

Supporting Information for

Self-supported hydrothermal synthesized hollow Co_3O_4 nanowire arrays with high supercapacitor capacitance

Xin-hui Xia, Jiang-ping Tu *, Yong-jin Mai, Xiu-li Wang, Chang-dong Gu and Xin-bin Zhao

State Key Laboratory of Silicon Materials and Department of Materials Science and Engineering,
Zhejiang University, Hangzhou 310027, China

E-mail: tujp@zju.edu.cn

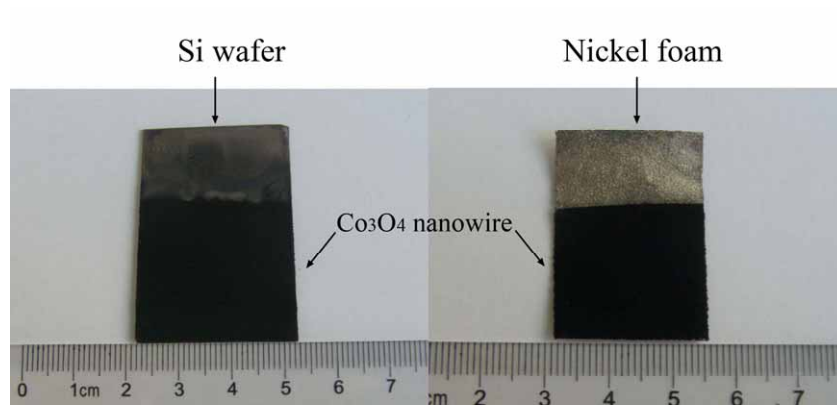


Fig. S1 Photograph of Co_3O_4 nanowire arrays on Si wafer and nickel foam substrates.

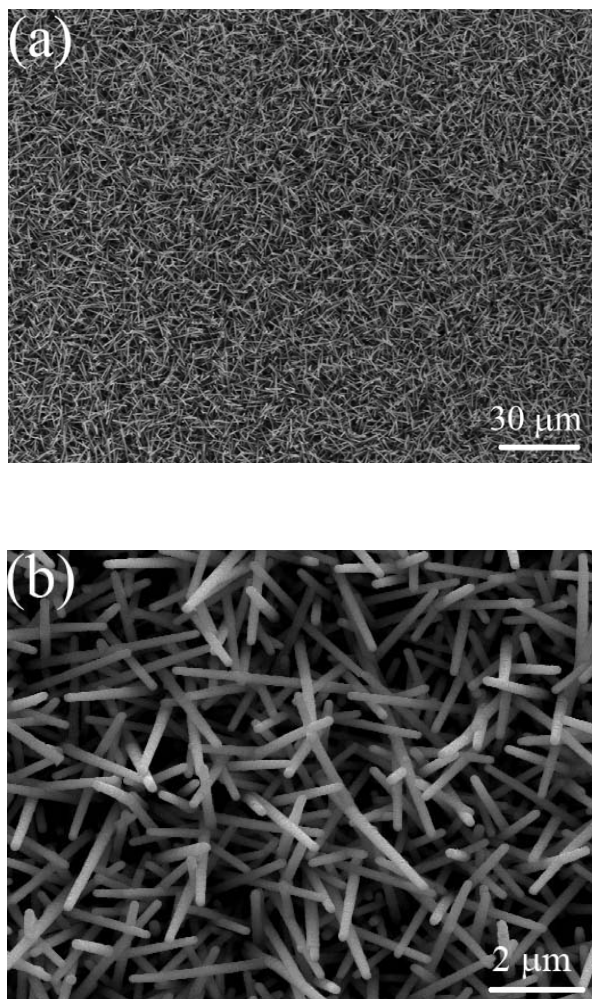
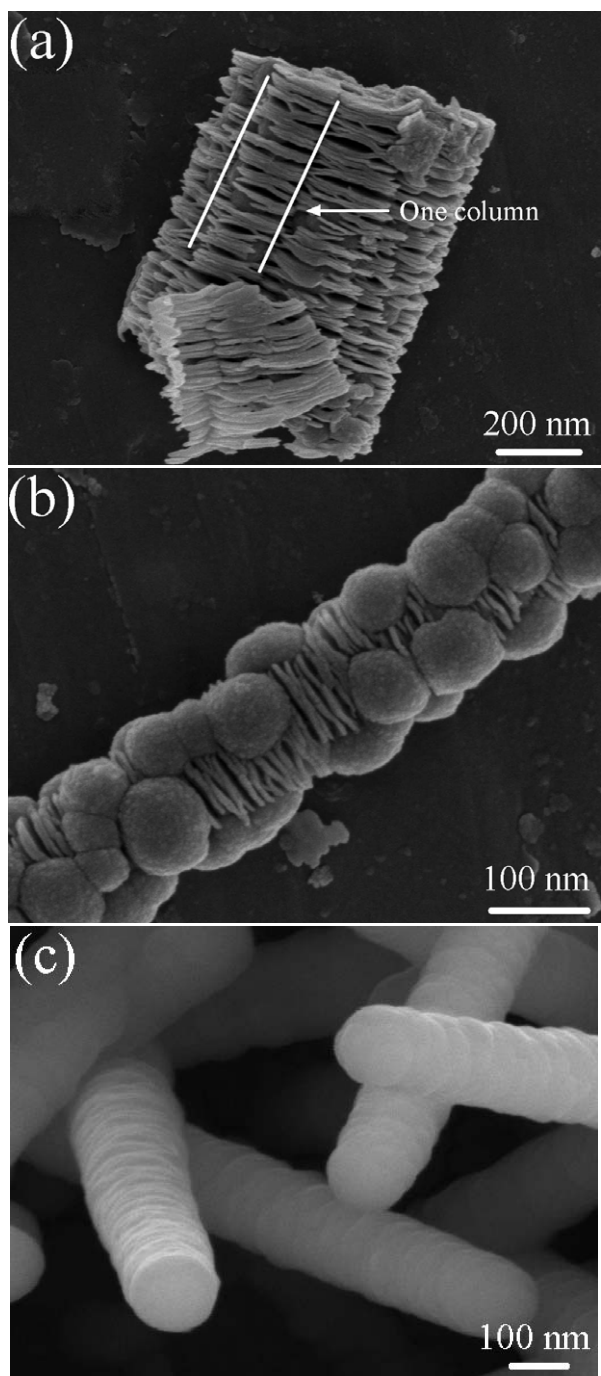


