

Supporting Information

Nitrogen-doped Hollow Carbon Spheres Functionalized by 9,10-Phenanthrenequinone Molecules as a High-Performance Electrode for Asymmetric Supercapacitors

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Synthesis of NPCs/AQ.

As the procedure of experiment is following: 5.912g of 2-methylimidazole (MeIm) was dissolved in the 540mL anhydrous ethanol, and then quickly added into the 540mL anhydrous ethanol of 1.976g zinc acetate dehydrate, It was aged 24h under room temperature, anhydrous ethanol was used to wash them after the white precipitates were collected by filtration, then they were directly annealed up to 800 °C under a N₂ atmosphere with ramp rate of 3 °C min⁻¹. The resulting black powers were washed with 1 M HCl solution to remove ZnO nanoparticles, and then washed with deionized water until neutral. They were dried at 70 °C for 24h, and obtained NPCs.

0.04 g NPCs were placed into the 30 mL acetone after ultrasonic dispersion, 0.01 g anthraquinone(AQ) was dissolved in the 30 mL acetone, and then mixed with them. After continually stirred 6h, it was immediately put into an oven until it was dry. Here we got the composite of NPCs and AQ (denote them as NPCs/AQ).

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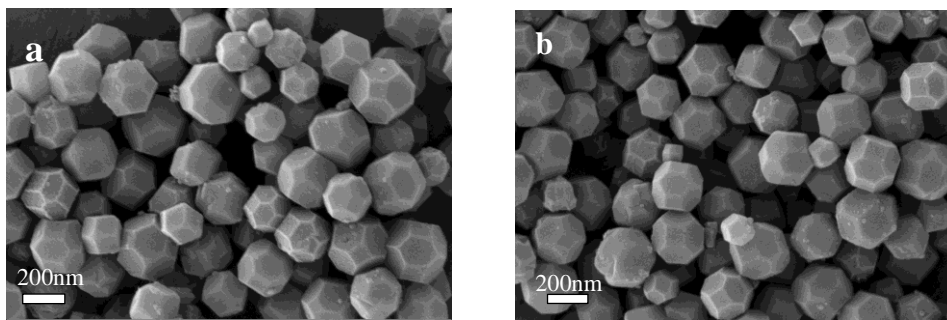


Fig.S1 FESEM of NPCs(a), NPCs/AQ(b)

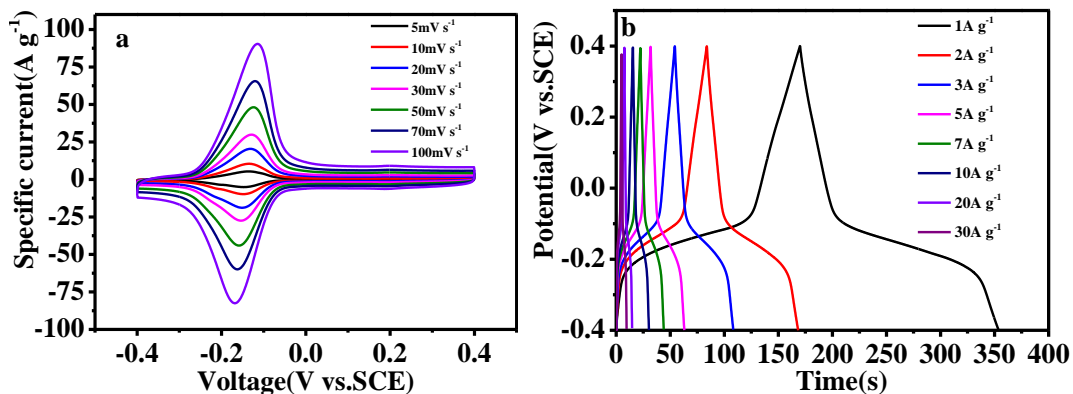


Fig.S2 (a) CV curves of NPCs/AQ in 1 M H₂SO₄; (b) the corresponding discharge specific capacitances of NPCs/AQ at various current density

As shown in Fig.S1, NPCs depicts polyhedra morphology, after adsorbing AQ molecule, these components keep similar morphology with NPCs. Fig. S2 (a) depicts the CV curves of NPCs/AQ electrodes at a fixed potential of -0.4 to 0.4V in 1 M H₂SO₄ as electrolyte. Fig. S2 (b) demonstrates galvanostatic charge–discharge curves of NPCs/AQ at various currents density, the specific capacitance is 223 F g⁻¹ at the current density of 1A g⁻¹.