

Electronic supplementary information

Self-discharge of active electrolyte enhanced supercapacitor: Mechanism and Solutions

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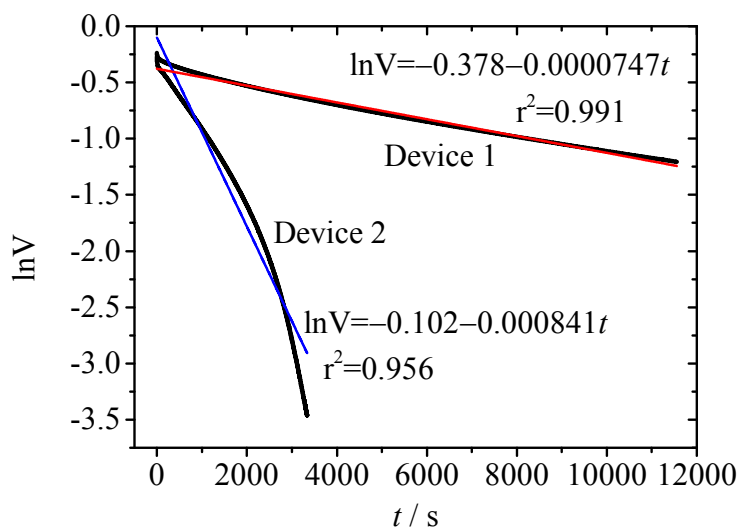


Fig. S1. Fitting of SDC curves of Device 1 and Device 2 to Eqn. 5.

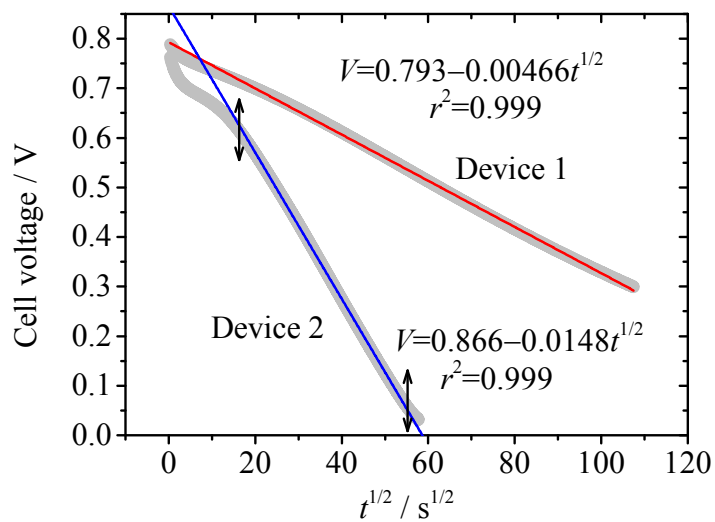


Fig. S2. Linear fitting of cell voltage versus square root of SDC time.

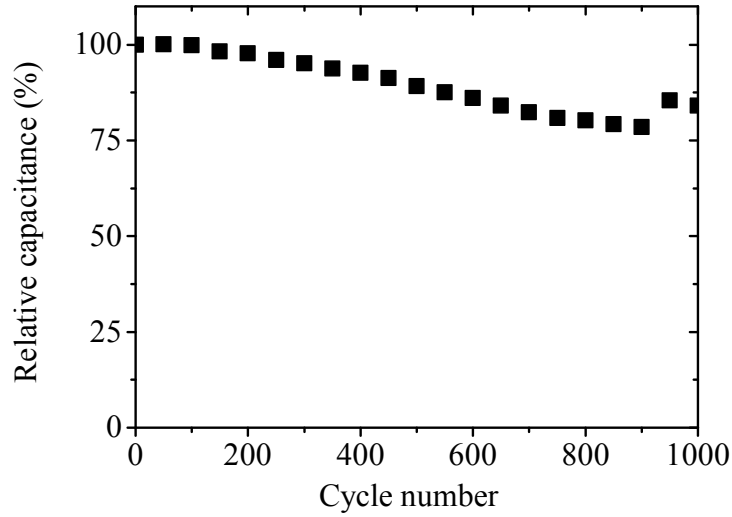


Fig. S3. Cycling stability of Device 3 upon GCD at a current density of 2.3 A g^{-1} .

After 1000 cycles the specific capacitance decreased to $\sim 80\%$ of its original value. The cycling stability is better than that of HQ-enhanced supercapacitor reported in Ref [1].

