Electronic Supplementary Information

Solvothermal-induced α-Fe_2O_3/Graphene Nanocomposite with Ultrahigh Capacitance and Excellent Rate Capability for Supercapacitor

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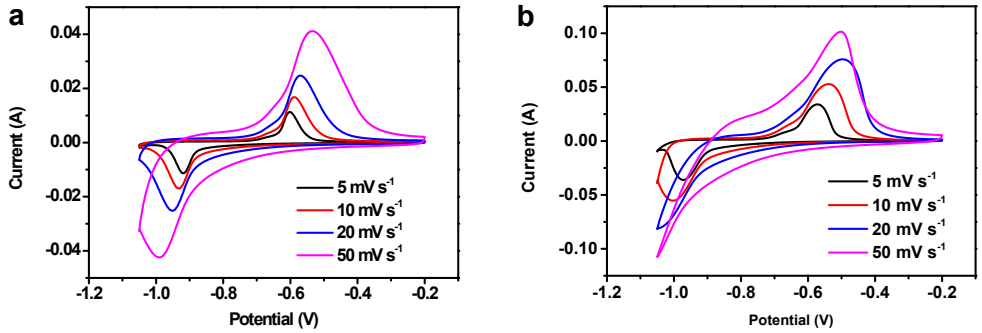

Figure S1. CV curves of the Fe_2O_3/GH-1 (a) and Fe_2O_3/GH-3 (b) composites at different scan rates.

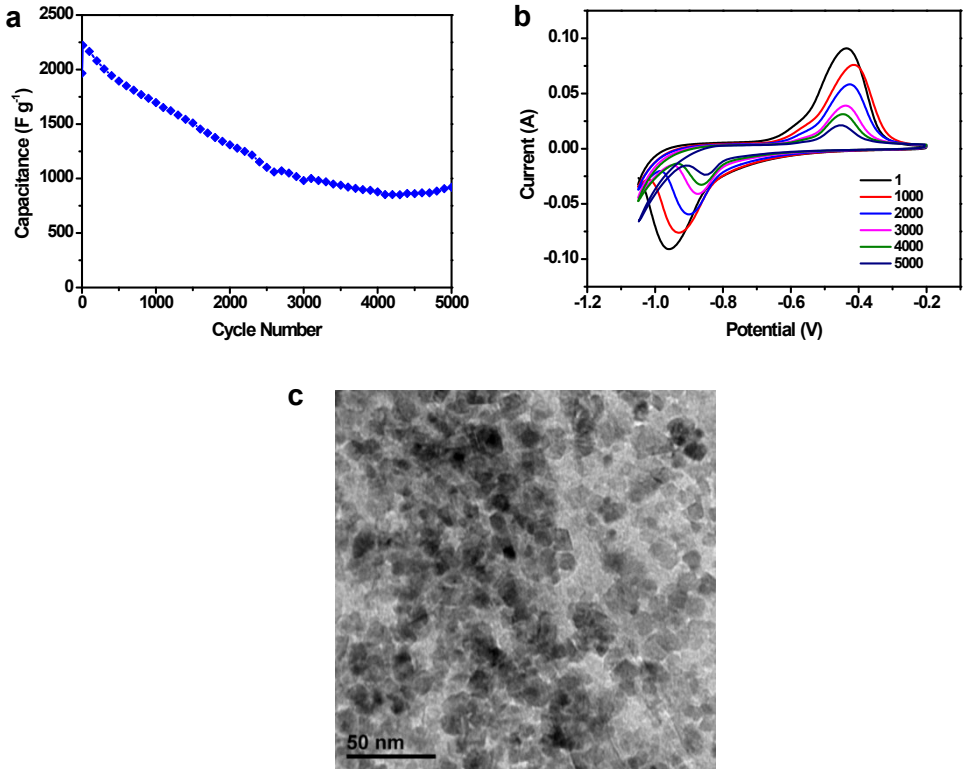

Figure S2. The specific capacitances (a) and the CV curves (b) of Fe_2O_3/GH-2 sample at 20 mV s^{-1} for 5000 cycles. The capacitance retention was 46.8% (920 F g^{-1}). And TEM image (c) of Fe_2O_3/GH-2 sample after 5000 cycles, showing the partially damaged and aggregated Fe_2O_3 particles.