Fig. S2 SEM images of self-supported Co_3O_4 nanowire arrays on nickel foil substrate.



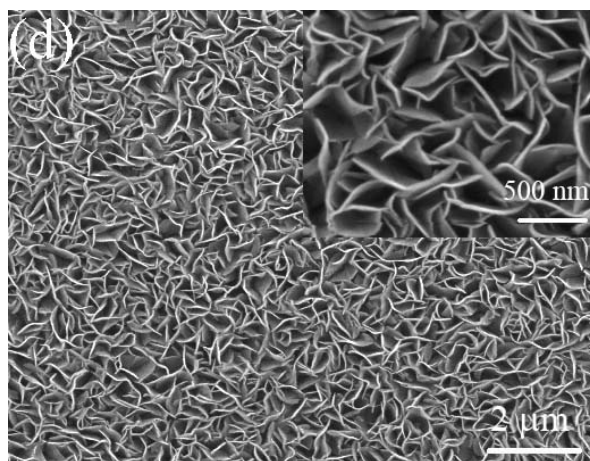


Figure S3 The effect of O₂ on the morphology of Co(OH)₂ nanostructures. SEM images of intermediate products obtained under O₂ atmosphere after reaction for (a) 1h; (b) 2h; (c) 3h; (d) nanowall Co(OH)₂ film grown in an O₂-free environment (the fine feature in inset).

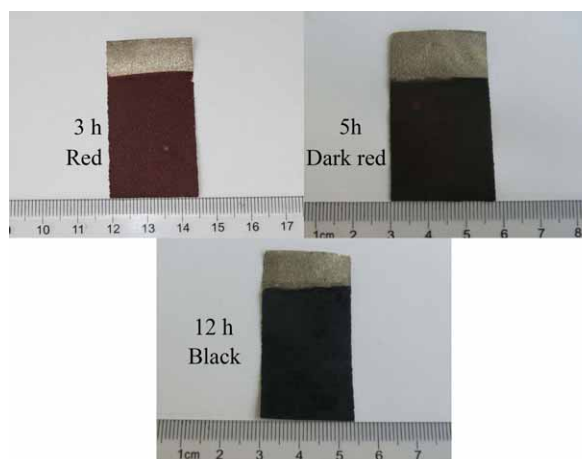


Fig. S4 Color evolution of sample on nickel foam substrate at different reaction times.

