Supporting information

A biomimetic "polysoap" for single-walled carbon nanotube dispersion

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NMR spectra of polysoap

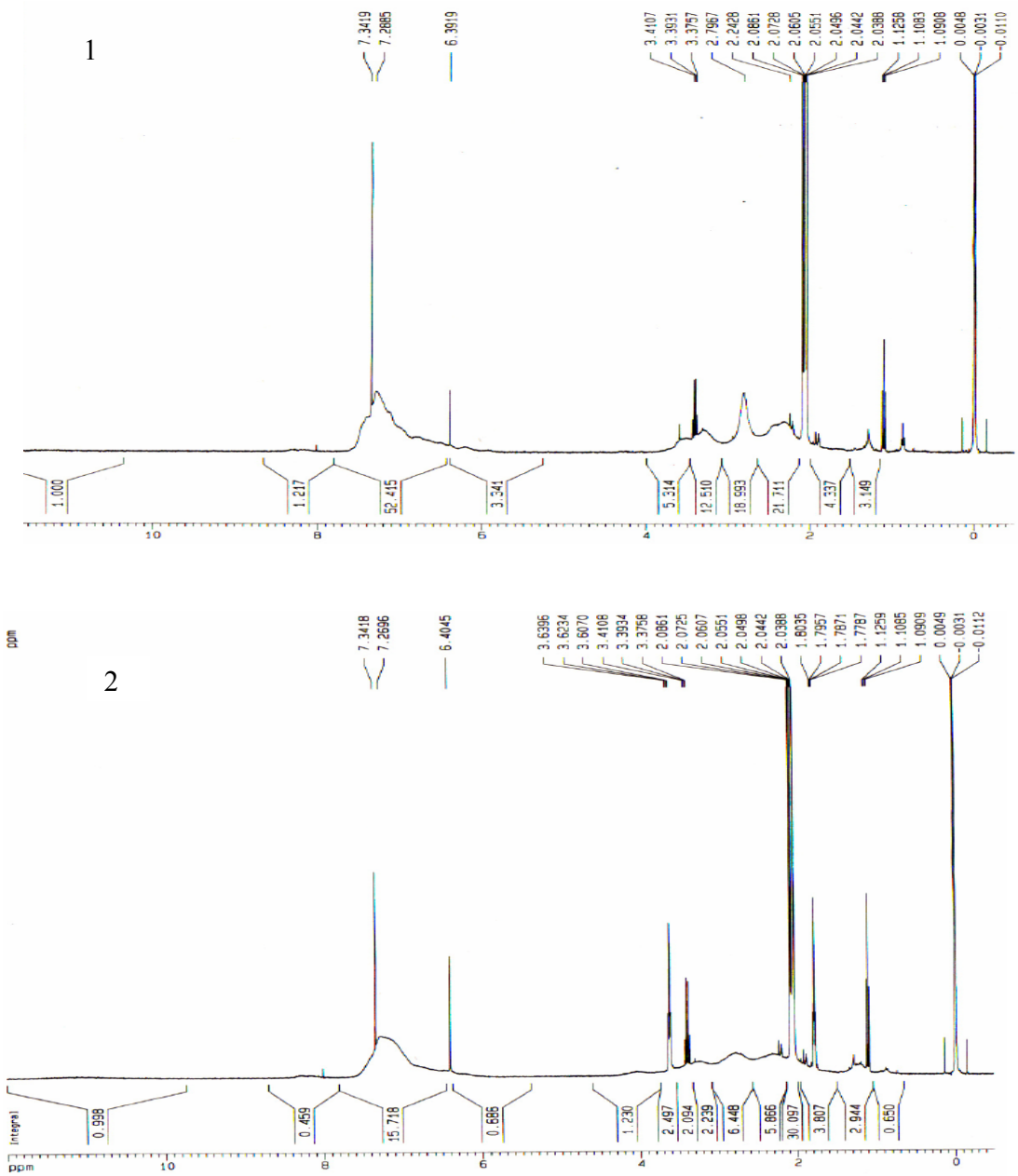


Figure S1: NMR spectra of polysoap 1 (1.15% pyrene) and polysoap 2 (2.30% pyrene)

