

Supplementary Information

Exposing Residual Catalyst in a Carbon Nanotube Sponge

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Supporting Information

Figure S1. More SEM characterization on CNT-Fe₂O₃ sponges (450°C, air, 60 min).

Figure S2. Exposing the residual catalyst in CNT sponges.

Figure S3. Newly grown CNTs from reactivated residual catalyst at different re-grown stages.

Figure S4. TGA results of as-grown and annealed CNT sponges for different periods (corresponding to 8 and 41 particles/μm², respectively).

Figure S5. Pore size distribution of CNT and CNT-Fe₂O₃ sponges based on the Density Functional Theory (DFT) model.

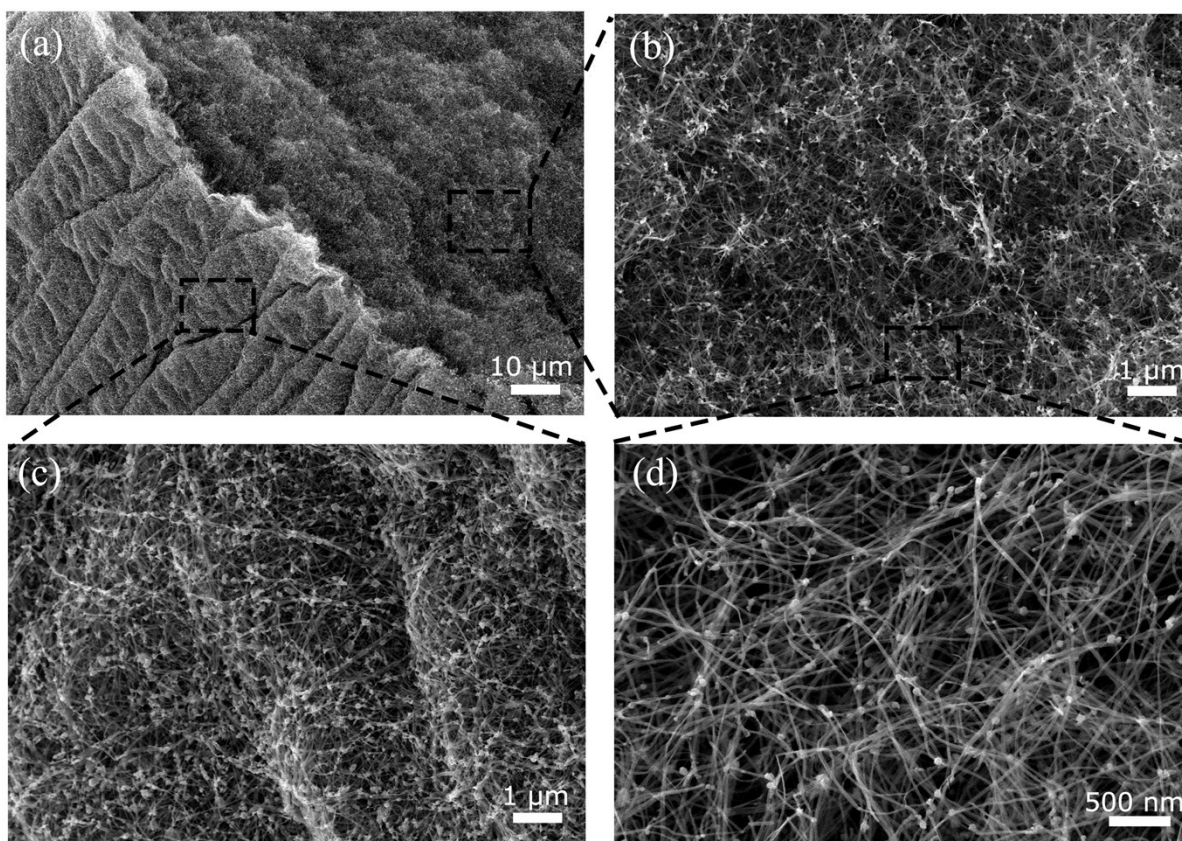


Figure S1. More SEM characterization on CNT-Fe₂O₃ sponges (450°C, air, 60 min). (a) Low magnification image of a bulk sponge showing the side surface (lower left part) and exposed cross-section (top right part). (b) Enlarged view on the cross-section showing uniform dispersion of Fe₂O₃ nanoparticles. (c) SEM image on the surface showing increased density of Fe₂O₃ nanoparticles. (d) High magnification view of (b).

