

## Supporting Information

### **Reactable ionic liquid assisted preparation of porous $\text{Co}_3\text{O}_4$ nanostructures with enhanced supercapacitive performance**

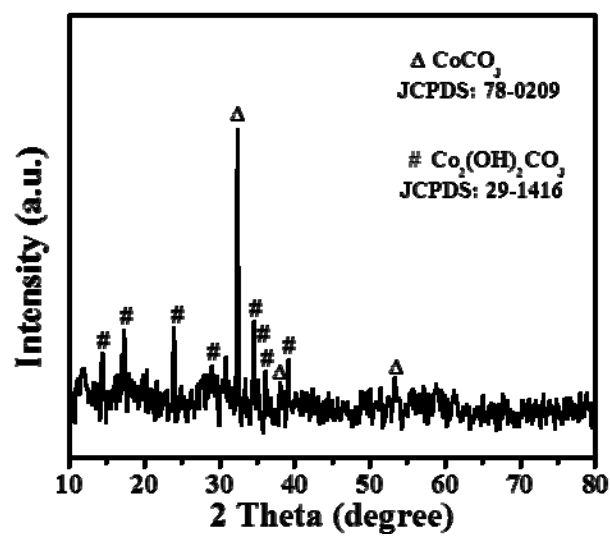
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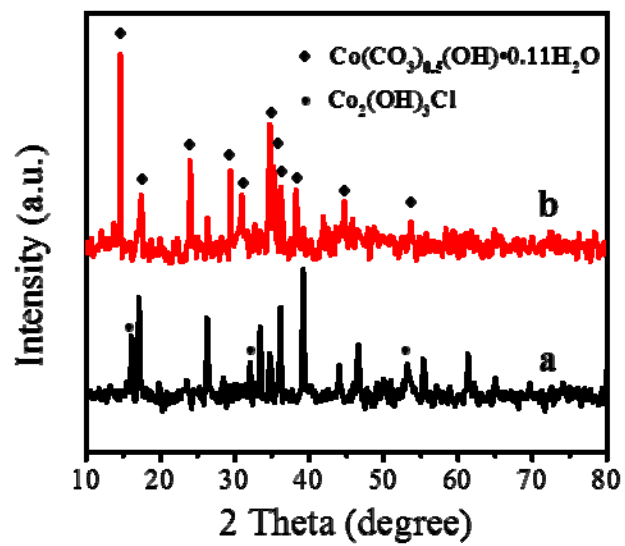
*<sup>b</sup>School of Material Science and Engineering, Jiangsu University, Zhenjiang, 212013, People's Republic of China*

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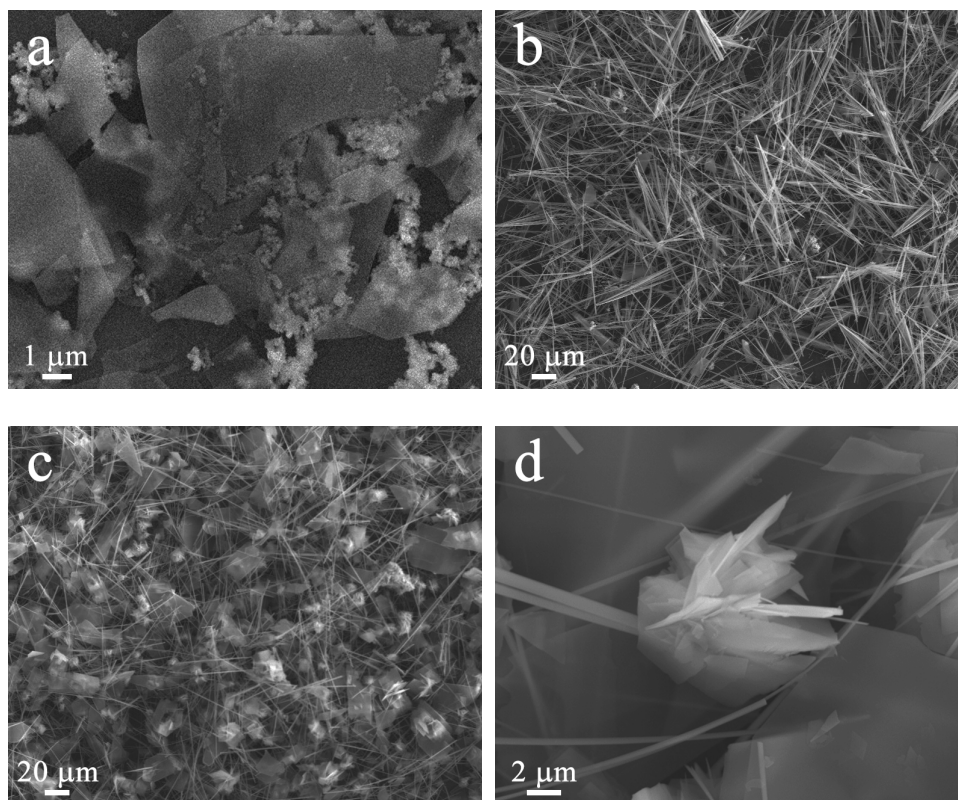
E-mail address: wangkun@ujs.edu.cn



