Supplementary data

Carbon Nanotube Reinforced Supramolecular Gels with Electrically Conducting, Viscoelastic and Near-Infrared Sensitive Properties

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Characterization of the CNTs: The morphology of Pr-SWNT and C_{16}-SWNT were observed under scanning electron microscope (SEM). The SEM images show that the tubular nature of the CNTs are retained after functionalization (C_{16}-SWNT) and also the integrity of the SWNTs remains intact (Figure S1).

In a previous work,[1] it has been shown by atomic force microscopy that the pristine SWNTs are 600-800 nm long whereas upon functionalization the CNTs become shorter (~150 nm) for the C_{16}-SWNT although the diameters of the nanotubes remain almost the same (10-20 nm). Raman shifts at 1580 cm^{-1} (D-band) and 150-210 cm^{-1} (radial breathing mode) confirm the presence of the intact carbon nanotube framework. A ~70% weight loss in thermogravimetric analysis is found from C_{16}-SWNT, which provides a measure of the extent of functionalization. The C_{16}-SWNT is found to be soluble in chloroform, dichloromethane and toluene whereas the pristine SWNTs are found to form suspensions in those media. This suggests that an optimum functionalization has taken place without the breakdown of the nanotube architecture.

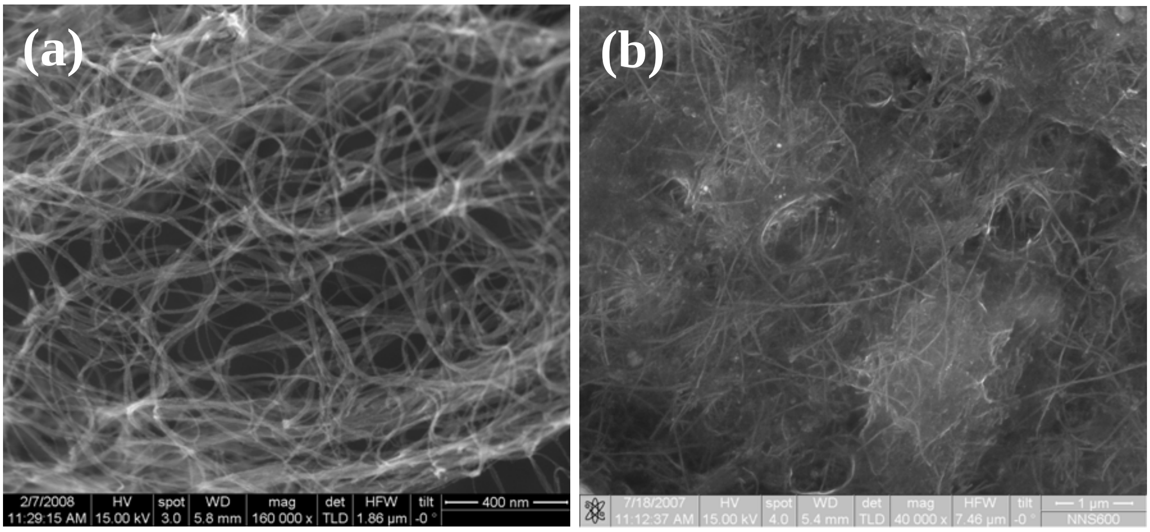

Figure S1. SEM image of (a) Pr-SWNT and (b) C_{16}-SWNT.

