

Supporting Information

Fe₂O₃/Reduced Graphene Oxide/Fe₃O₄ Composite *in Situ* Grown on Fe Foil for High-Performance Supercapacitors

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Synthesis of Ni(OH)₂

Nanostructure Ni(OH)₂ was synthesized via a simple hydrothermal method at low temperature following the procedure reported by Jiang et al.¹ Briefly, Ni(NO₃)₂•6H₂O (0.291 g) and hexamethylenetetramine (HMT, 0.701 g) were added into deionized water (35 ml) to form a homogenous solution. Then, the homogenous solution was transferred into a Teflon-lined stainless steel autoclave (100 ml) and heated at 80°C for 12 h. After reaction, the precipitates were collected by filtration and washed with deionized water and absolute ethanol for several times. The final products were dried at 60°C for 6 h.

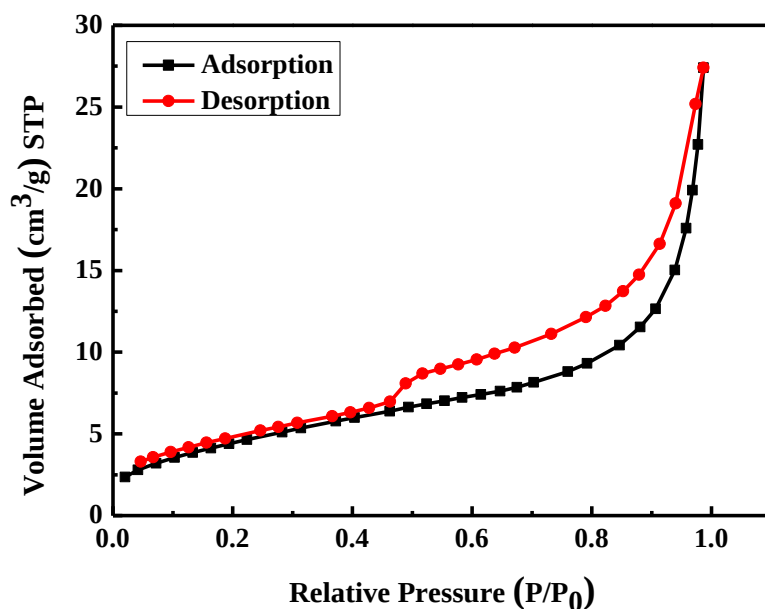


Figure S1. The N₂ adsorption-desorption isotherm of Fe₂O₃/RGO/Fe₃O₄ composite.

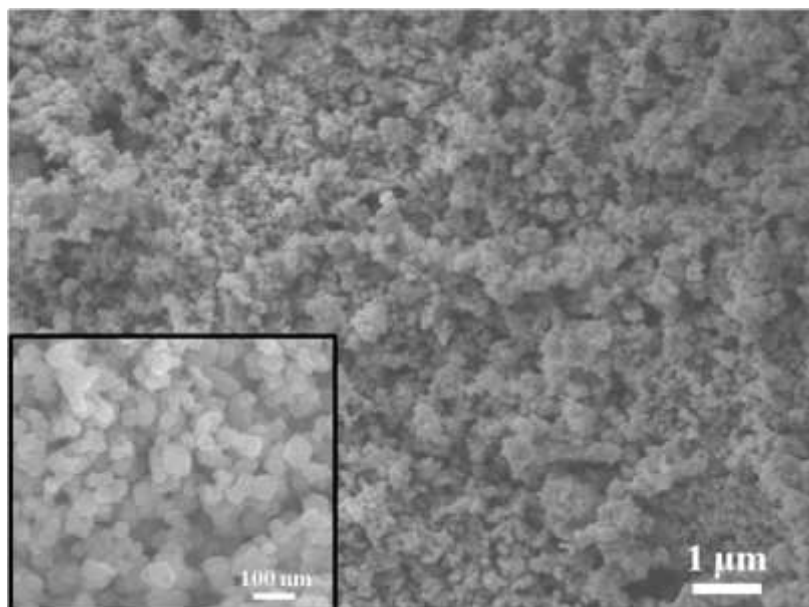


Figure S2. SEM image of F2RF-150 after 5000 cycles. Inset: High magnification SEM image.