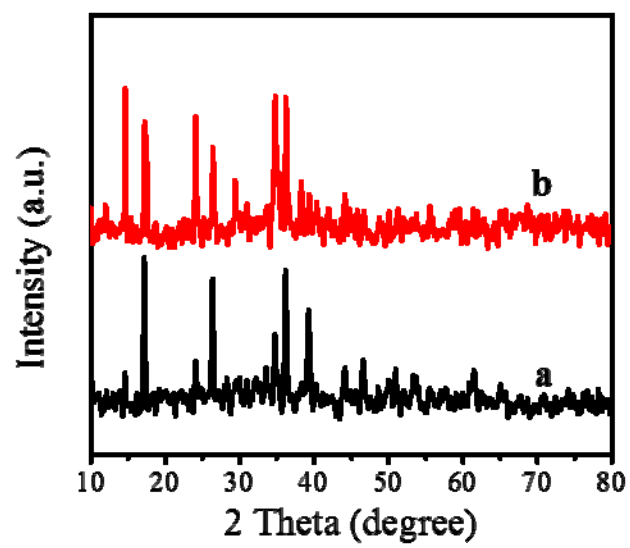
**Fig. S1** XRD pattern of the precursor derived from the hydrothermal treatment at 160 °C for 6 h by using  $\text{CF}_3\text{COONa}$  instead of the ionic liquid.



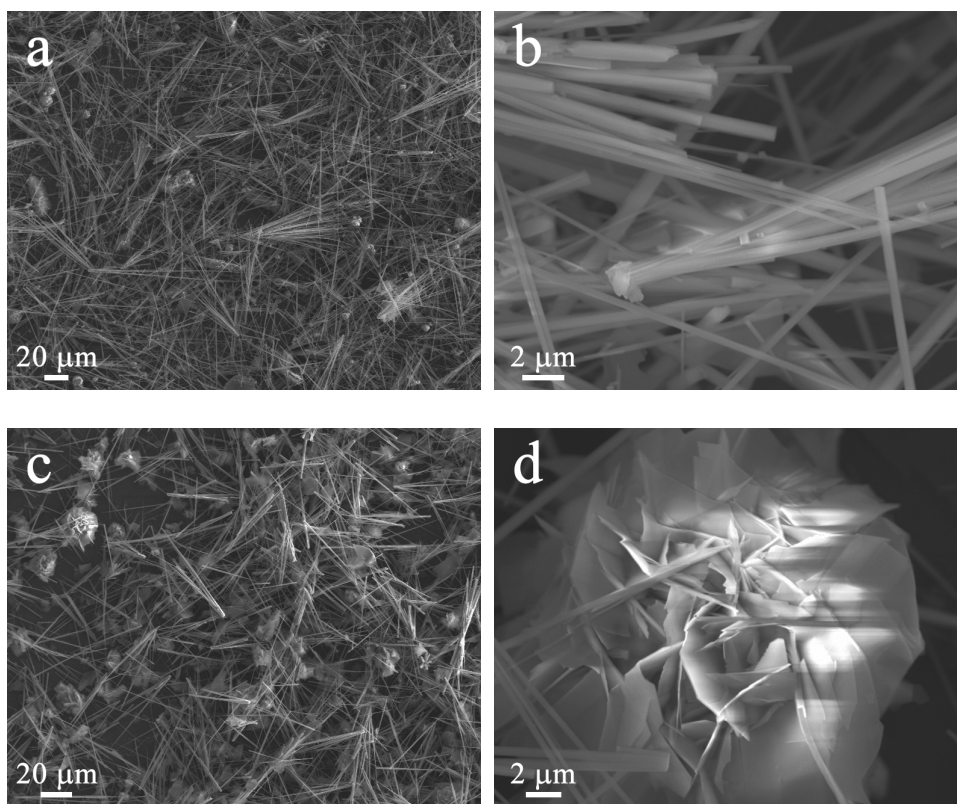
**Fig. S2** XRD patterns of precursors derived from hydrothermal treatment at 160 °C for 6 h in the presence of 1 g (a) and 3 g (b) [C<sub>16</sub>MIM]CF<sub>3</sub>COO