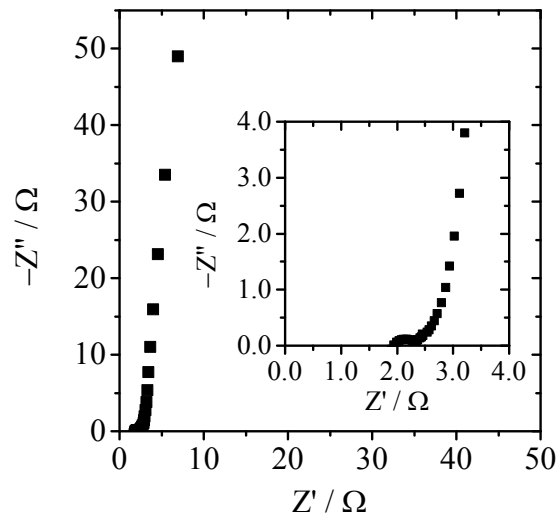


Fig. S4. Nyquist plots of Device 3. Inset: magnified high-frequency regions.

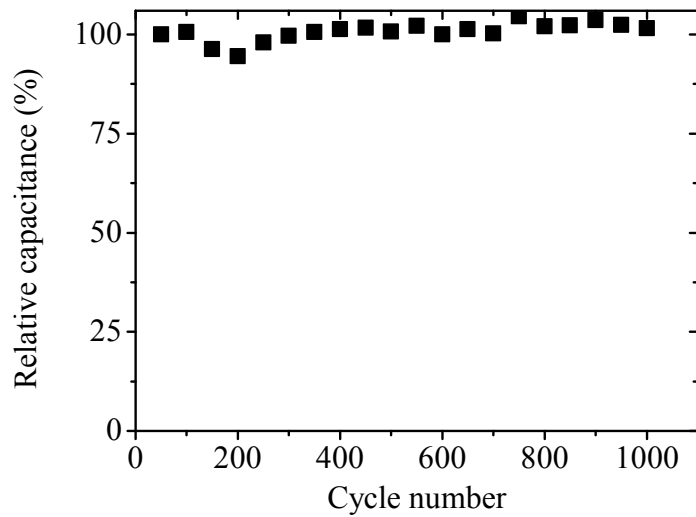


Fig. S5. Cycling stability of Device 4 upon GCD at a current density of 2.4 A g^{-1} .

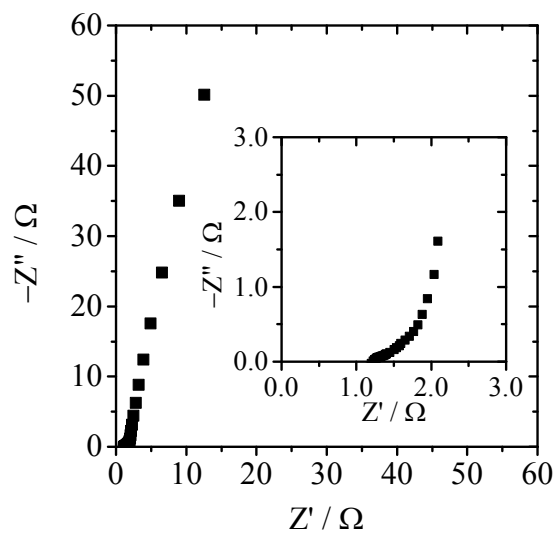


Fig. S6. Nyquist plots of Device 4. Inset: magnified high-frequency regions.

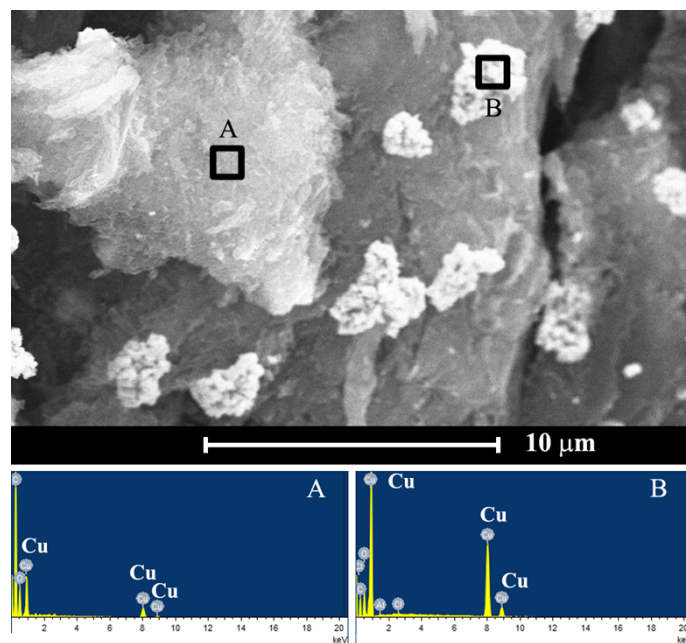


Fig. S5 SEM image and EDAX spectra of cathode of Device 4 after charge process.

The GHG electrode was dialysis in pure water overnight before lyophilization, to remove soluble species. Some copper particles can be found in the SEM image. And Cu signal was also detected in those areas without larger particles.

Reference

- [1] S. Roldán, C. Blanco, M. Granda, R. Menéndez and R. Santamaría, *Angew. Chem., Int. Ed.*, 2011, **50**, 1699-1701.