Electronic Supplementary Information

Salting-in effect in organic dispersions of poly(3-hexyl thiophene)- carbon-nanotubes.

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Materials and Methods

Pristine multi-walled carbon nanotubes (MWNT-MER, typical diameter 20 nm, CVD, MER corporation USA) were used as received**.** Polythiophene derivatives were purchased from Rieke metals: Poly(3-hexylthiophene-2,5 diyl), P3HT, Mw 58,000 gr/mol, pd=2.2 Regioregularity < 90% Catalog no. P100. Poly(3-octylthiophene-2,5 diyl),P3OT, Mw 71,000 gr/mol , pd = 2.1. Regioregularity ~ 90%-95% catalogue no 4003-e.

Solvents: Spectroscopic grade solvents Tetrahyrofuran (THF) and Toluene were purchased from Fluka Chemicals Israel, 1,2 dichlorobenzene (dCB) from Acros Organics Belgium.

Salts: were purchased from Sigma-Aldrich; Potassium Bromide (KBr), Tetra-*n*-butylammonium bromide (TBAB), Aluminium Chloride ($AlCl_3$), and Potassium Iodide (KI).

Preparation of solutions: Polymer solutions were prepared by dissolving the P3ATs in an organic solvent. Salt solutions were prepared by dissolving the salt in THF. The solutions were mixed for 48h at ambient conditions (25^{o}C).

Table S1: Solubility of different salts in THF, as determined experimentally **(25 °C)**

	mg/ml
KBr	0.06-0.1
TBAB	3-5
$AlCl_3$	0.1
KI	0.001

KBr and KI are practically insoluble in toluene (due to the lower dielectric constant THF ε= 7.58 Toluene, ε= 2.58 at 25C).

Preparation of dispersions: Liquid dispersions were prepared by adding 2 ml of the P3AT solution to 2 mg of a dry powder of as-received non-purified CNT, followed by 2h sonication (at very mild conditions (50W, 43KHz)). The resulting dispersion was centrifuged (20 min at 4500 RPM). Throughout the study nominal concentrations of CNT powders in dispersions are reported unless otherwise noted.

Addition of salt: The desired volume of the salt-THF solution was added to pre-prepared dispersions of MWNT-MER in P3HT-THF and re-sonicated for 1 hour. The resulting dispersions were centrifuged (20 min at 4000 RPM). Following centrifugation, the supernatant was decanted from above the sediment.

Microscopic characterization: High resolution transmission electron microscopy (HRTEM, FEI Tecnai 12 G^2 TWIN TEM equipped with a Gatan model 794 CCD camera at 120kV) was used to examine the microscopic structure of the dispersions. The specimens were prepared by placing a droplet of the dispersion on a TEM grid (300 mesh Cu, Ted Pella) and drying.

UV-Vis spectroscopy: A double -beam UV-Vis spectrometer (Perkin-Elmer Lambda 35) was used for spectroscopic measurements. The samples were prepared by drop-casting a thin film (about 50 nm) of the solution onto a cleaned glass substrate and drying at ambient conditions.