## **Electronic Supplementary Information**

## Terephthalate-based cobalt hydroxide: a new electrode material for supercapacitors with ultrahigh capacitance

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**Fig. S1** SEM images of the morphology evolution for  $Co_2(OH)_2(Tp)$  samples grown on Ni foam at different reaction time: (a) 4 h, (b) 6 h, (c) 8 h, and (d) 12 h.



Fig. S2 SEM images of the  $Co_2(OH)_2(Tp)$  electrode after 5000 GCD cycles.



Fig. S3 Nyquist plots of the first and the 5000th cycles for the Co<sub>2</sub>(OH)<sub>2</sub>(Tp) electrode.



Fig. S4 Nyquist plots of the first and the 5000th cycles for the ASC device.