Supporting Information Available

Controlled Positioning of Carbon Nanotubes by Dielectrophoresis: Insights into the Solvent and Substrate Role

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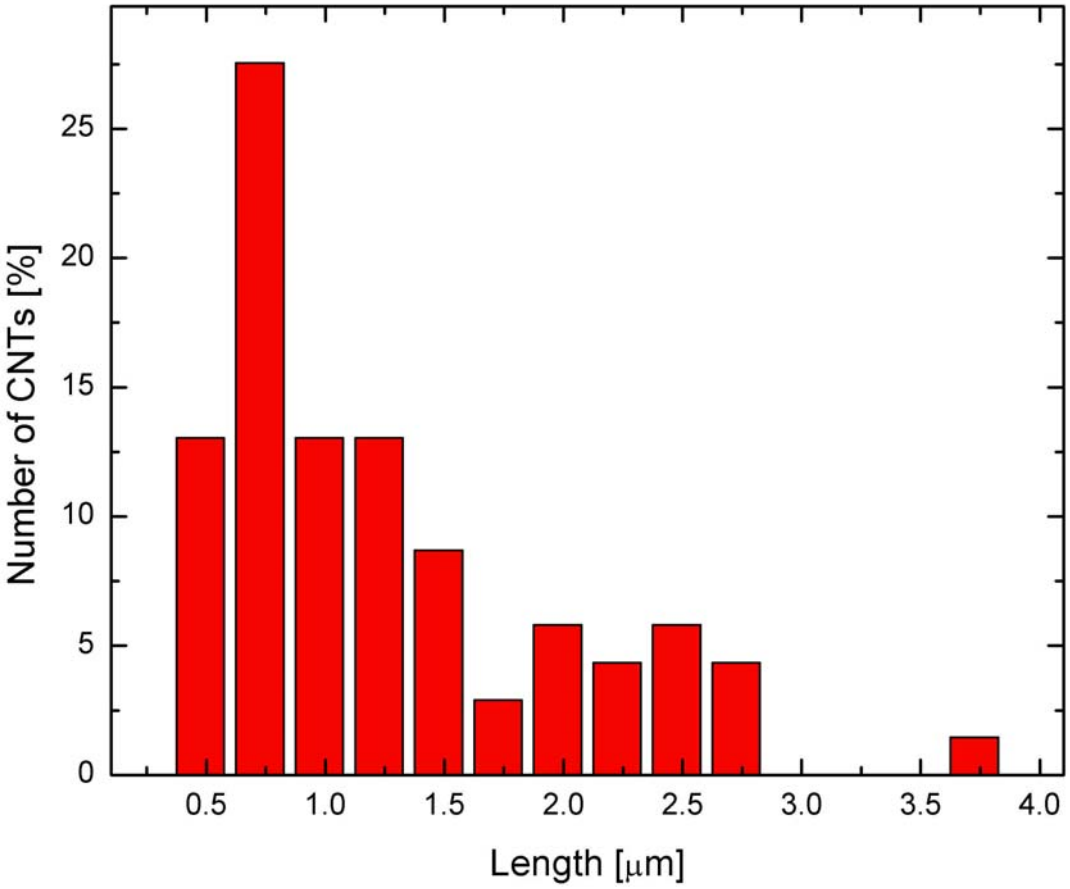

Figure S1. Carbon nanotubes length distribution determined from a large number of scanning electron micrographs.