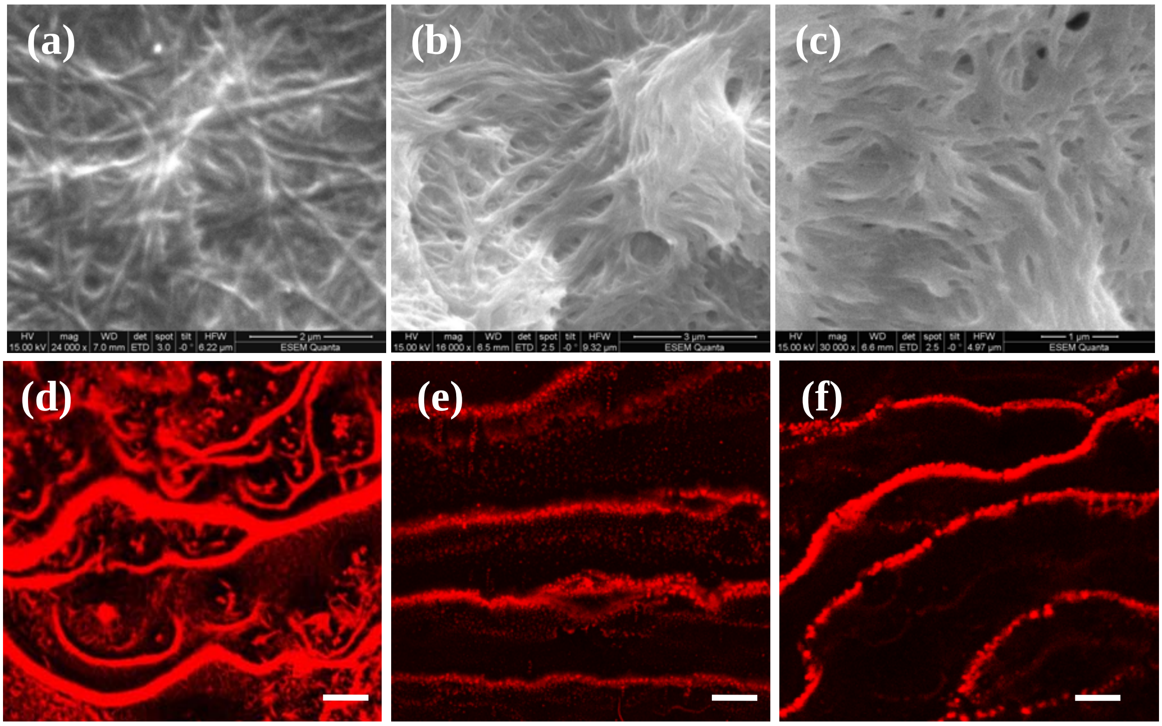

Figure S2. SEM images of the freeze dried samples (from toluene) of (a) **1**, (b) **1**-Pr-SWNT and (c) **1**-C_{16}-SWNT. Confocal microscopic images of (d) **1**, (e) **1**-Pr-SWNT and (f) **1**-C_{16}-SWNT in wet condition (in presence of toluene, scale bar 10 μm).

