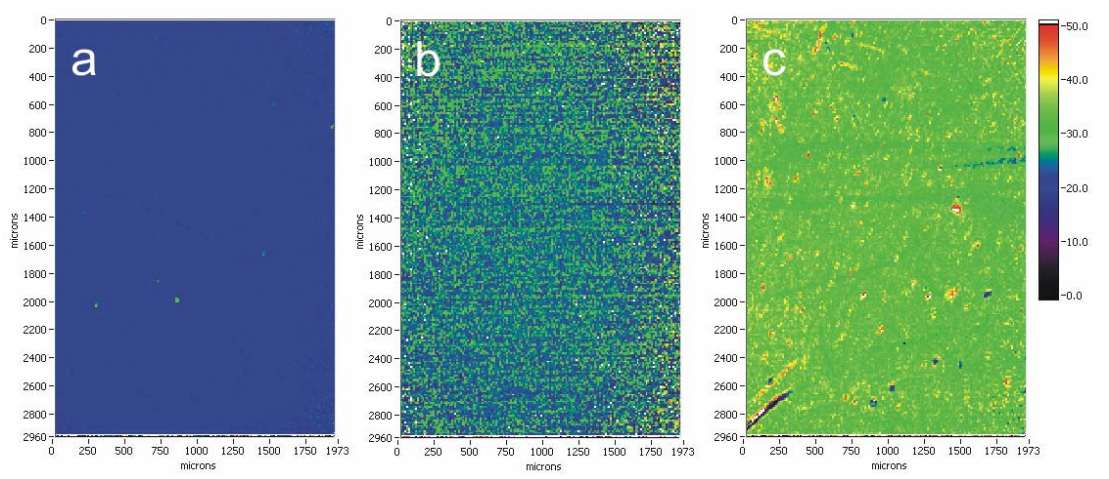

Figure S10. Ellipsometric thickness maps for a) PDADMA/SWNT**2**, b) PDADMA/SWNT**1** and c) SWNT**4**/PSS multilayers with 15 layers on a MESA-primed gold surface. The concentration of NaBr was 0.1 M in SWNT**1**, SWNT**2** and polymer solutions and zero in the SWNT**4** solution.

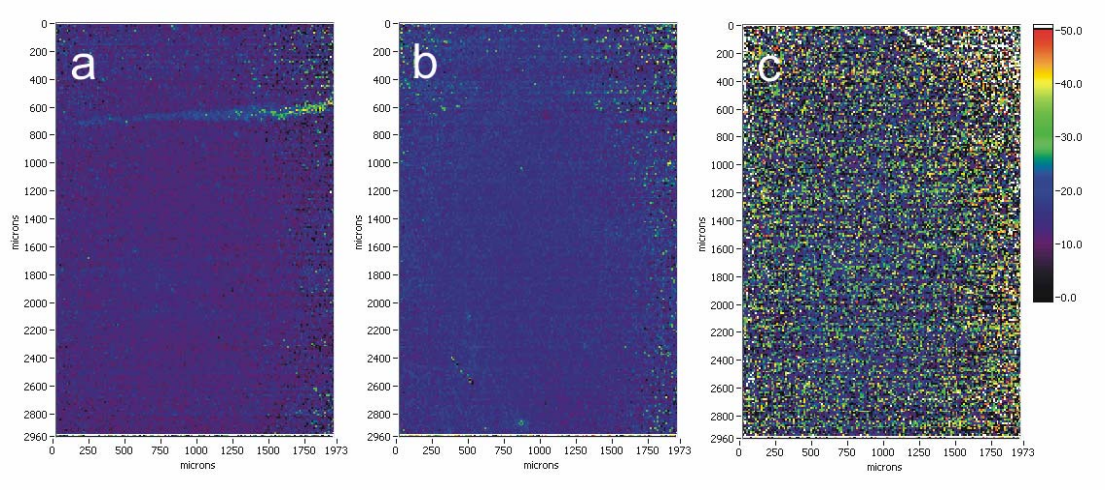

Figure S11. Ellipsometric thickness maps for a) SWNT**3**/SWNT**1** multilayer (no salt was added) b) SWNT**3**/SWNT**1** multilayer (0.1 M NaBr in SWNT**1** solution) and c) SWNT**3**/SWNT**2** multilayer (0.1 M NaBr in SWNT**2** solution) with 15 layers on a MESA-primed gold surface. The concentration of NaBr was zero in the SWNT**3** solution.