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Supporting Information for

Comparison of chemical, ultrasonic and thermal regeneration of carbon nanotubes for acetaminophen, ibuprofen, and triclosan adsorption

Manuscript to be submitted to *RSC Advances*

11/11/17

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Summary:

8 pages, including title page, 7 figures

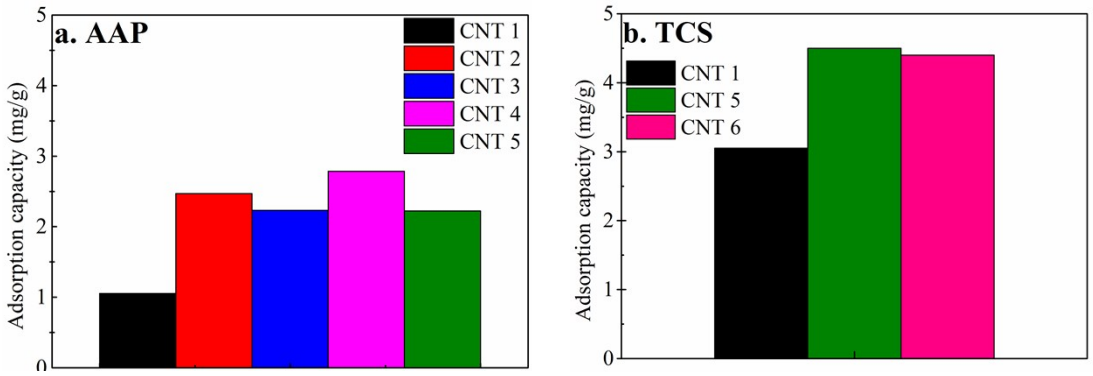

Figure S1. Comparison of the adsorption capacities of different carbon nanotubes for (a) acetaminophen and (b) triclosan. CNT1 was employed in this study for the evaluation of CNT adsorption/regeneration in a relatively short period.

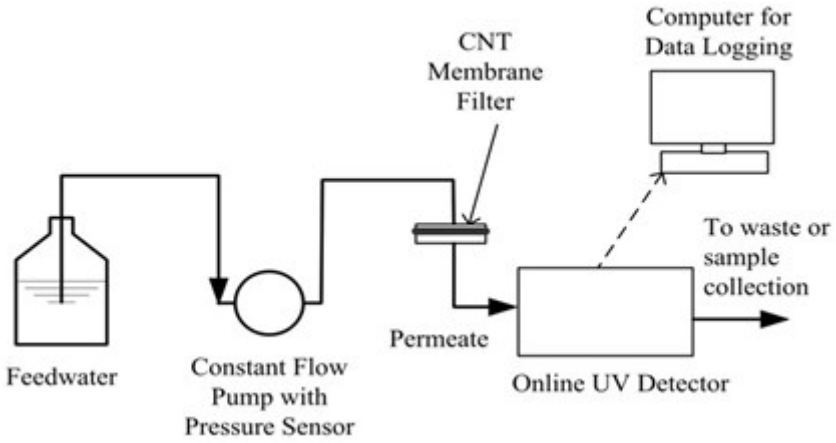

Figure S2. Schematic diagram of the bench-scale filtration system used in the chemical regeneration study.