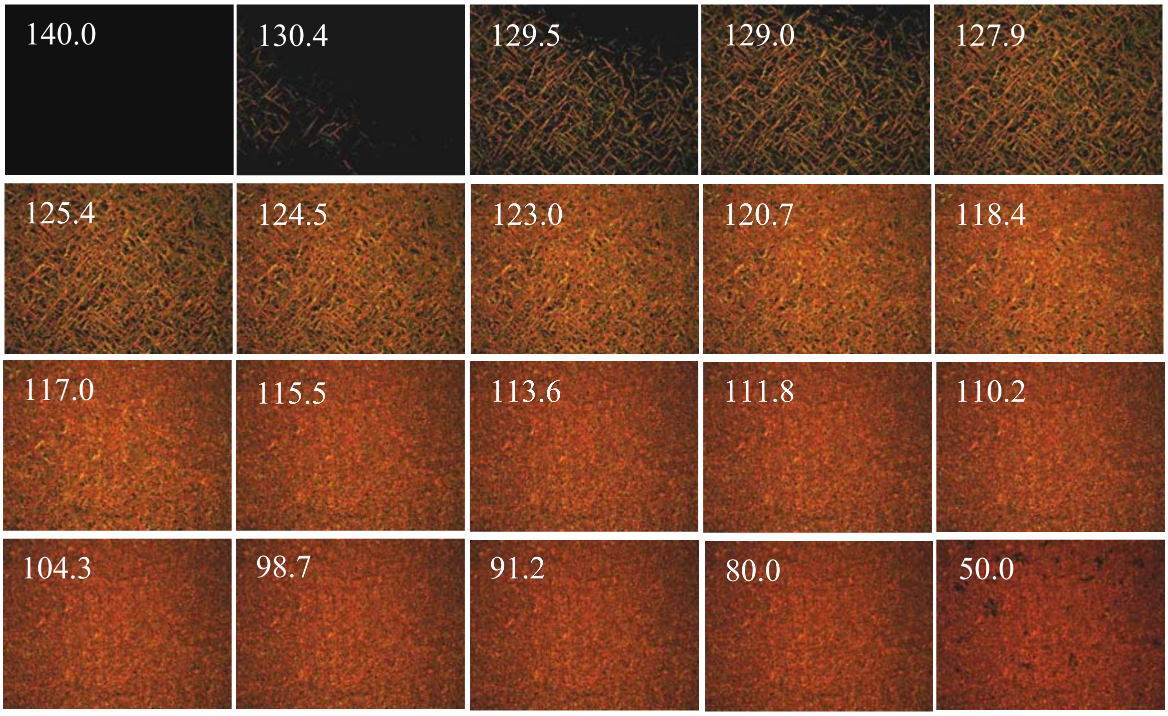

Figure S3. Snapshots of the anisotropic growth of **1** at progressively decreasing temperatures from the isotropic melt (Magnification x20).

