Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Fabrication of Cross-Linked Carbon Nanotube Foam Using Polymethylmethacrylate Microsphere as Template

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Supporting Information

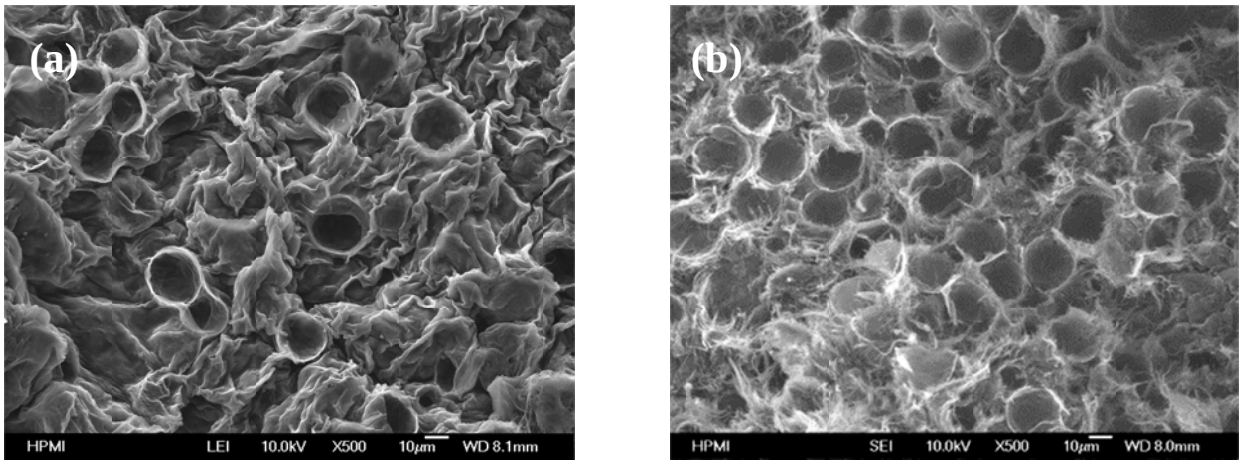

Figure S1. SEM images of CNT foams after heat treatment at 280 ^{o}C. The ratios of CNT to PMMA (CNT/PMMA) are (a) 1/3 and (b) 1/10.

As shown in Figure S1, the porosity of the CNT foam increases with the increase of the amount of PMMA spheres in CNT/PMMA composite.

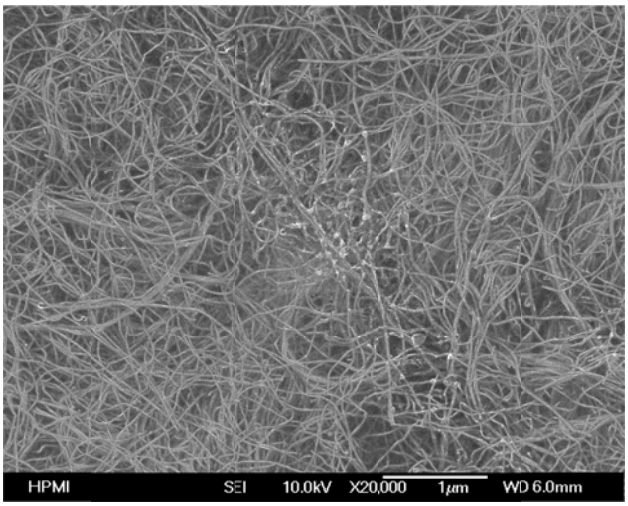

Figure S2. SEM image of the pore surface (cell wall) of the CNT foam.

