Length fractionation of boron nitride nanotubes using creamed oil-in-water emulsions

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Supporting Information

Figure S1. A pictorial depiction of a three-step BNNT fractionation scheme starting with: (a) adding an oil layer on top of a well-dispersed aqueous suspension of BNNTs stabilized by the Tween 20 polymer, thus forming a two-layered mixture; (b) homogenization by sonication to produce a single emulsion phase; and finally (c) emulsion creaming induced by low-speed centrifugation at a low temperature (4^{o}C).

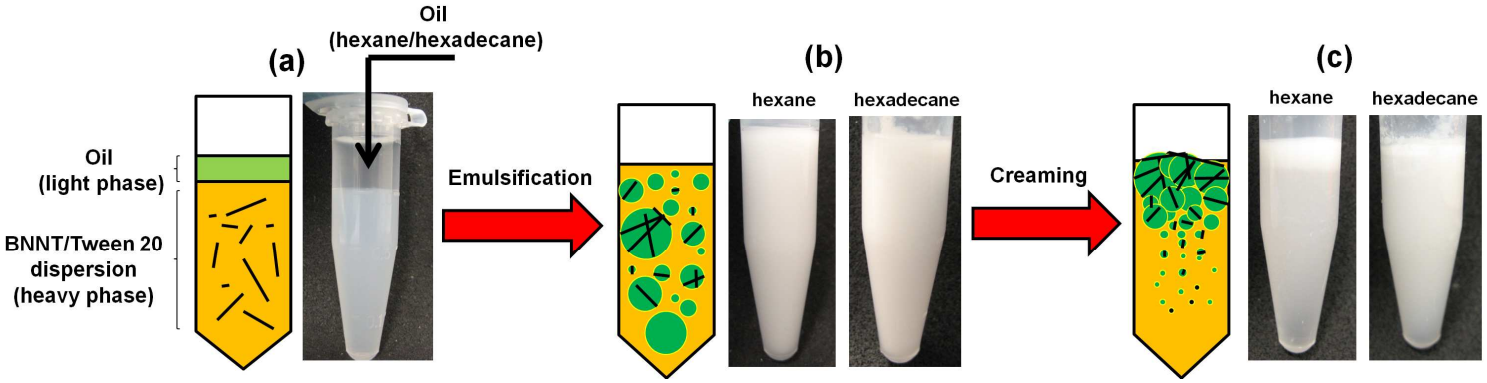

Figure S2. (a) A high-resolution transmission electron micrograph (TEM, Jeol JEM-2100F, 200 kV) of a BNNT, obtained by centrifugation from the original aqueous suspension prior to creaming separation. The arrow points to a uniform wrapping layer of the Tween 20 surfactant on the exterior of the BNNT. (b) A TEM of a BNNT, from F1, after creaming separation and centrifugation against both acetone and water. The arrow indicates almost complete desorption of the surfactant layer at the BNNT surface.

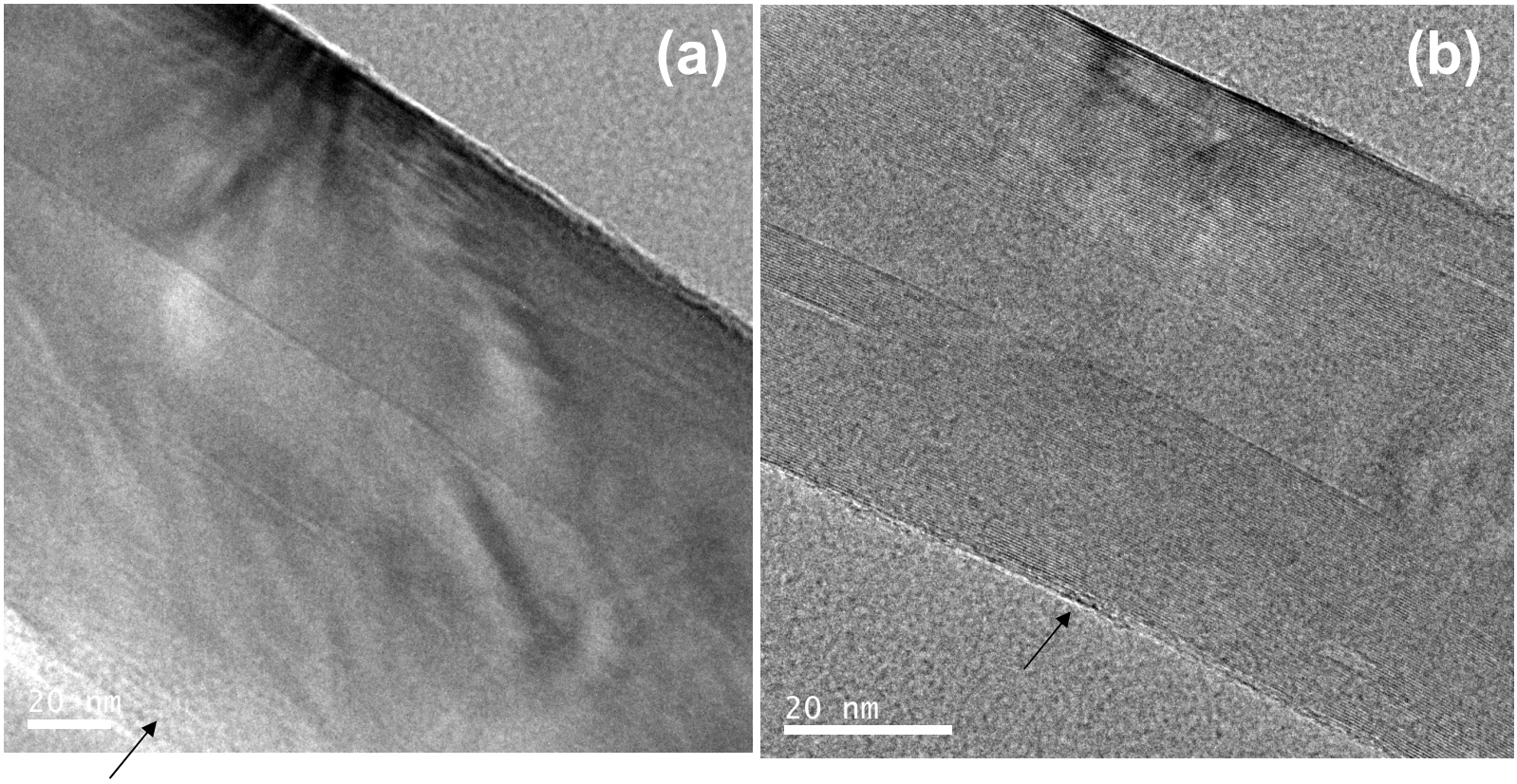

Figure S3. Field-emission scanning electron micrographs (SEM, Hitachi SU8000/S4800, 5 kV) of the three separate BNNT fractions (a) F1 (b) F2 and (c) F3 in accordance with Figure 3, providing further information on the BNNT morphology and confirming the length distribution of the BNNTs in each of the three fractions derived from the OM observations (Figure 3b).