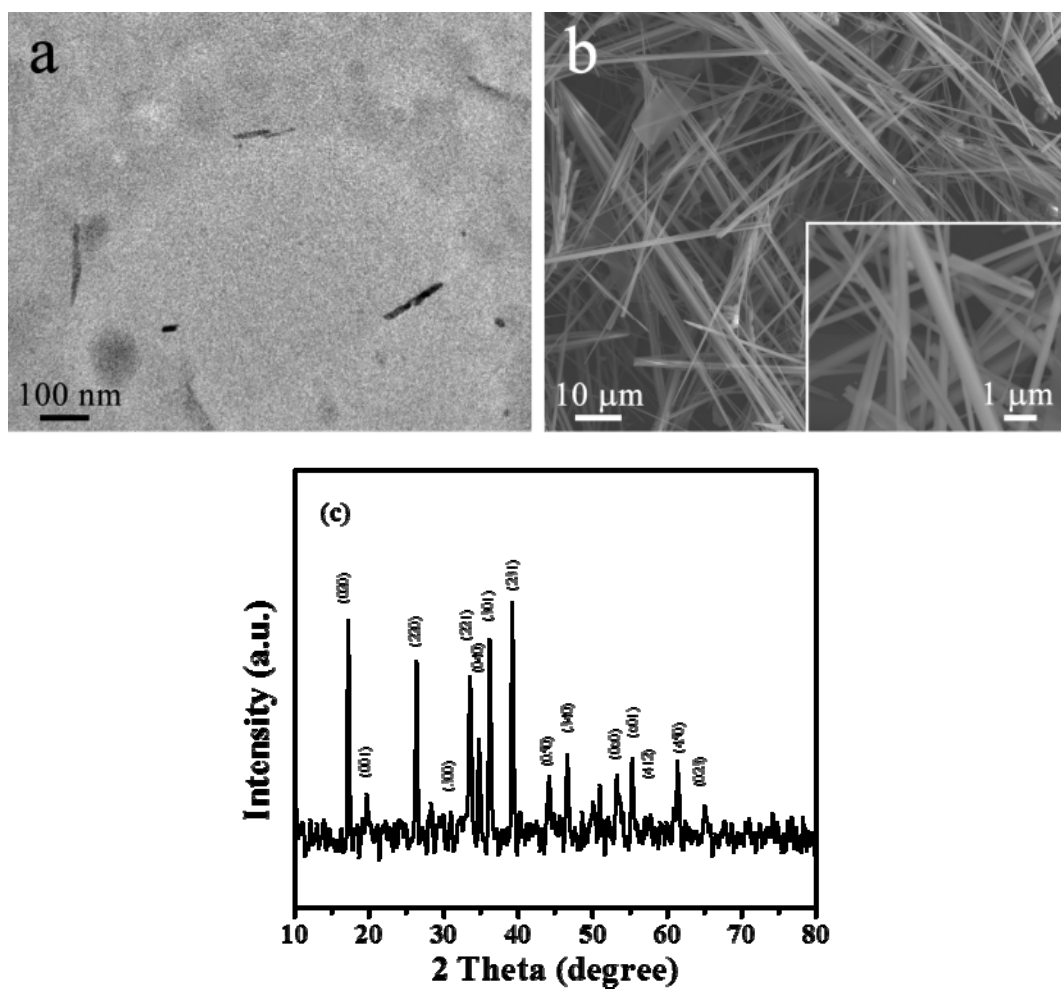
**Fig. S3** SEM images of precursors derived from different experimental conditions. Hydrothermal treatment at 160 °C for 6 h in the presence of 0 g (a), 1 g (b) and 3 g (c-d)  $[\text{C}_{16}\text{MIM}]\text{CF}_3\text{COO}$ .



