Electronic Supplementary Information

One-step hydrothermal fabrication of strongly coupled Co_3O_4 nanosheets-reduced graphene oxide towards electrochemical capacitors

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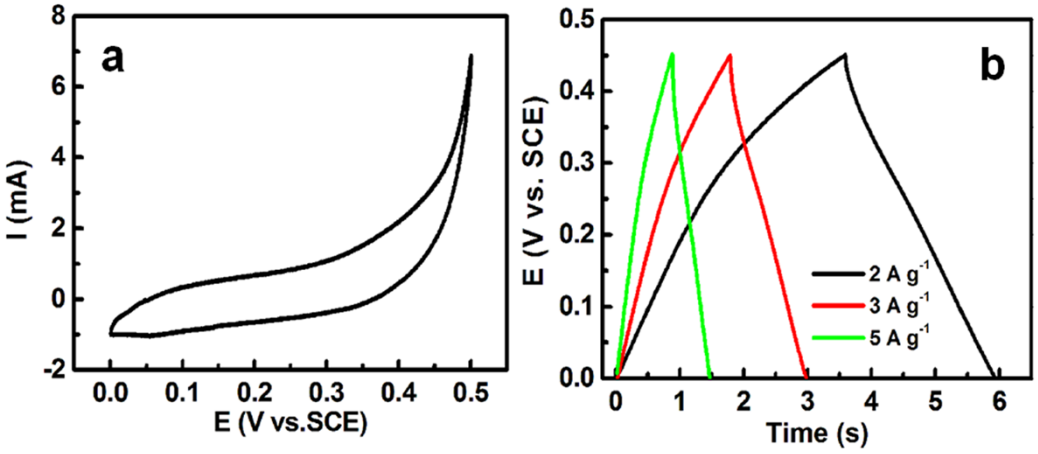

Fig. S1 (a) CV curve (10 mV s^{-1}) and (b) charge-discharge plots of the r-GO electrode at various current densities as indicated

As seen in the Fig. S1a, the small areas integrated below the zero-current line at a scan rate of 10 mV s^{-1}, suggesting the low SC of the as-fabricated rGO electrode. Of particularly note, a serious polarization phenomenon above ~0.35 V is presented, which is related to the oxygen evolution in such electrochemical window. Fig S1b demonstrates the typical charge-discharge plots of the rGO electrode at various current densities as indicated. The obvious linear charge-discharge curves indicate the typical electrical double-layer capacitance for the rGO electrode. And the SCs of 11, 8 and 6 F g^{-1} can be calculated for rGO electrode at current densities of 2, 3 and 5 A g^{-1}. Furthermore, the low coulombic efficiency of ~64% was observed at 2 A g^{-1} for the rGO electrode, owing to the existence of obvious polarization.

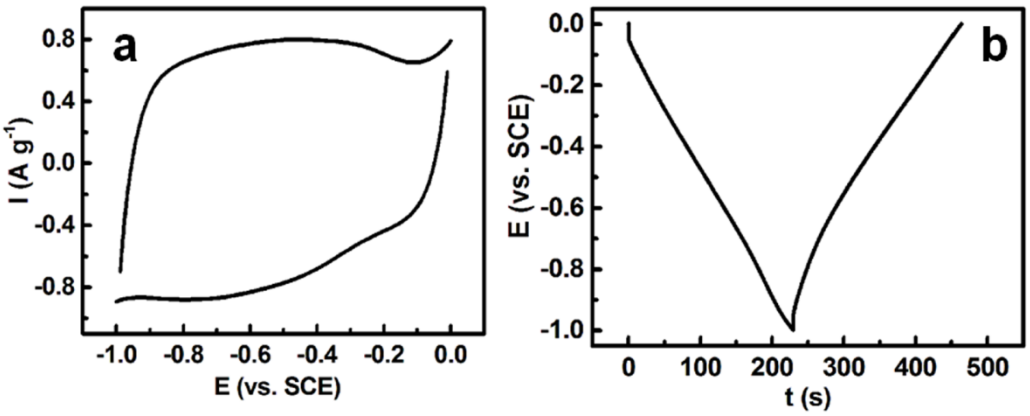

Fig. S2 (a) CV curves and (b) constant-current charge-discharge plots of the AC electrode

As demonstrated in Fig. S2a, near rectangular shape of the CV are observed, indicating its typical double-layer electric capacitance. In addition, the SC of the AC electrode is calculated as ~118 F g^{-1} at a current density of 0.5 A g^{-1}, as shown in Fig. S2b.

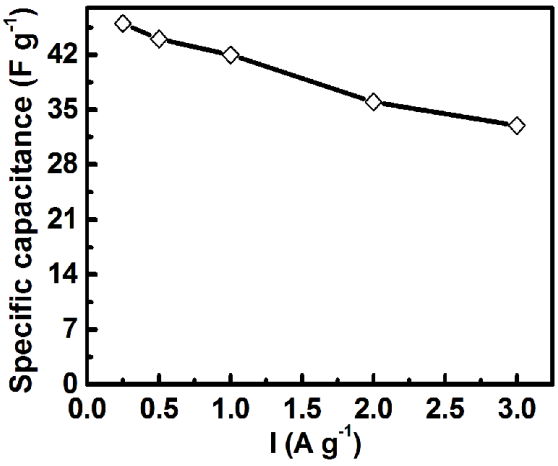

Fig. S3 Calculated SCs as a function of the current density for the AC/Co_3O_4 NSs-rGO asymmetric EC