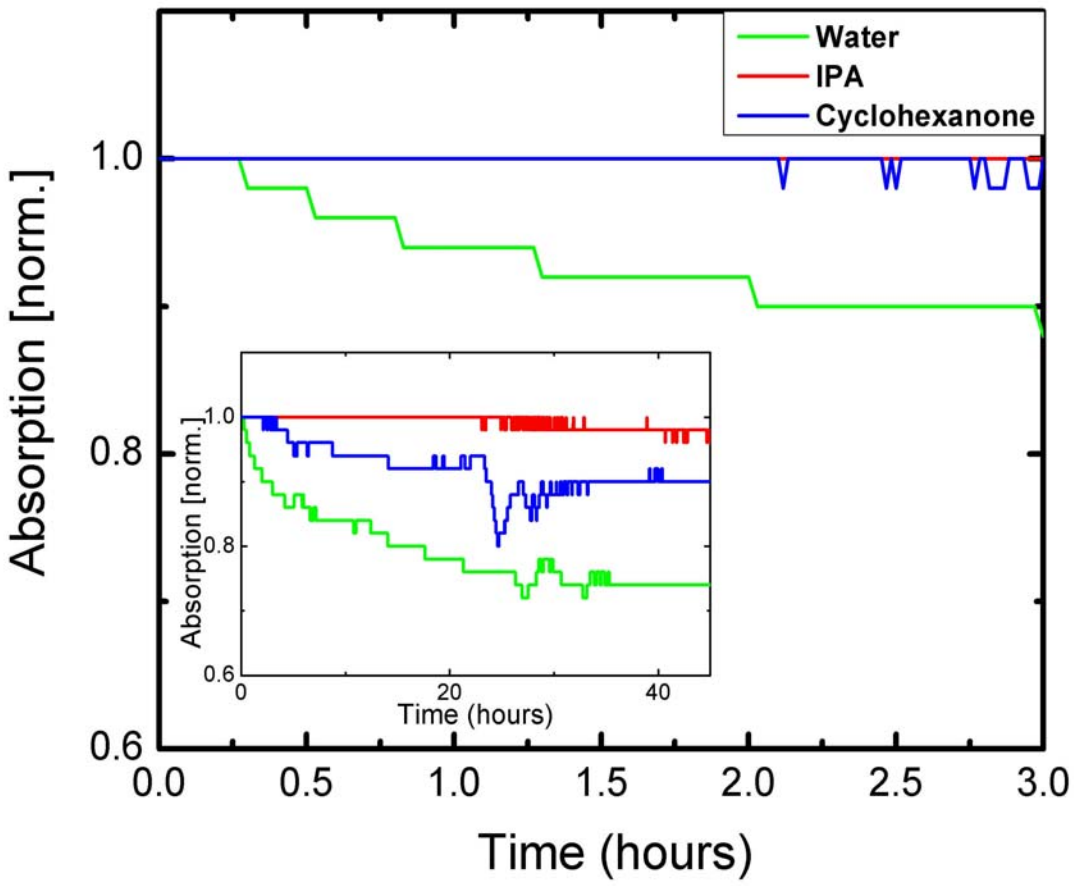

Figure S2. Normalized optical absorption (at wavelength 500 nm) measurements of CNTs dispersed into cyclohexanone, water and IPA, measured over 10 days each two minutes