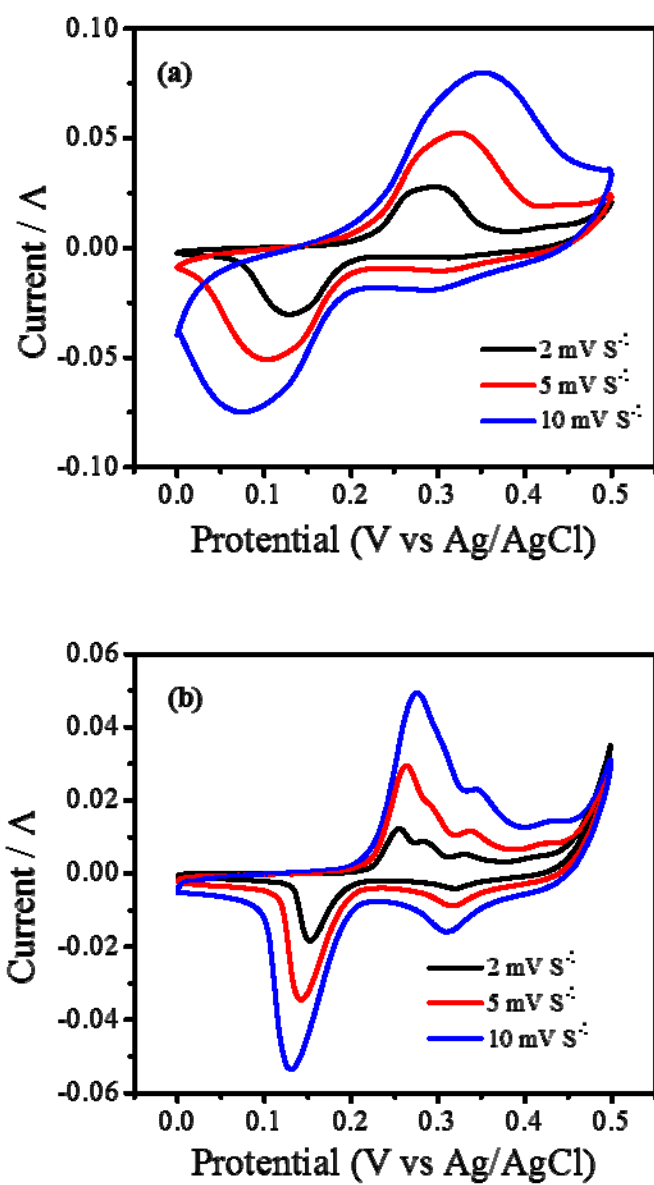
**Fig. S4** XRD patterns of precursors derived from hydrothermal treatment in the presence of 2 g  $[\text{C}_{16}\text{MIM}]\text{CF}_3\text{COO}$  at 180 °C (a) and 200 °C (b) for 6 h.



**Fig. S5** SEM images of precursors derived from in the presence of 2 g  $[\text{C}_{16}\text{MIM}]\text{CF}_3\text{COO}$  by hydrothermal treatment at 180 °C (a, b) and 200 °C (c, d) for 6 h.

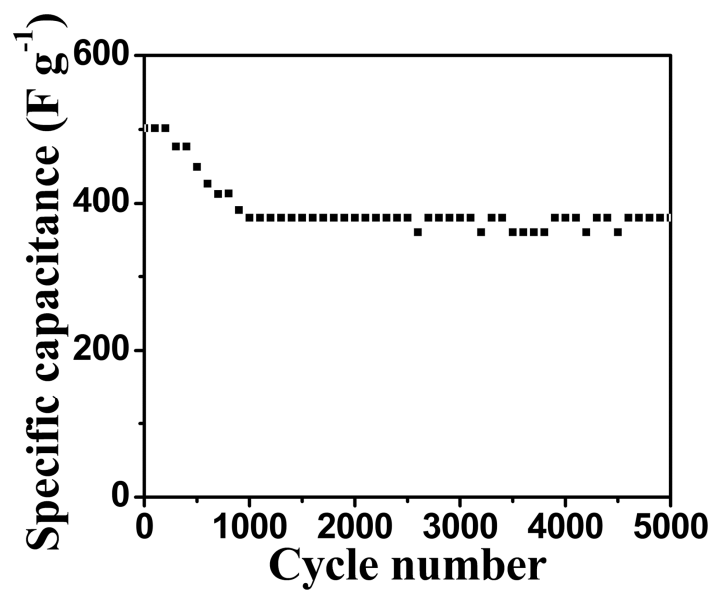


**Fig. S6** TEM image (a) of the reaction solution obtained at 160 °C for 1 h; SEM image (b) and XRD pattern (c) of precursor derived from 2 g ionic liquid and hydrothermal treatment at 160 °C for 12 h.



**Fig. S7** Cyclic voltammogram of S1 (a) and S2 (b) in 6.0 M KOH solution at different current densities from 2 to 10 mV s<sup>-1</sup>





**Fig. S8** Dependencies of the discharge specific capacitance on the charge/discharge cycle numbers of S1 at the charge-discharge current density of  $4 \text{ A g}^{-1}$ .