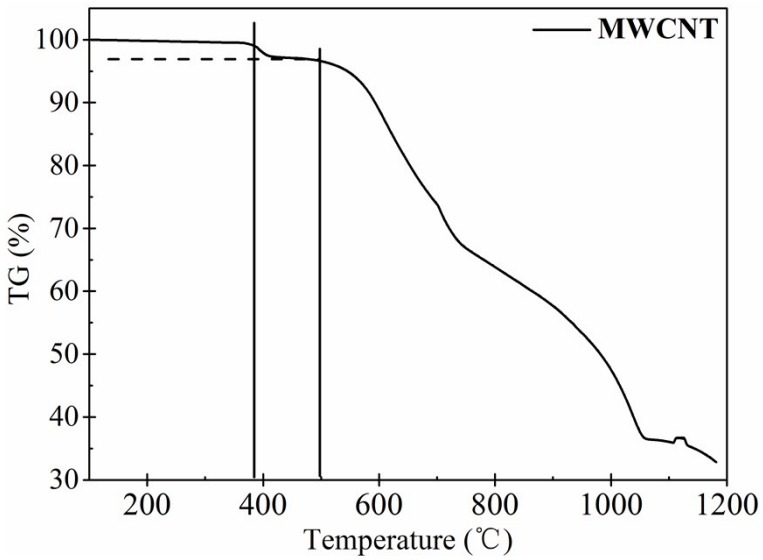

Figure S3. Thermogravimetric analysis of the MWCNT used in this study.

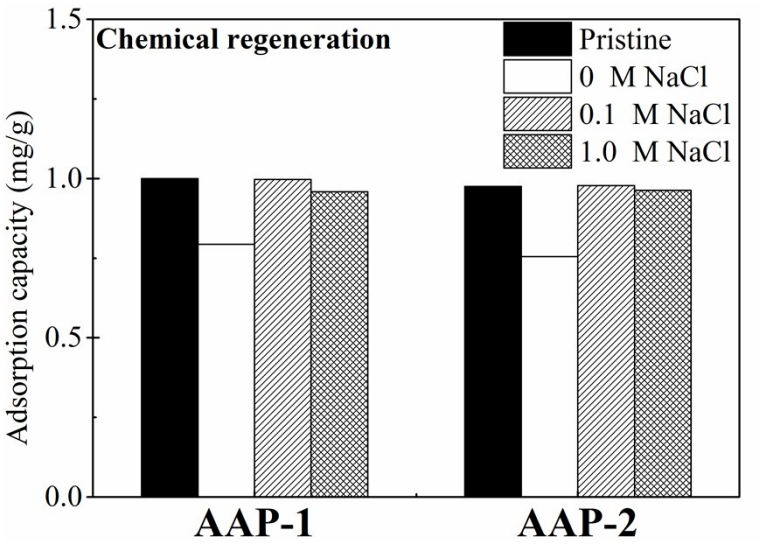

Figure S4. Duplicate experimental runs for AAP adsorption onto the MWCNT chemical regenerated with NaCl solutions of different spiked concentrations. The results indicate that the regeneration efficiency followed the order of 0.1 M NaCl ⩾ 1.0 M NaCl > ultrapure water (0 M NaCl) at the end of 45-min filtration. Feed concentration of each PPCP compound = 1 mg L^{-1}, pH = 7.0, CNT mass = 30 mg, and temperature = 25 ± 2 °C.

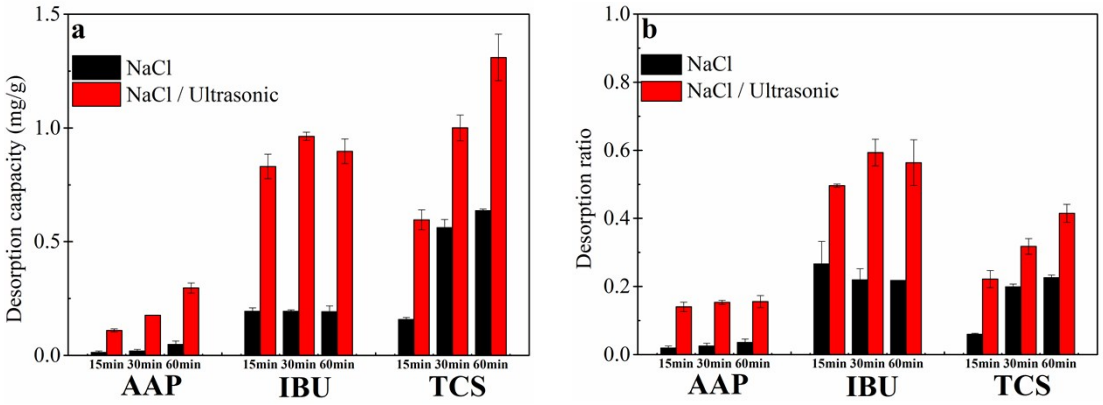

Figure S5. Comparison of (a) desorbed amount and (b) desorption ratio of acetaminophen, ibuprofen and triclosan with/without 15 min to 60 min of ultrasonic treatment. Feed concentration of each PPCP compound = 1 mg L^{-1}, pH = 7.0, CNT mass = 30 mg, temperature = 25 ± 2 °C.