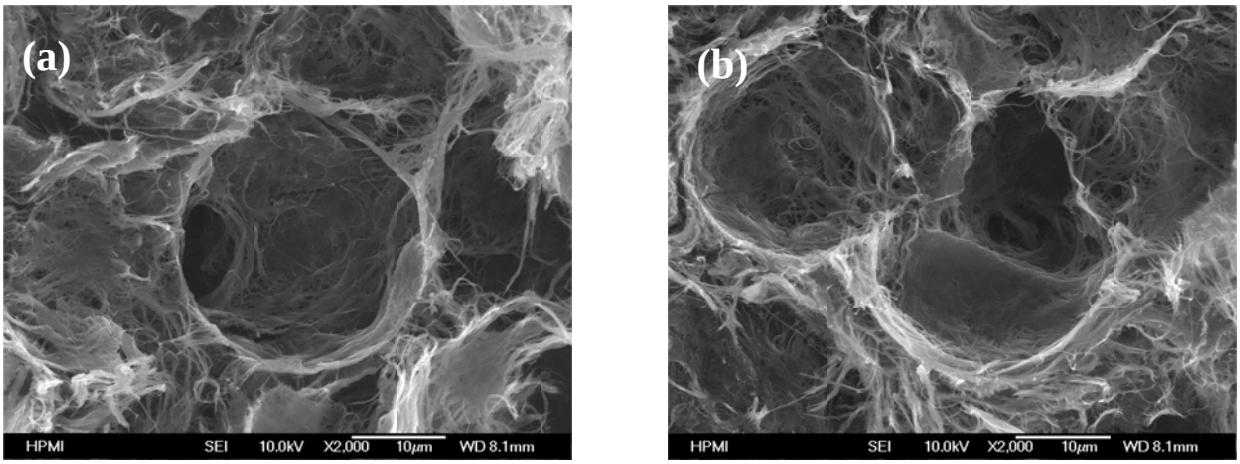

Figure S3. SEM images showing the cross-section morphology and structure of the foam after stabilization at 280 ^{o}C. The CNT/PMMA was 1/10 and PMMA were totally removed.

As indicated in Figure S3, the pores are distributed through out the whole structure of the CNT foam and some of the pores are open cells. These images confirmed that the prepared CNT foams have a contiguous 3D capsule structure.

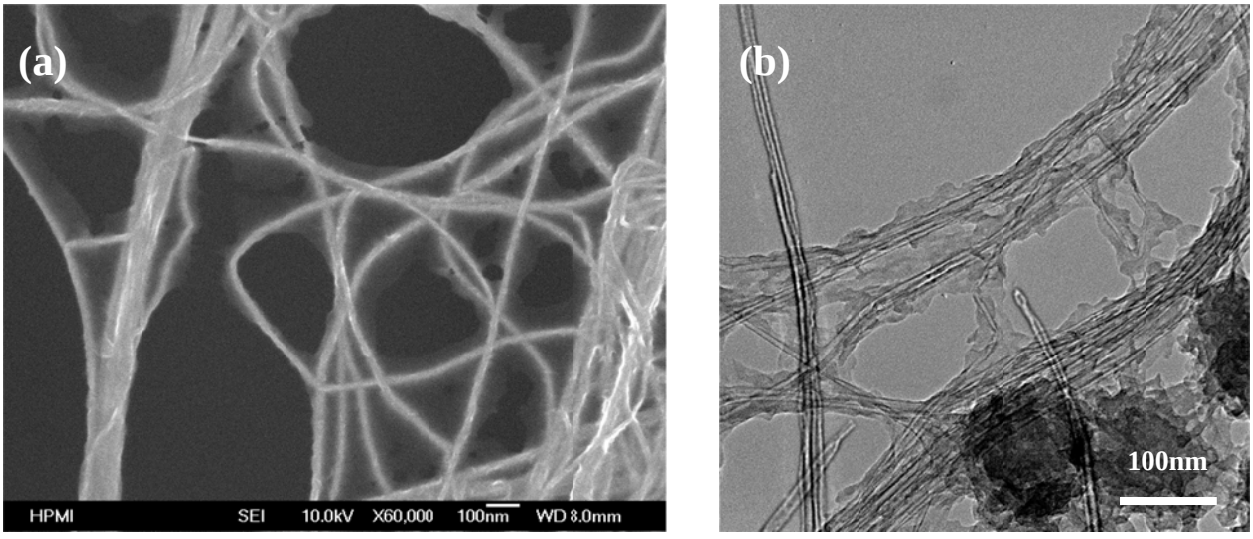

Figure S4. (a) SEM image and (b) TEM image show the structure after carbonization at 1000 °C when the CNTs were coated with PAN at 2.0 mg/mL PAN/DMF concentration.

As shown in Figure S4, the graphitic structures fully cover and connect CNTs after 1000°C thermal treatment when the concentration of the PAN/DMF solution is as high as 2.0 mg/mL. The 'sphere' structures are graphitic structures resulted from the aggregated PAN polymer.