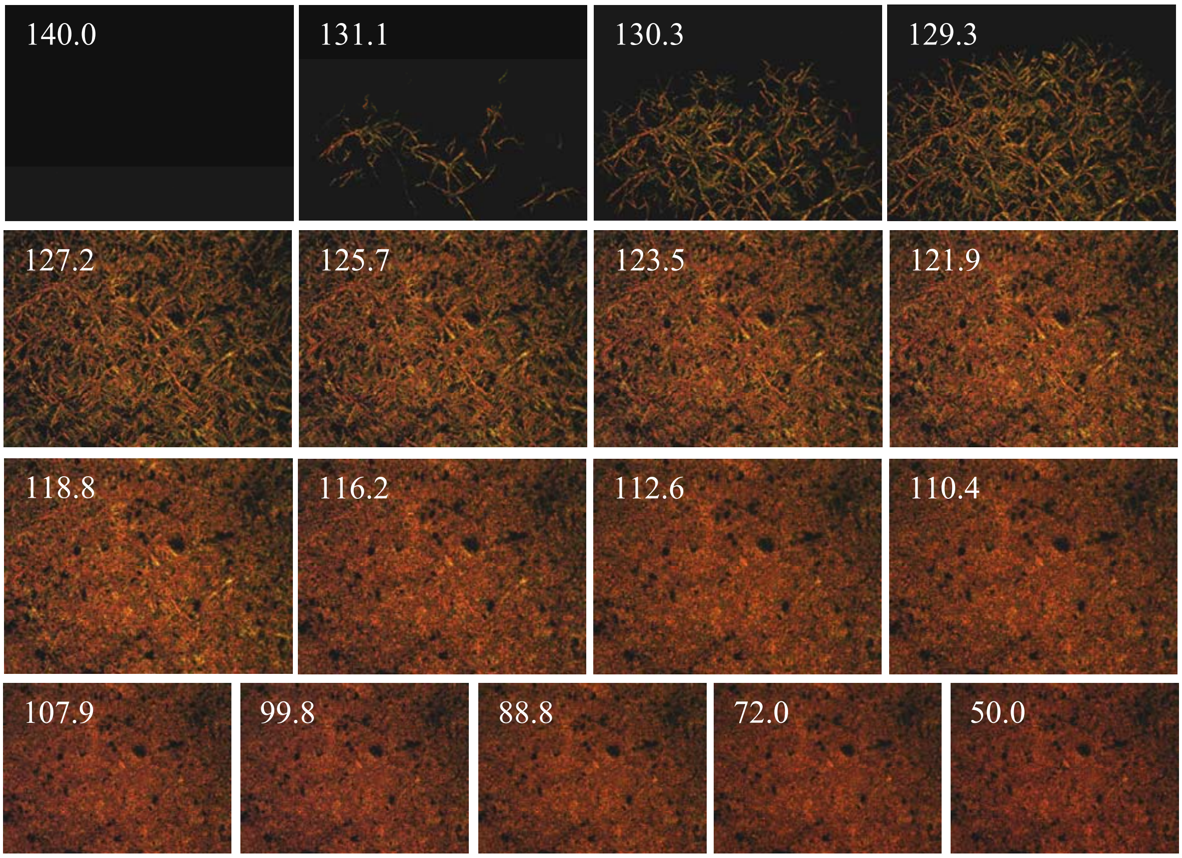

Figure S4. Snapshots of the anisotropic growth of **1**-Pr-SWNT at progressively decreasing temperatures from the isotropic melt (Magnification x20).

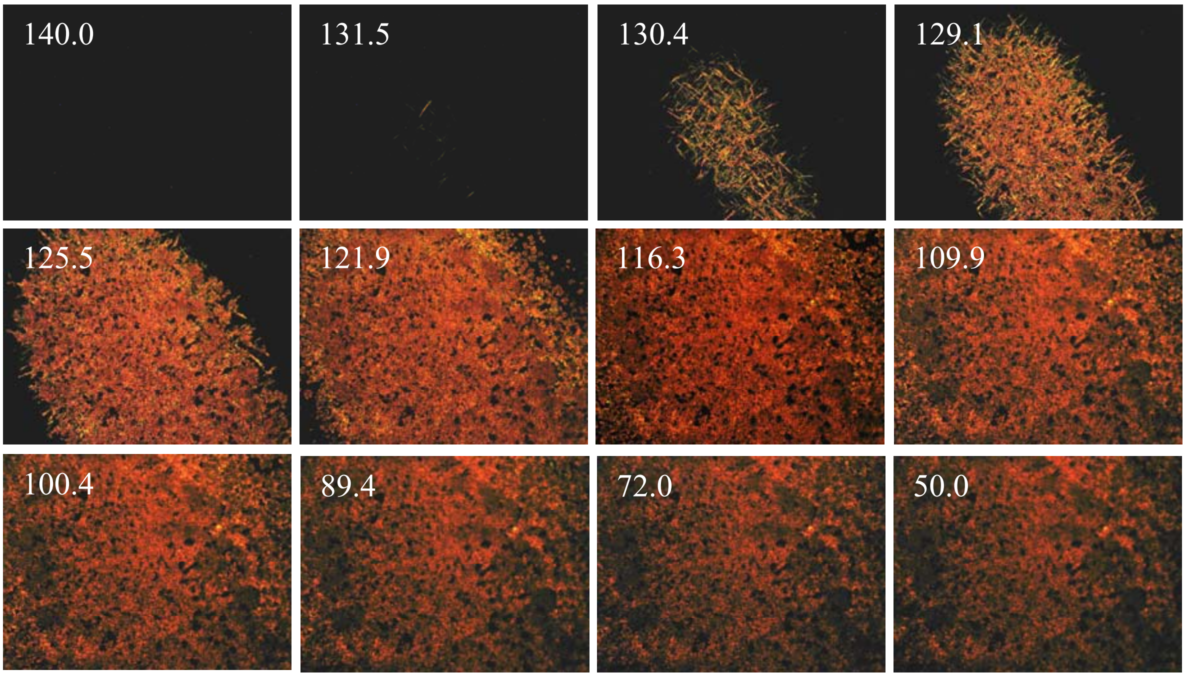

Figure S5. Snapshots of the anisotropic growth of **1**-C_{16}-SWNT at progressively decreasing temperatures from the isotropic melt (Magnification x20).

References.

1. A. Pal, B. S. Chhikara, A. Govindaraj, S. Bhattacharya and C. N. R. Rao, *J. Mater. Chem.*, 2008, **18**, 2593