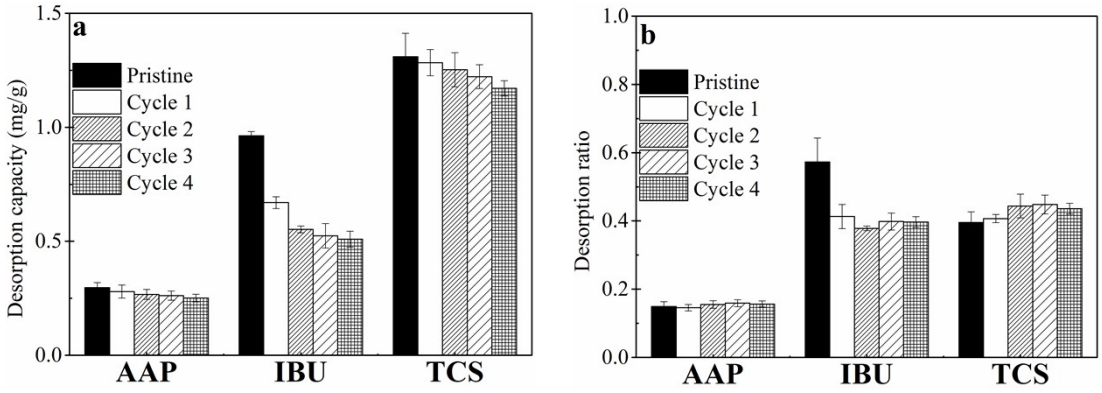

Figure S6. Comparison of (a) desorbed amount and (b) desorption ratio of acetaminophen, ibuprofen and triclosan obtained in five consecutive filtration/regeneration circles with ultrasonic treatment at the pre-determined regeneration time, respectively. PPCP concentration in the feed solution = 1 mg L^{-1}, pH = 7.0, CNT mass = 30 mg, and temperature = 25 ± 2 °C.

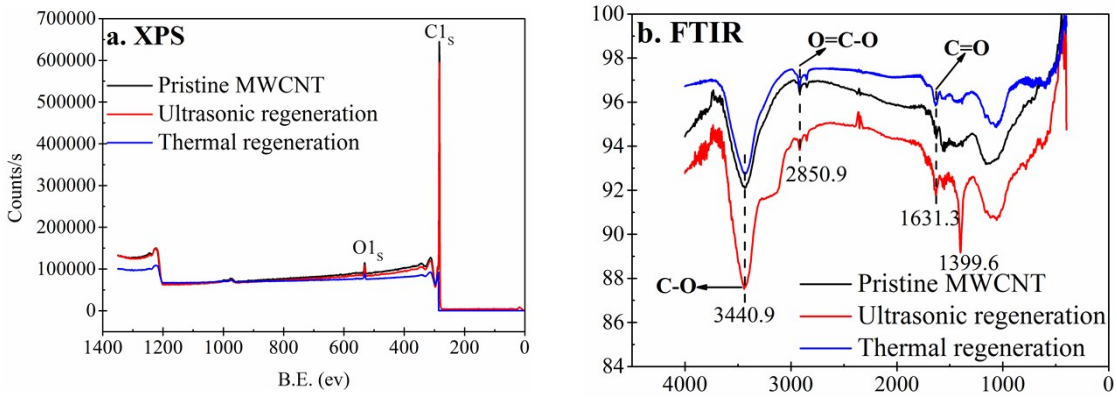

Figure S7. (a) X-ray photoelectron spectroscopy (XPS) and (b) Fourier transform infrared spectrometry (FTIR) results for the pristine and the regenerated MWCNT samples.