Supporting Information

Sharper and Faster "Nano Darts" Kill More Bacteria: a Study of Antibacterial Activity of Individually Dispersed Pristine Single-Walled Carbon Nanotube

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Figure S1 Characterization of SWCNT samples using various techniques including Raman spectroscopy, TGA, PLE, AFM, SEM and TEM.

Figure S2 Releasing of 260 nm absorbing materials from bacteria after incubating with SWCNT dispersions.

Figure S3 OD growth curves of *E. coli* and *B. subtilis* in LB broth and the Tween-20 saline solution and the impact of a bacterial static agent on the bacterial death rate.

Figure S4 Releasing of 260 nm absorbing materials from bacteria after incubating with SWCNTs obtained after centrifugation at different forces.

Figure S5 AFM images of air dried *E. coli* and *B. subtilis* and typical force-distance curves obtained on glass surface, *E. coli* and *B. subtilis* in air.

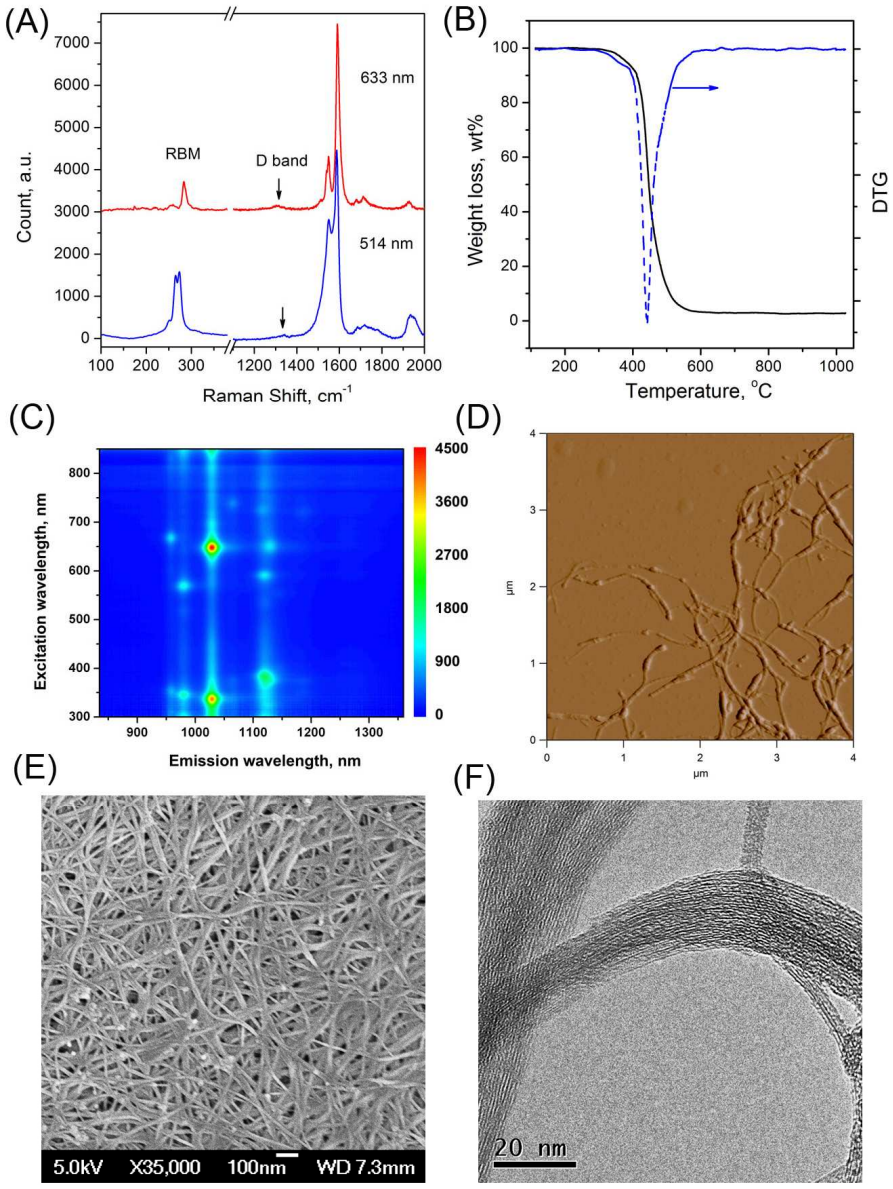

Figure S1. Characterization of SWCNT samples using various techniques: (A) Raman spectra of a solid SWCNT sample under 514 and 633 nm laser excitations; (B) TGA spectra of a solid SWCNT sample; (C) PLE intensity map as a function of excitation and emission wavelength for SC dispersed SWCNTs in D_2O; (D) AFM image of SWCNT bundles dried on a mica surface; (E) SEM image of a SWCNT film composed of tube bundles deposited on a filter membrane; (F) TEM image of SWCNT bundles.

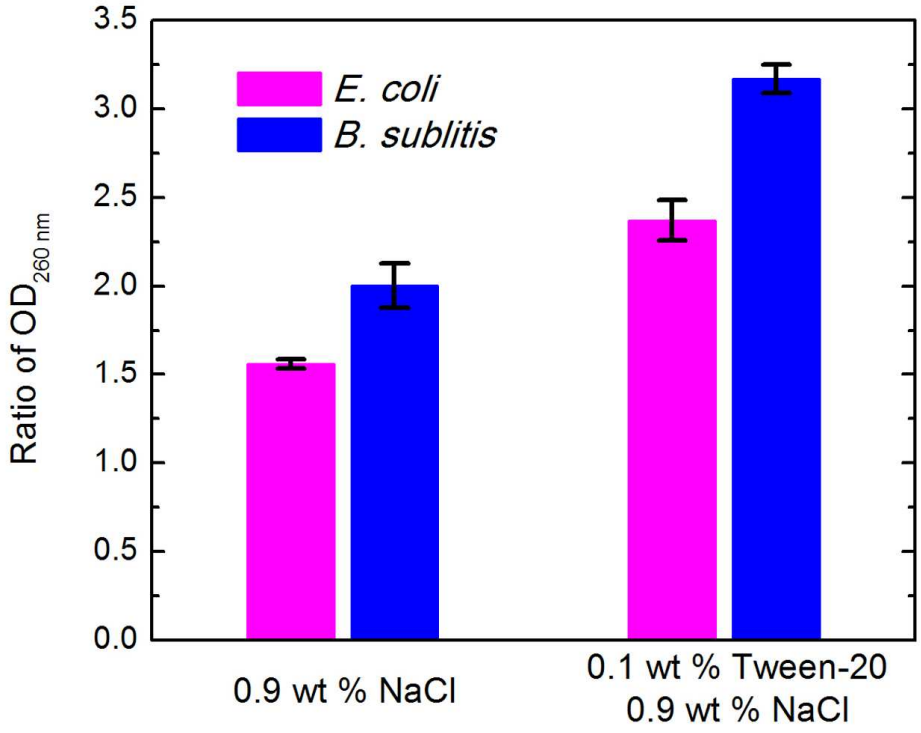

Figure S2. Releasing of 260 nm absorbing materials from bacteria after incubating with SWCNT dispersions. 10 mL of SWCNT dispersion (5 µg /mL) was incubated with 1 mL of different bacterial suspensions (10^6–10^7 cfu/mL) for 2 hours at 250 rpm shaking speeds, and at 37 °C or 30 °C.