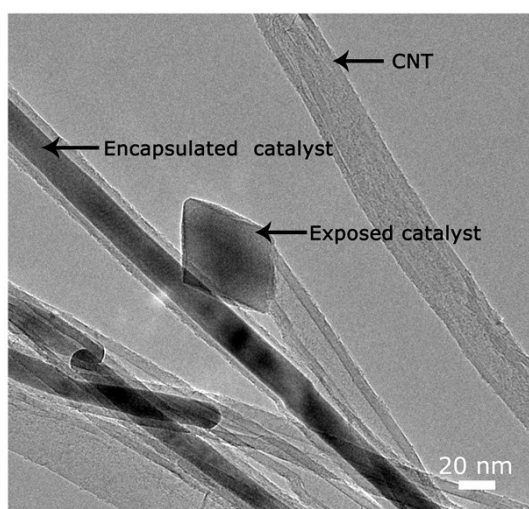


Figure S2. Exposing the residual catalyst in CNT sponges. TEM image of CNT-Fe₂O₃ sponges (800°C, Ar, 30min) showing encapsulated residual catalyst and exposed crystalline particles attached to the ends of CNTs.

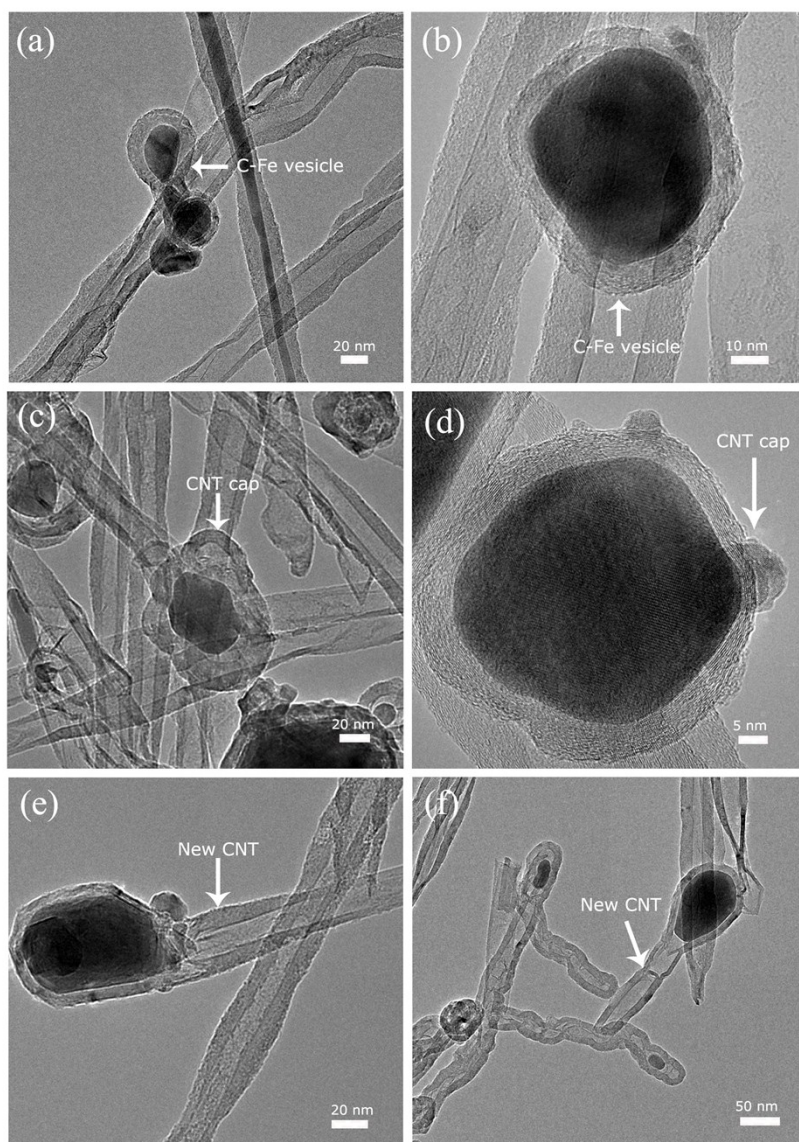


Figure S3. Newly grown CNTs from reactivated residual catalyst at different re-grown stages. TEM images of re-grown CNTs showing (a), (b) particles covered by several graphitic layers, (c), (d) CNT caps grown from nanoparticles and (e), (f) multi-walled structure of new CNTs.

