

Supporting Information

Graphene-based 3D Composite Hydrogel by Anchoring Co₃O₄ Nanoparticles with Enhanced Electrochemical Properties

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10 SI-1. Electrochemical Measurement with a two-electrode system

The electrochemical measurements of as-obtained products were conducted using a two-electrode system for comparison.

The detail procedure of experiment is as following: First, the water of prepared Co₃O₄/graphene hydrogel (CGH) composites was exchanged with 6 M KOH electrolyte for 2 h before tests. Then two
15 pieces of CGH were attached on platinum foils, the symmetry parts were assembled with a neutral paper sandwiched between the hydrogel. A platinum wire was clipped onto the foil by a clip at the end of each platinum foil, which was connected with CHI 660B for CV and galvanostatic charge-discharge measurements between 0 V and 1 V. The specific capacitance, energy density and maximum peak power density of the electrodes were calculated according to the equation reported previously^[1].

20 SI-2. Additional electrochemical data of CGH and GH with a two-electrode system

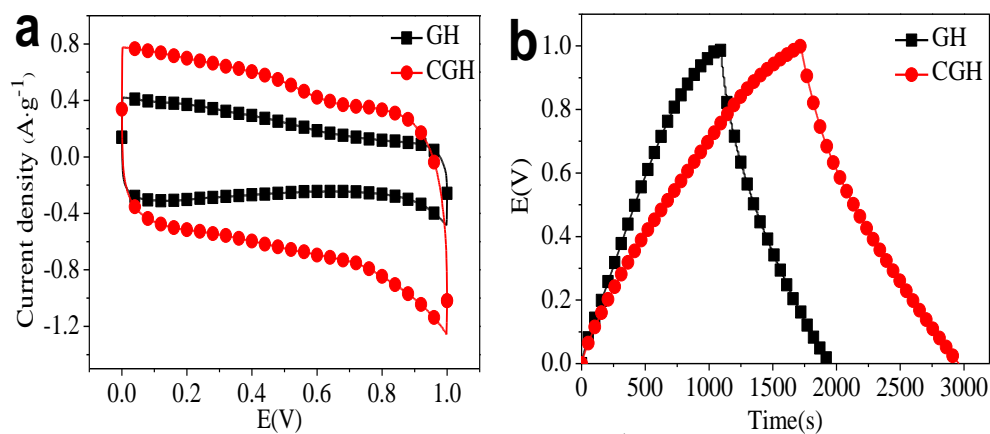


Figure S1 (a) CV measurements of CGH and GH at 5 mV·s⁻¹; (b) Galvanostatic charge/discharge tests of CGH and GH at 0.5 A·g⁻¹.

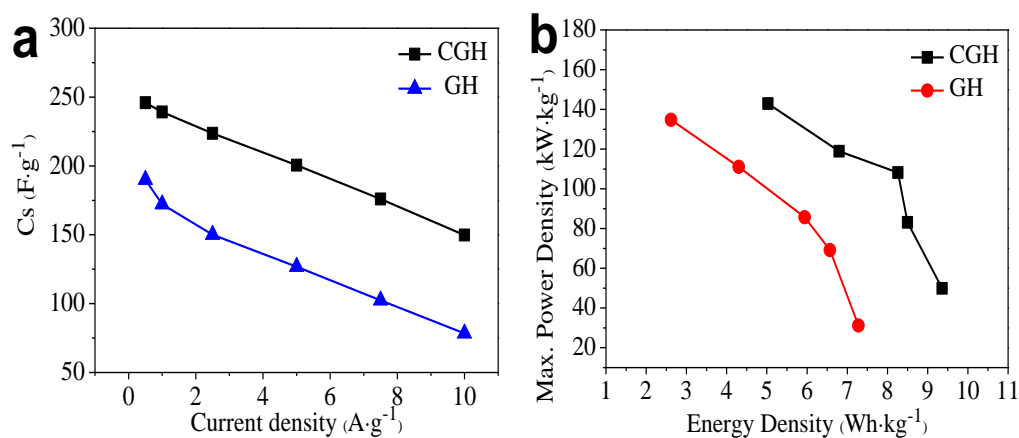


Figure S2 (a) Gravimetric capacitances of CGH and GH measured at various current densities; (b) Ragone plots of CGH and GH.

SI-3. Nyquist plots of CGH, Co₃O₄ and GH with a three-electrode system

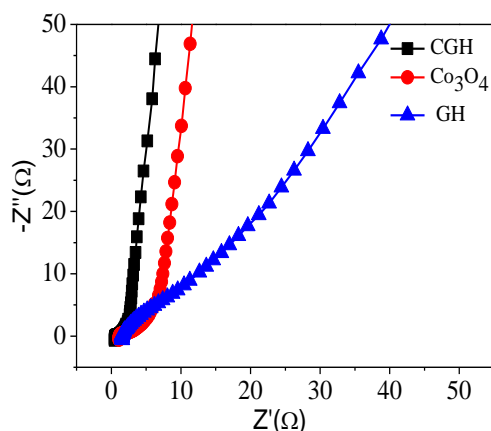


Figure S3 the Nyquist plots of CGH, Co₃O₄ and GH.

References

- [1] X. W. Yang, J. W. Zhu, L. Qiu, D. Li. *Adv. Mater.*, 23 (2011) 2833–2838.