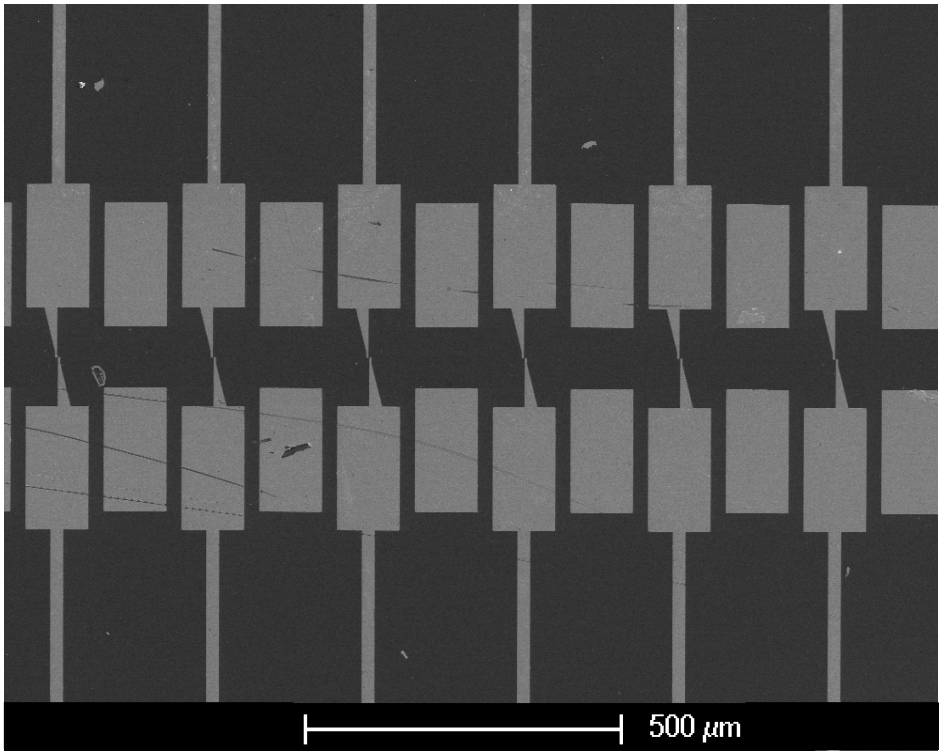

Figure S3. Overview of the structures used for the DEP experiments

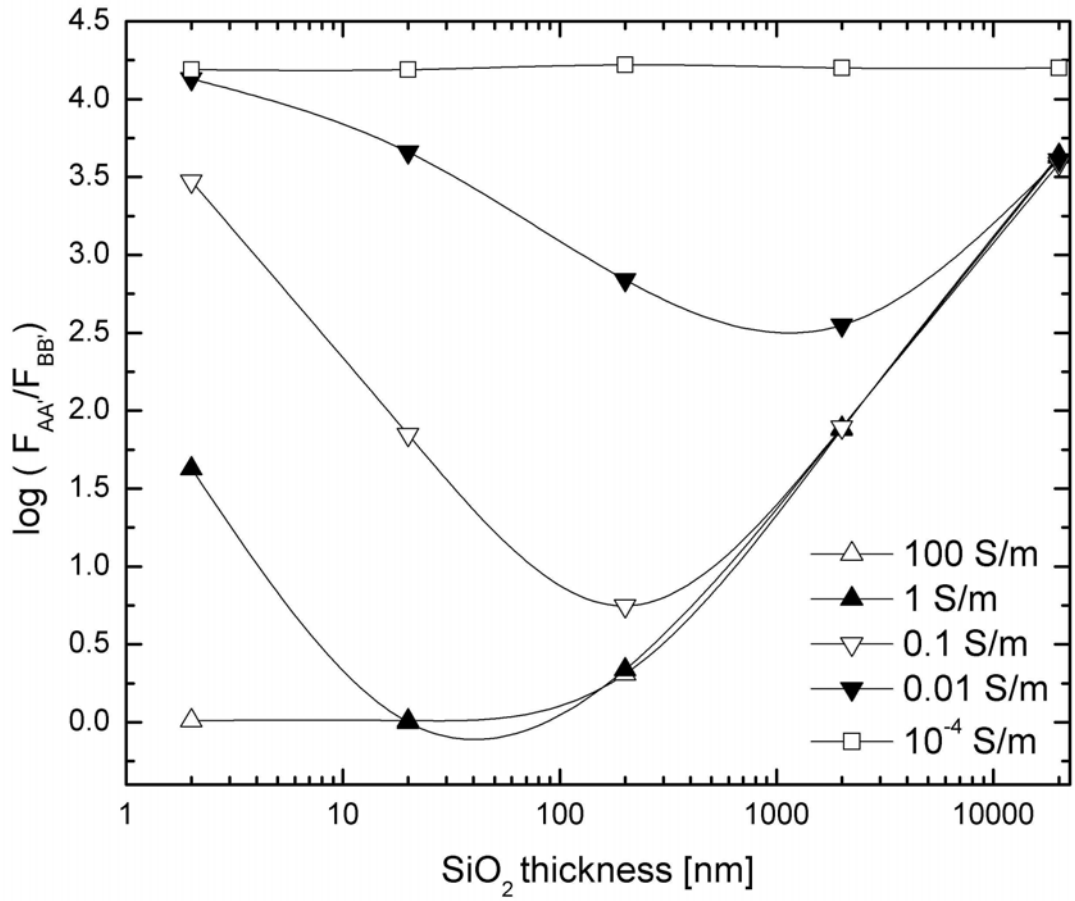

Figure S4. The attracting force on a CNT placed between the two electrodes ($F_{AA'}$) and between the substrate and the active electrode ($F_{BB'}$) are in competition, their relative strengths depend on the SiO_2 thickness in a non-linear way

Material	Solvant	Frequency [kHz]	V_{AC} [V RMS]	V_{DC} [V]	Yield [% of connected electrodes]	Average number of Nws/Nts bridging electrodes	Ref	Ref of growth conditions
CVD CNTs	Water	1000	0.8	0.8	100	8	Our work	[7]
TiO_2 NFs	IPA	100	2.5	1	100	6	Our work	[31]
TiO_2 NTs	IPA	100	2.5	1	30	1	Our work	[31]
VO_x NTs	Cyclohexane	100	2.5	1	100	4	Our work	[32]
ZnO Nws	IPA	100	1.5	0.5	30	1	Our work	[33]
InAs Nws	Water	1000	1.2	0	80	x		[29]
Gold Nws	Methanol	150	0.5	0	100	x		[28]

x = not published information

Table S1. DEP parameters to attract individual nanowires/nanotubes with various composition

References

(29) Raychaudhuri, S.; Dayeh, S. A.; Wang, D. L.; Yu, E. T. *Nano Lett.* **2009**, *9*, 2260-2266

(30) Boote, J. J.; Evans, S. D. *Nanotechnology* **2005,** *16*, 1500-1505

(31) Horváth, E.; Kukovecz, A.; Kónya, Z.; Kiricsi, I. *Chem. Mater.* **2007,** *19*, 927–931

(32) Niederberger, M.; Muhr, H.J.; Krumeich, F.; Bieri, F.; Gunther, D.; Nesper, R. *Chem. Mater.* **2000,** *12*, 1995–2000

(33) Park, H.K.; Oh, M.H.; Kim, S.W.; Kim, G.H.; Youn, D.H.; Lee, S.; Kim, S.H.; Kim, K.C.; Maeng, S.L. *ETRI Journal* **2006,** *28*, 787-789

Solvent	***Polarizability of a 1um length CNT for an electric field of 1V/um***	***Maximum dipole moment of the solvation shell***	***Total dipole moment***
Water	***530 kD***	***500 kD***	***1 030 kD***
IPA	***530 kD***	***~ 500 kD***	***~1 030 kD***
Cyclohexanone	***530 kD***	***~0 D***	***530 kD***

Table S2. Maximum dipole moment obtained for CNTs solvated by the solvents used in our study