Online Supplementary Material for: Quantification of Carbon Nanotubes by Raman Analysis
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Figure S1. The 1620 cm\textsuperscript{-1} (the CNT ‘G’ peak) Raman intensity of Baytube 150 HP MWCNTs in 1\% Pl F127 (aq) at CNT concentrations of 0, 10, 30, 40, 70, 90, 100, 120, and 130 \(\mu\)g/ml, and ratio of 1620 cm\textsuperscript{-1} Raman intensity to 1452 cm\textsuperscript{-1} surfactant peak intensity.

Figure S2. ‘D’ peak areas of Baytube 150 HP MWCNTs, Arkema MWCNTs, and 5-Helix SWCNTs in 1\% Pl-127 (aq) at concentrations of: 0.1, 0.5, 1, 2, 4, 6, 8, 10 \(\mu\)g/ml in sealed capillary tubes. Peaks less
than 2 µg/ml failed to resolve above a signal-to-noise ratio threshold of 2 in some cases. Standard error over three measurements is shown.

To present samples to the instrument in a more uniform manner, and to reduce sample volume, dispersions of three different CNT samples (two multi-walled, one single-walled) were sealed in glass capillary tubes for analysis. Scattering intensity peak areas (Fig. S2) corresponding to the ‘D’ peaks show only poor correlation across the sub-10 µg/ml concentration range and higher variance. Peaks for concentrations below 2 µg/ml failed to resolve with a signal-to-noise threshold ratio of 2, in most cases. Variance in the surfactant peak at low CNT concentrations, and the lower total mass presented in the capillary tube, preclude detection at these levels. The reduction in total mass presented for analysis in the capillary tube likely exacerbates problems resulting from examining concentrations near the LOD, while eliminating the confounding influence of sample absorption.

![Figure S3](image)

*Figure S3.* 400 x 400 micron map grids overlaying two quartz fiber filters with collected SMW100 MWCNTs (SWeNT).

Quartz-fiber filters were mapped by raster scanning, evaluating each point by Raman for the presence of CNTs using a simple binary heuristic. For each filter, three 0.16 mm² (400 x 400 µm) Raman maps were produced starting from random positions. Figure S3 shows single map area for two 25-mm filters onto which CNT aerosol was collected. The total area mapped (0.48 mm²) for each 25-mm filter represents approximately 0.1% of the total sample collection area (approximately 415 mm²). The number of surveyed areas at which CNTs were present was determined by a peak identification algorithm.²⁷
Figure S4. Individual spectrum from mapping measurement, graphitic peaks with quartz filter background subtraction (SMW100 MWCNTs [SWeNT]).