Absorption spectra of polysoap:

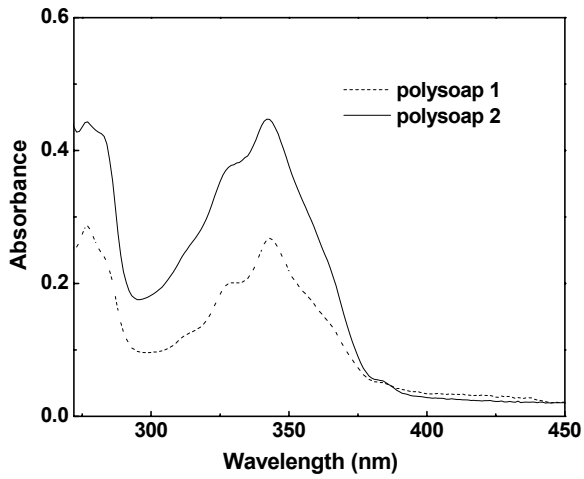
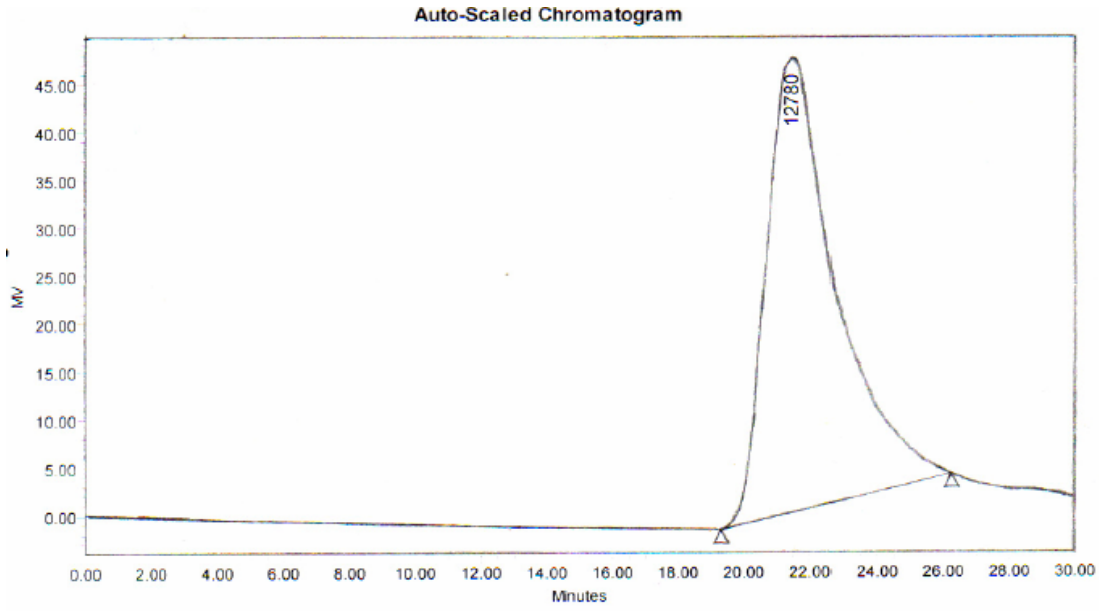


Figure S2: UV-Vis spectra of 0.4 mg polysoaps in 1ml 0.1 M NaOH solution. polysoap1: pyrene side chain content 1.15%; polysoap 2: pyrene side chain content 2.30%.

GPC characterization of PSMA



GPC Results

	Dist Name	Mn	Mw	Mv	MP	Mz	Mz+1	Polydispersity	K	alpha	% Area
1		8436	11268		12780	13752	15856	1.335645			100.00

Figure S3: GPC characterization of PSMA

Solubility of SWNT in polysoap

We compare the solubility of SWNT in different surfactant solutions using absorption spectra. HiPCO SWNTs are sonicated in 1mg/ml solution of three surfactants: polysoap, ssDNA and SDS, at ~5W for 90 min and then centrifuged for 90 min at 13000 rpm. The results show that the solubility in polysoap solution is about 1.3 times that in ssDNA and about 5 times that in SDS.