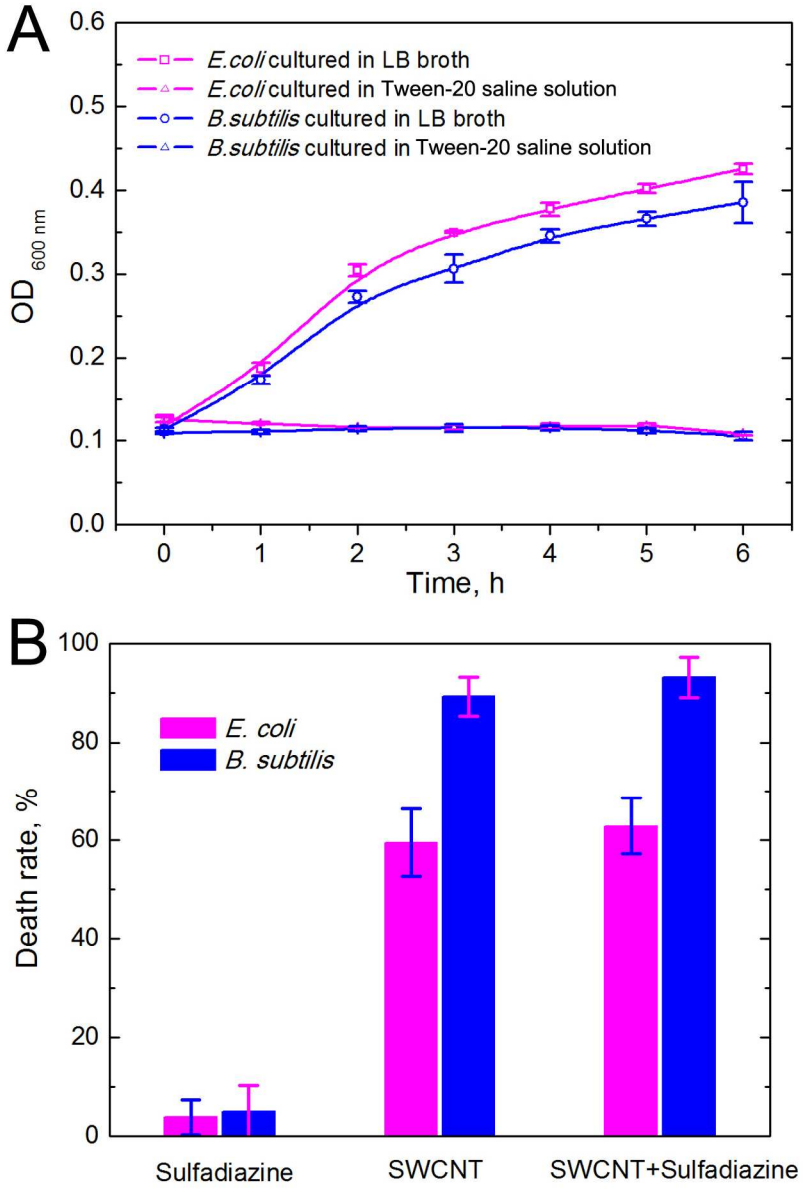

Figure S3 (A) OD growth curves of *E. coli* and *B. subtilis* in LB broth and the Tween-20 saline solution (0.1 wt %Tween-20 and 0.9 wt %NaCl) at 37 ^{o}C or 30 ^{o}C. 100 µL of bacterial dispersions (10^{8} to 10^{9} cfu/mL) were mixed with 900 µL of LB broth or the Tween-20 saline solution. (B) The impact of a bacterial static agent (sulfadiazine at 5 µg/mL) on the death rates of *E. coli* and *B. subtilis*.