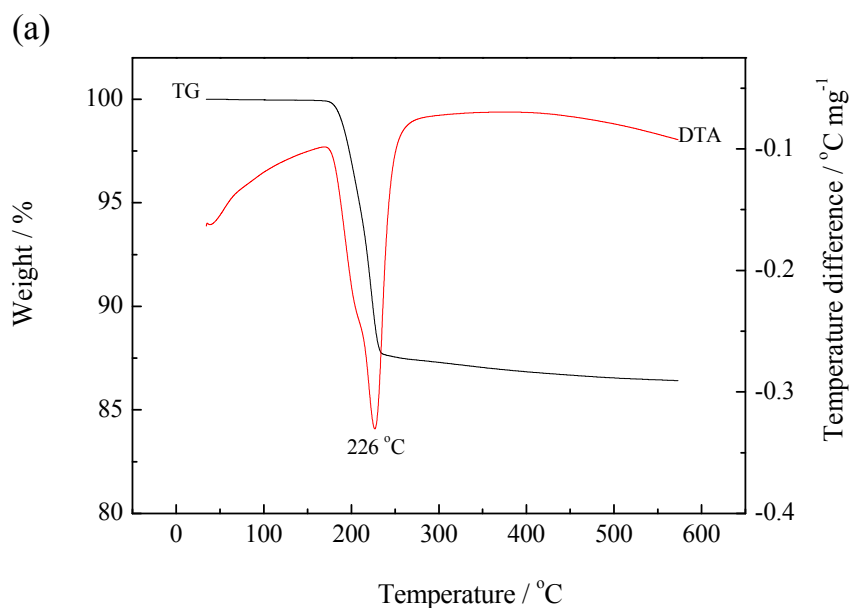


Fig. S5 TG-DTA curves of β -Co(OH)₂ nanowires.

The weight loss stage below 170 °C is the result of the dehydration of physically absorbed water. The major weight loss is between 173 and 237 °C in which a dominant endothermic peak centered at 226 °C is noticed in the DTA curve. This acceleratory stage is attributed to the loss of water through decomposition of hydroxide prior to the formation of Co₃O₄.

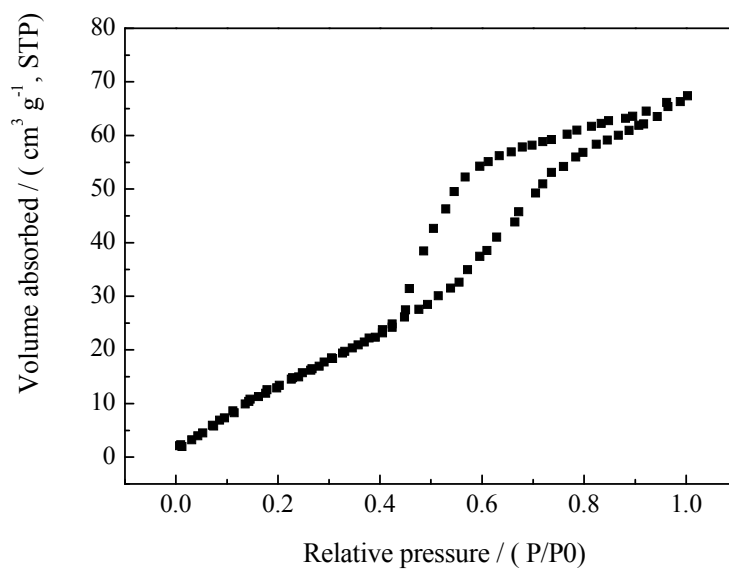


Fig. S6 BET measurement of the Co₃O₄ nanowires annealed at 250 °C for 1 h. The measured surface area of Co₃O₄ nanowires is about 78 m² g⁻¹.

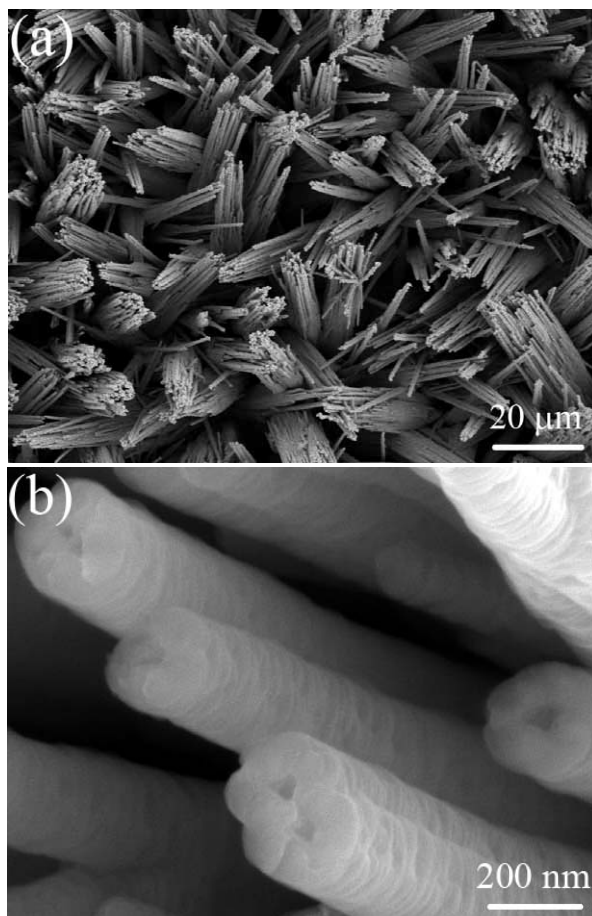


Fig. S7 SEM images of the Co_3O_4 nanowire array after cycling for 7500 cycles at 2 A g^{-1} .