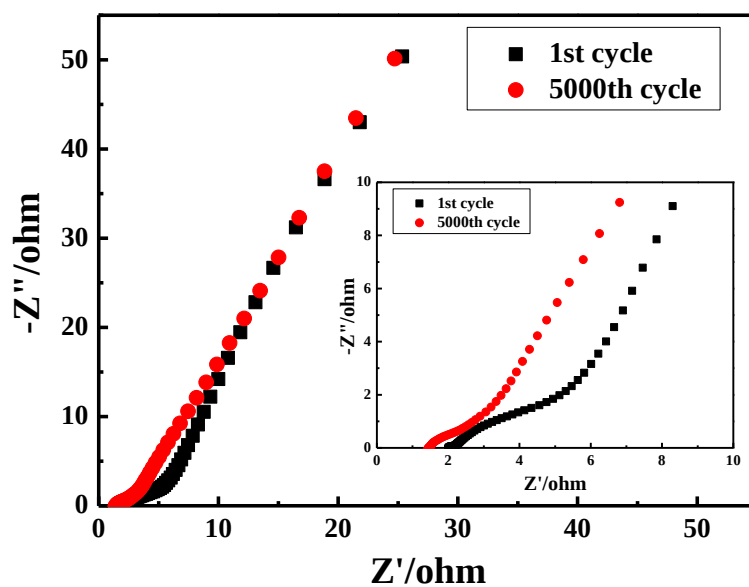


Figure S3. Nyquist plots of F2RF-150 electrode after 1st and 5000th cycle. Inset: Plots in high frequency region.

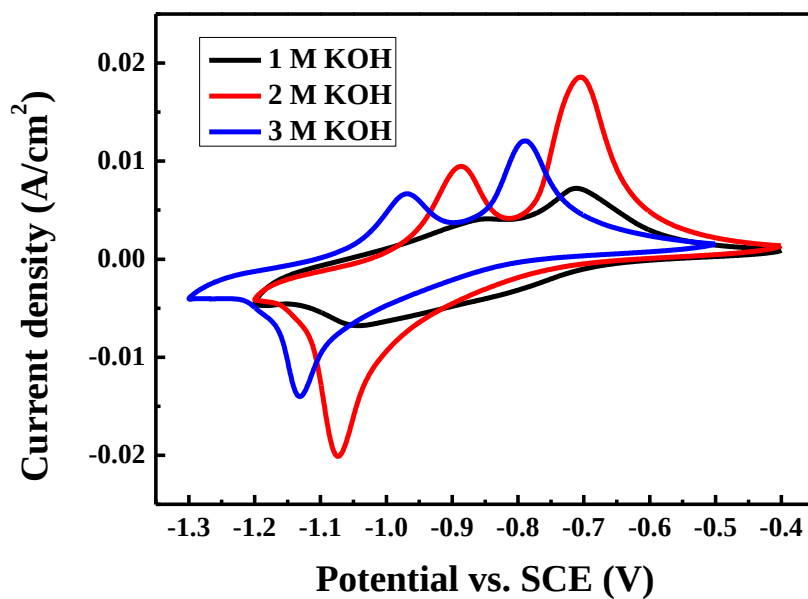


Figure S4. CV curves for the F2RF-150 electrode in the KOH solution with different concentrations.

References

- (1) Jiang, H.; Zhao, T.; Li, C. Z.; Ma, J., Hierarchical Self-assembly of Ultrathin Nickel Hydroxide Nanoflakes for High-performance Supercapacitors. *J. Mater. Chem.* **2011**, *21* (11), 3818-3823.