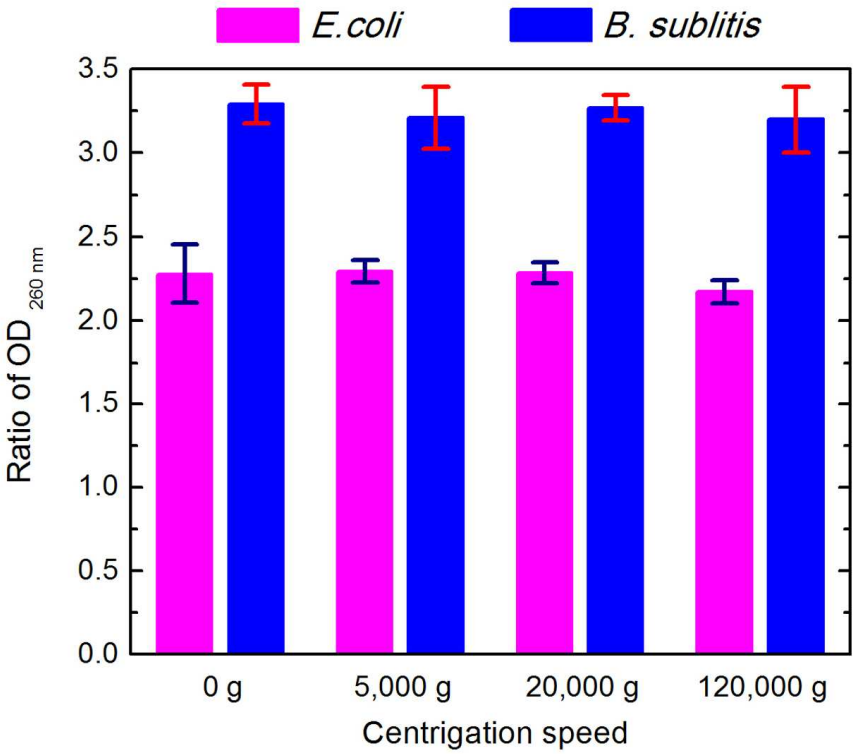

Figure S4 Releasing of 260 nm absorbing materials from bacteria after incubating with SWCNTs obtained after centrifugation at different forces. SEM-EDS results indicated that SWCNT samples marked as "0 g" contained 19.28 at. % Co and samples marked as "120,000 g" contained 0.17 at. %. 10 mL of SWCNT dispersion (5 µg /mL) was incubated with 1 mL of bacterial suspensions (10^6 to 10^7 cfu/mL) for 2 hours at 250 rpm shaking speeds, and at 37 °C or 30 °C.

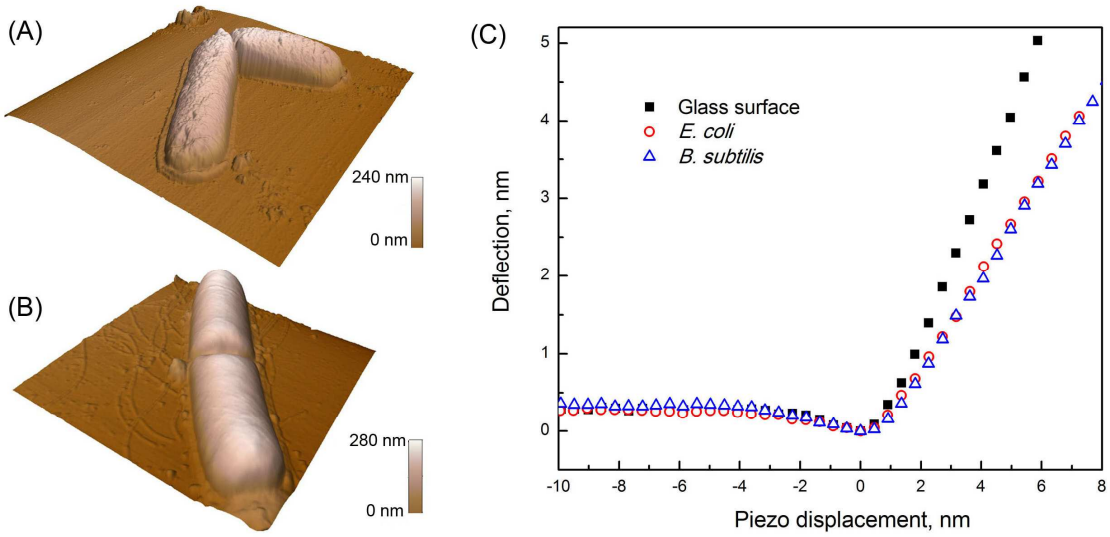

Figure S5 AFM 3D reconstruction images of (A) *E. coli* and (B) *B. subtilis*. 10 μL of washed bacterial suspension were dropped onto glass slides and air drying at room temperature. AFM images were conducted in tapping mode using Silicon probes (NCH from Nano World). (C) Typical force-distance curves obtained on glass surface, *E. coli* and *B. subtilis* in air.