Supplementary Materials

Architecting Nanostructured Co-BTC@GO Composites for Supercapacitor Electrode Application

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Electrochemical Analysis

All electrochemical measurements were performed by using an electrochemical working station (CHI660E, Chenhua, Shanghai, China) apparatus in a three-electrode system. The measurements were carried out in 3M aqueous KOH electrolyte. The working electrodes were prepared in an agate mortar by mixing the active composite, carbon black, and PVDF in a mass ratio of 80:10:10 in NMP as a solvent. The current collector was prepared by dispersing 2.5 mg of mixture onto nickel foam (1 cm × 1cm), where the mass of the active ingredient was 2 mg. An Ag/AgCl electrode was used as the reference electrode and Pt wire (1 cm × 1 cm) was used as the counter electrode. Cyclic voltammograms (CV) were acquired at 0–0.6 V at various scan rates. Galvanostatic charge-discharge (GCD) curves were obtained in the potential range of 0–0.5 V at the different current densities. The electrochemical impedance spectroscopy (EIS) of the mixture was acquired in the frequency range of 1 × 10^5 Hz to 0.01 Hz with an AC potential amplitude of 0.005 V at 0.325 V DC voltage [1–4].

The specific capacitance is calculated based on the GCD curves by using Equation (S1) as following [5]:

$$C = \frac{I \times \Delta t}{m \times \Delta V} \quad \text{(S1)}$$

in which C (F/g) is the specific capacity, I (A) is the discharge current, Δt (s) is the discharge time, m (g) is the mass of active materials and ΔV (V) is the potential range of discharge, respectively.

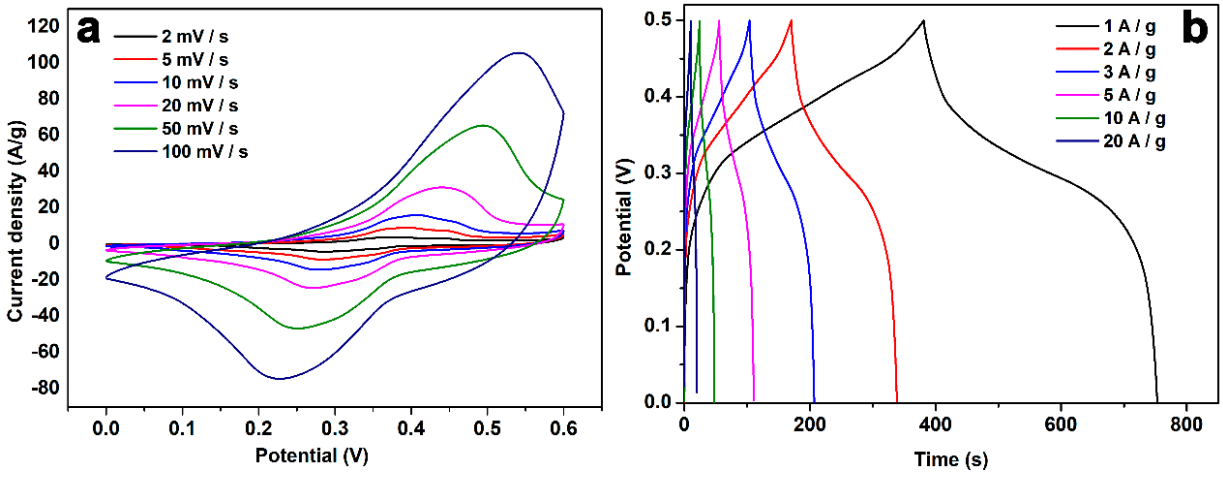

Figure S1. (**a**) CV curves of Co-BTC at different scan rates, (**b**) GCD curves of Co-BTC at different current densities.