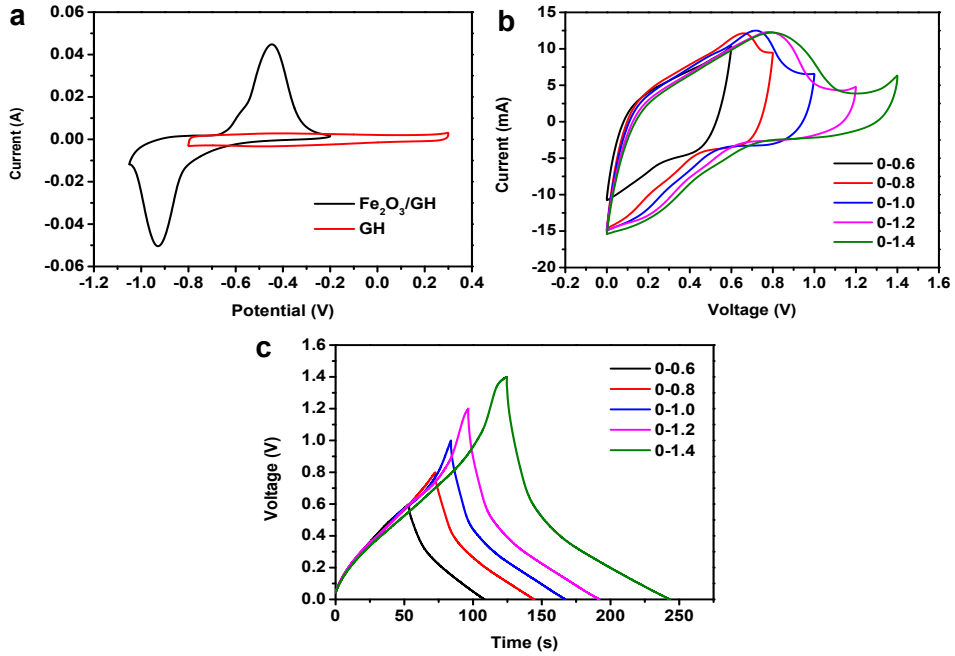

Figure S3. CV curves (a) of the Fe_2O_3/GH-2 composite and GH samples at 20 mV s^{-1} as well as CV curves (b) and galvanostatic charge-discharge curves (c) of the Fe_2O_3/GH//GH ASCs under different voltage windows.

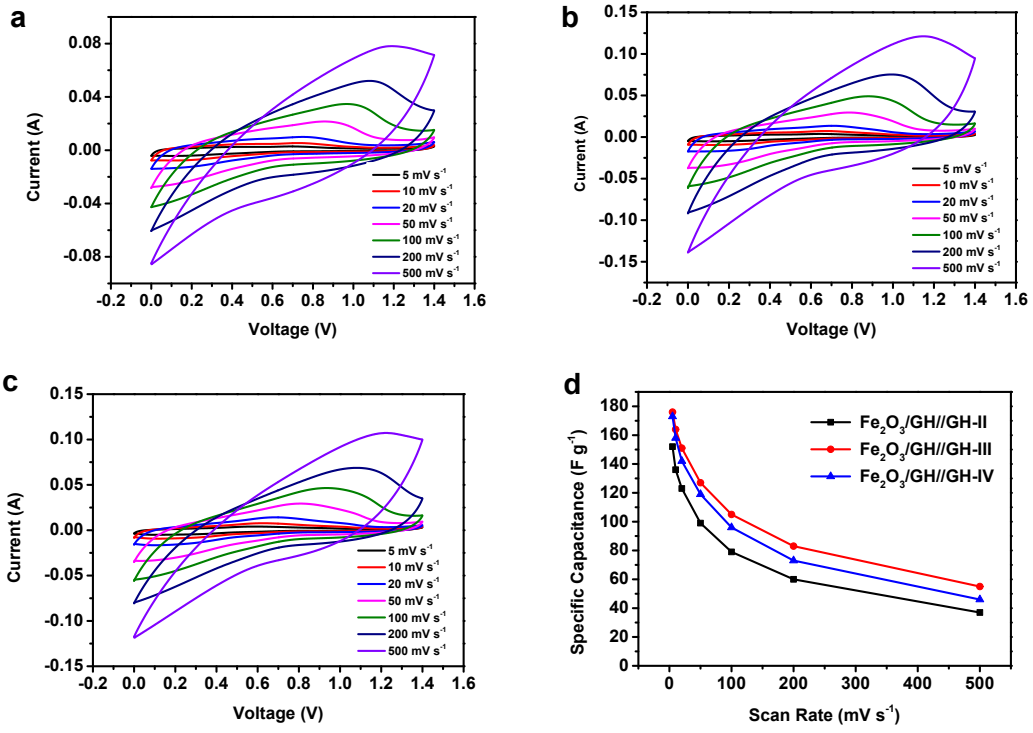

Figure S4. CV curves of the Fe_2O_3/GH//GH-II (a), Fe_2O_3/GH//GH-III (b) and Fe_2O_3/GH//GH-IV (c) ASCs as well as the special capacitance of different ASCs corresponding to different scan rates (d).

