Supplementary Material

Rheological investigation of single walled carbon nanotubes -induced structural ordering in CTAB solutions

Ofra Ben- David[a], Einat Nativ-Roth[a,b], Rachel Yerushalmi – Rozen[a,b*] and Moshe Gottlieb[a,b]*

a. Department of Chemical Engineering, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel

b. Ilze Kats Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel

* rachely@bgu.ac.il, mosheg@cs.bgu.ac.il

1.The concentration of the two phases comprising the CTAB-SWNT aqueous dispersions

In a previous study we investigated the spontaneous de-mixing of the ternary SWNT–CTAB–water system into two coexisting phases at CTAB concentrations 5 wt% < C_{CTAB} < 22wt%. Using Small angle X-ray scattering (SAXS) we found that the scattering curves of the upper (SWNT lean) phases comprising of the ternary system is similar to that of the native CTAB solution of a similar concentration. The detailed study is presented in reference 7 of the current publication (Fig.1, E. Nativ-Roth, R. Yerushalmi-Rozen and O. Regev *SMALL* 2008, **4**, 1459-1467.).

2. SWNT –induced structural ordering

SWNT-induced structural ordering of CTAB assemblies is clearly observed in Fig.1(c) below. While the presence of SWNT induces the formation of elongated CTAB micelles at concentrations well below the native transition, the presence of MWNT Fig 1(A) or carbon black Fig. 1(B) fails to do so.

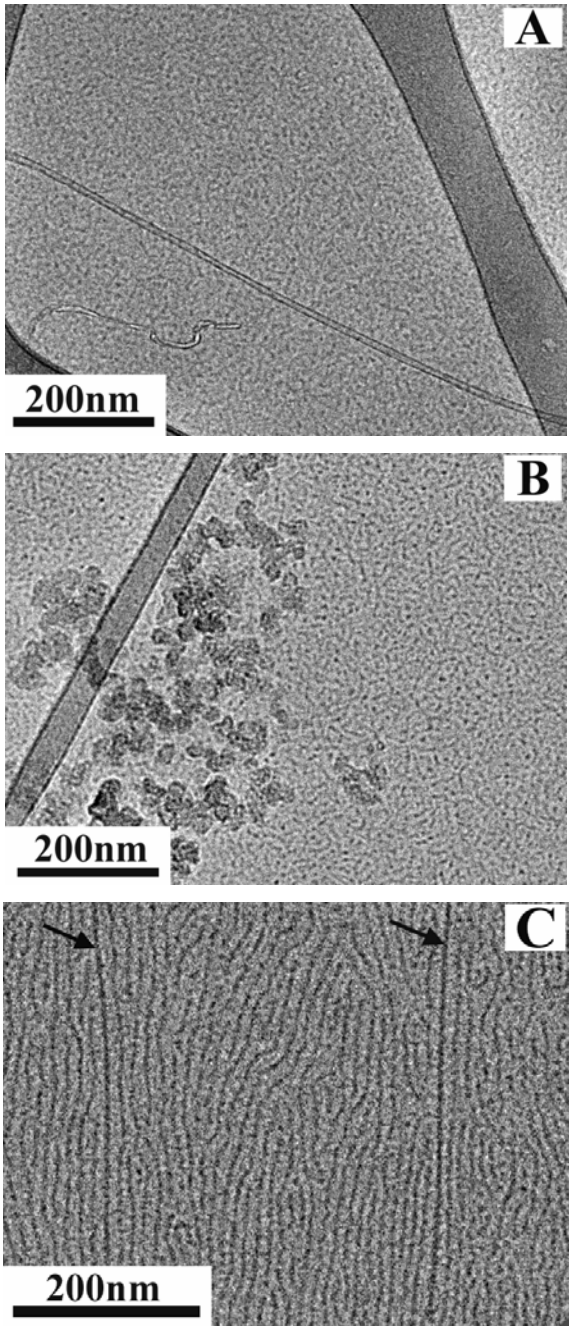

Fig. 1 Cryo-TEM images of CTAB dispersions (15 wt%) and 0.1 wt% of A) MWNT, B) CB and C) SWNT. Scale bar 200 nm. Arrows point at SWNT.