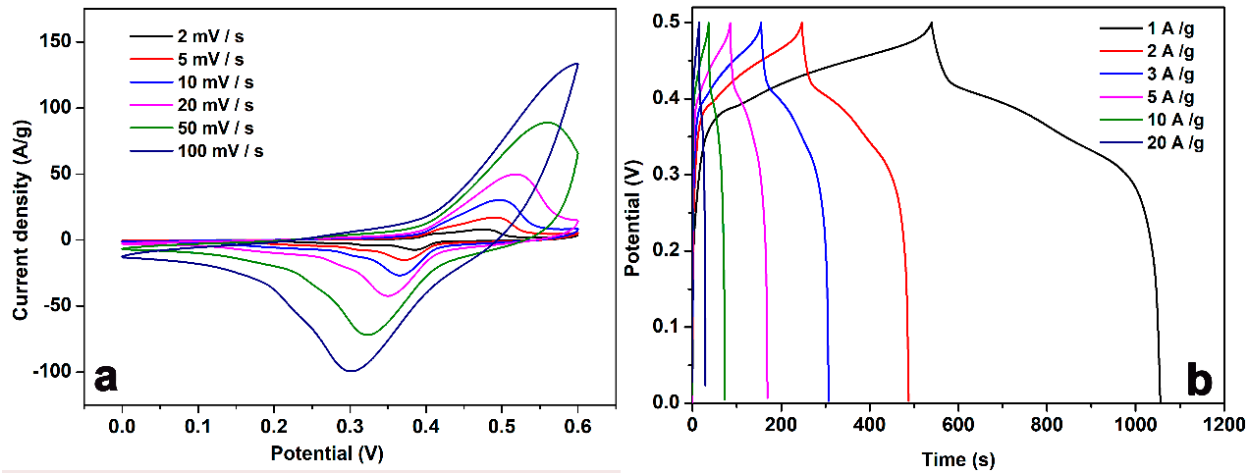

Figure S2. (a) CV curves of Co-BTC@GO 1 at different scan rates, (b) GCD curves of Co-BTC@GO 1 at different current densities.

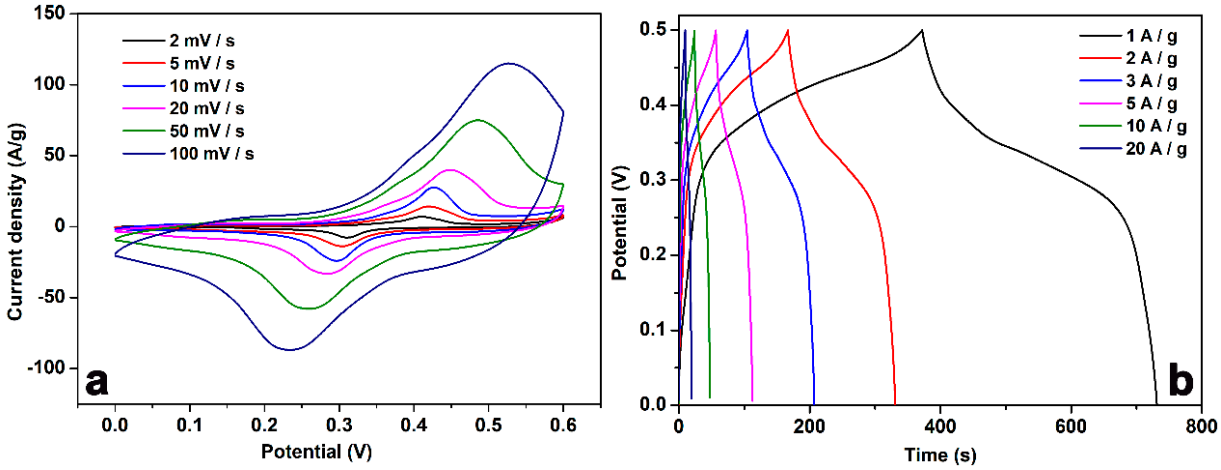

Figure S3. (a) CV curves of Co-BTC@GO 4 at different scan rates, (b) GCD curves of Co-BTC@GO 4 at different current densities.

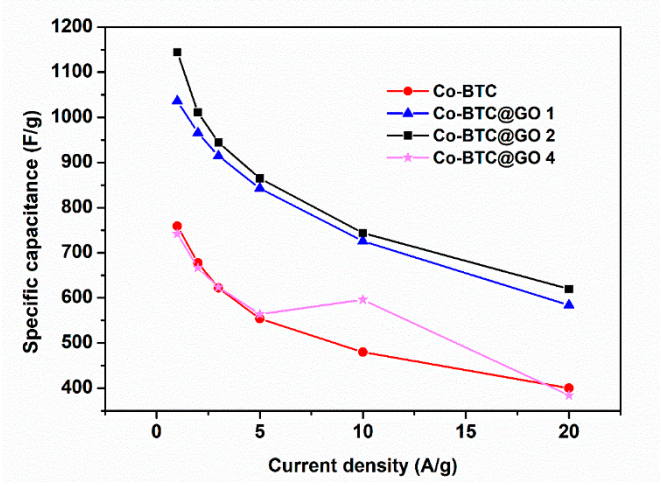

Figure S4. specific capacitance at various current densities (1–20 A/g) of Co-BTC, Co-BTC@GO 1, Co-BTC@GO 2 and Co-BTC@GO 4.

Reference

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