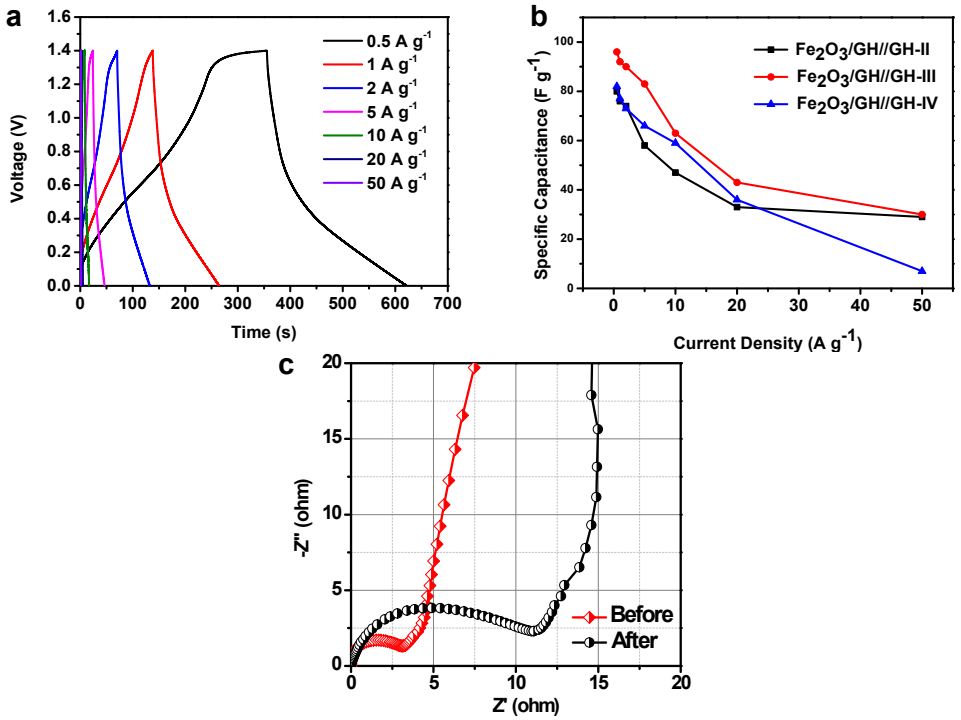

Figure S5. Galvanostatic charge-discharge curves (a) of the Fe_2O_3/GH//GH-III ASC at different current densities (0-1.4 V) and the special capacitance of the Fe_2O_3/GH//GH-III ASC tested at current density of 5 A g^{-1} (b) as well as the EIS analyses (c) of the Fe_2O_3/GH//GH-III ASC before and after 5000 cycles test.

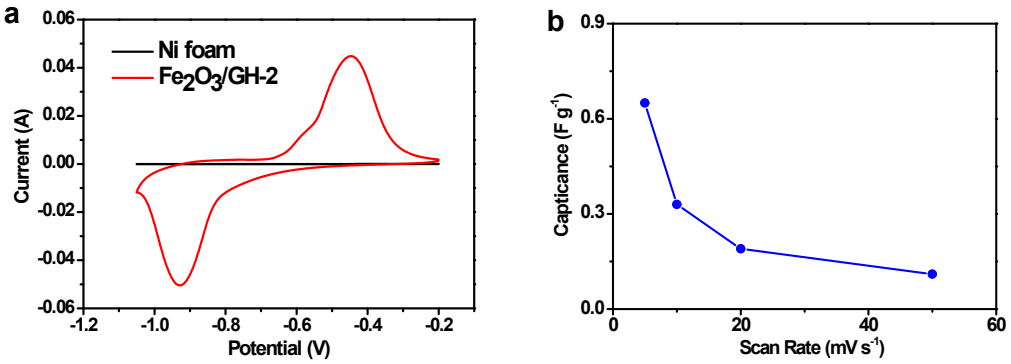

Figure S6. The CV curves (a) of Ni foam loaded with (red) and without (black) active material Fe_2O_3/GH-2 at 20 mV s^{-1} as well as the specific capacitance (b) of Ni foam without active material calculated by CV test. The specific capacitance for Ni foam with the same treatment was 0.065 F g^{-1} at 5 mV s^{-1}, while the value was 2310 F g^{-1} for the sample-loaded electrode. Considering the different mass of Ni substrate (about 72 mg) and Fe_2O_3/GH-2 sample (about 1 mg), the capacitance values came to 4.7 mF and 2310 mF, respectively. It is obvious that the effect of Ni foam on capacitance is negligible.