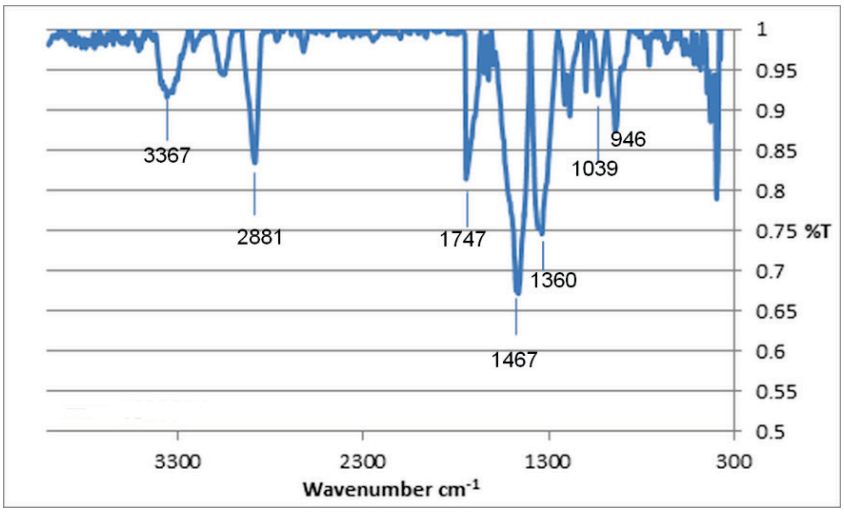
Supplementary Information

1. FT-IR

FT-IR spectra were recorded on an FT-IR Tensor 27 spectrometer (Bruker) using ATR.

Figure S1 displays the FT-IR spectrum of carboxylated WS_2 INTs with peaks of interest marked. The peaks can be assigned as follows (wavenumbers ν in cm^{-1}). 3367, O-H stretch; 2881, C-H stretch; 1747, C=O stretch of carboxylic acid; 1467, C-H bend; 1360, C-H rock; 1039, C=S stretch (indicative of covalent attachment to sulfur of the INTs); 946, O-H of carboxylic acid.

Figure S1. FT-IR spectrum of carboxylated WS_2 INTs.

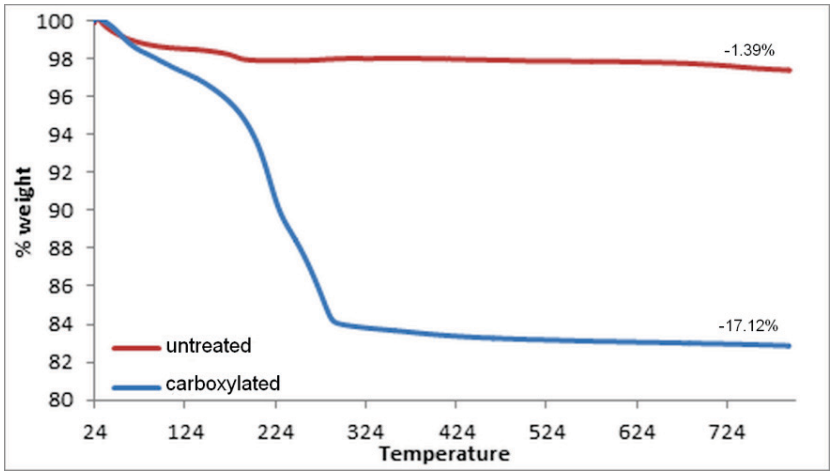


2. Thermogravimetric Analysis

Thermogravimetric analysis was performed on a TA Q600-0348, model SDT Q600 (Thermofinnigan) using a temperature profile of 25–800 °C at 10 °C/min under N_2 flow (10 mL/min) with sample masses ranging from 5-12 mg.

The TGA analysis of the inorganic nanotubes before and after carboxylation is displayed in Figure S2. Weight losses were 1.39% and 17.12% for the untreated and carboxylated WS_2 INTs respectively, indicating that organic material is attached to the surface of the treated nanotubes.

Figure S2. TGA plots of WS_2 INTs.



3. Zeta Potential

Nanoparticle surface charge (ξ potential) was determined using a Zetasizer Nano-ZS (Malvern Instruments Ltd. Worcestershire, UK) in water at 25 °C and 150 V. Dispersions were prepared with an ElmaSonic S30 sonicator (Elma GmbH & Co., Singen, DE).5 mg of WS_2 INTs or carboxylated WS_2 INTs were dispersed in 15 ml ultra-pure H_2O (resitivity >18 Mohm•cm) by sonication for one minute. The Zeta potential was measured immediately after sonication. The analysis showed -27.8 mV and -17.3 mV for the carboxylated and untreated WS_2 INTs, respectively.