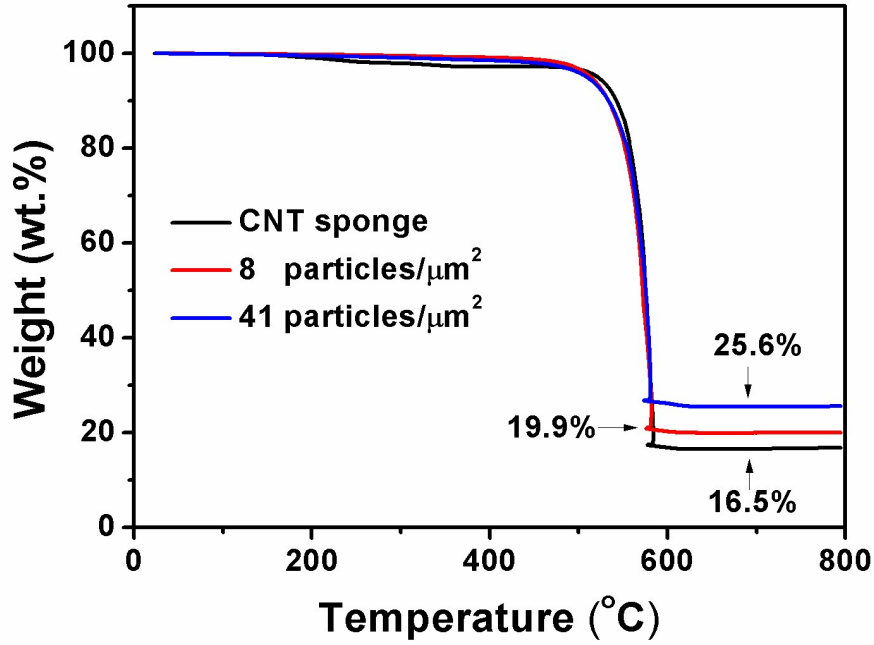


Figure S4. TGA results of as-grown and annealed CNT sponges for different periods (corresponding to 8 and 41 particles/ μm^2 , respectively). Weight loss of samples was recorded in air from room temperature to 800°C.

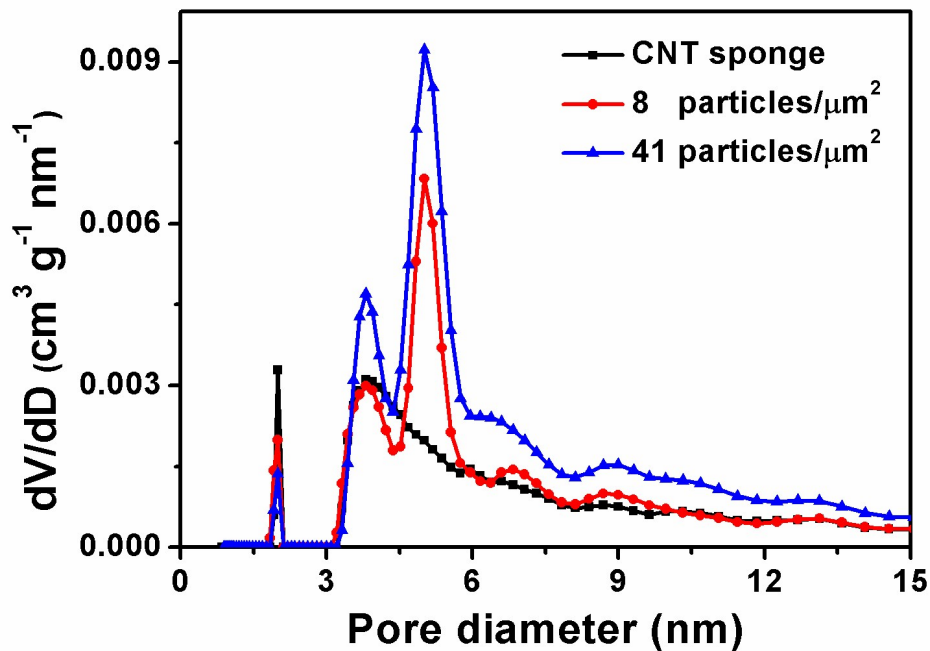


Figure S5. Pore size distribution of CNT and CNT-Fe₂O₃ sponges based on the Density Functional Theory (DFT) model. Samples are CNT and CNT-Fe₂O₃ sponges with exposed nanoparticle average areal densities of about 8 (number of particles enclosed) and 41 particles/ μm^2 .