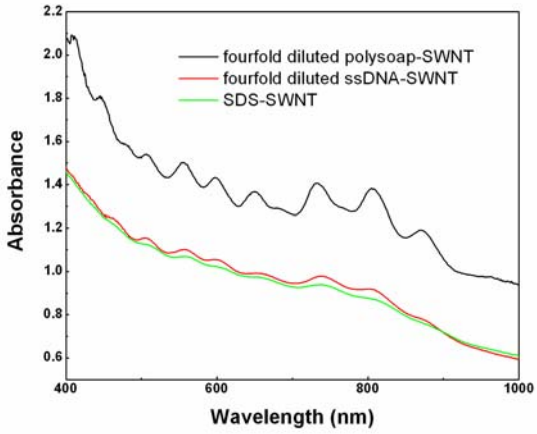


Fig. S4. Absorption spectra of SWNT saturated in 1mg/ml polysoap, ssDNA and SDS solutions.

AFM images of SWNT-polysoap complexes and bare SWNTs

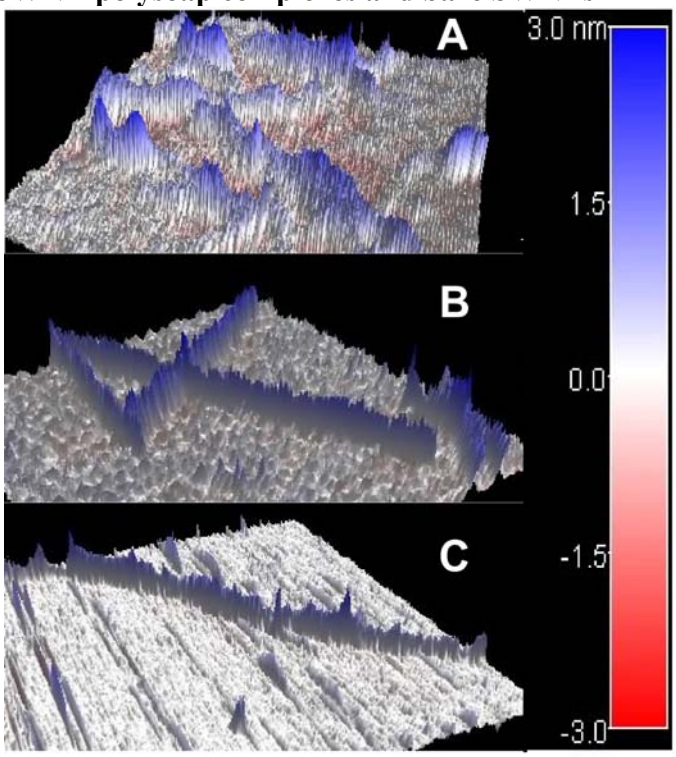


Fig. S5. AFM images of (A) SWNT-polysoap on mica, (B) CVD SWNT on Si wafer, and (C) small bundles of SWNT on mica. The scan sizes are 1.7 μm in (A), 4μm in (B) and 1μm in (C). The height color scales are identical for all frames.

Shown in Fig. S5 are the comparison between SWMT-polysoap complexes and bare SWNTs in 3D representation. Fig. S5 (A) is another image of SWNT-polysoap complexes on mica. The sample preparation and imaging conditions are the same as that for the Fig. 2. Fig. S5 (B) shows CVD synthesized SWNTs on Si wafer and Fig. S5 (C) shows small bundles of the HiPCO SWNT on mica substrate. The HiPCO material was sonicated at ~ 5W in N-methyl pyrrolidinone for 30 min. Due to the poor solubility of SWNT, no individually dissolved SWNT could be found. Fig. S5 (B) and (C) demonstrate that the surface roughness of bare SWNTs is comparable to that of the background but the SWNT-polysoap complexes have much more significant surface corrugation.