Supplementary Information

Deft Dipping Combined with Electrochemical Reduction to Obtain 3D Electrochemical Reduction Graphene Oxide and Its Applications in Supercapaccitors

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Figure S1. Electrochemical reduction equipment.

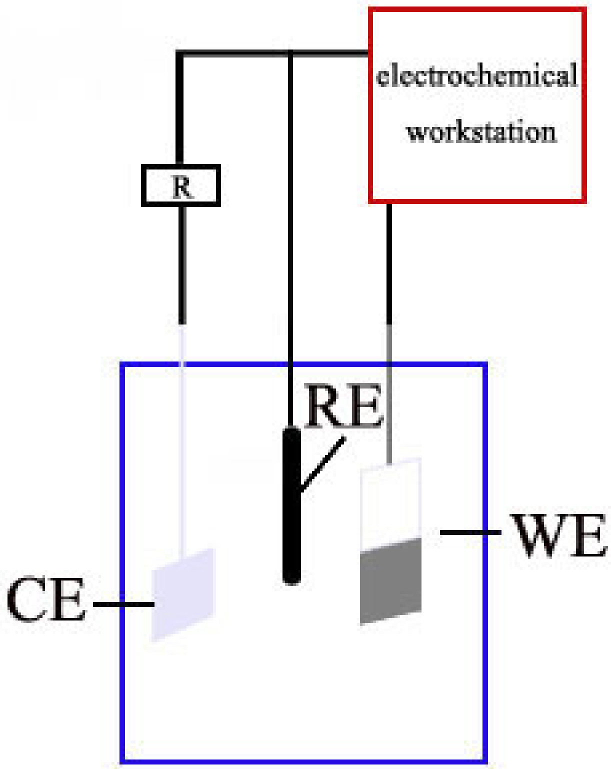


Figure S2. Digital images of Enlarged 3D ERGO.

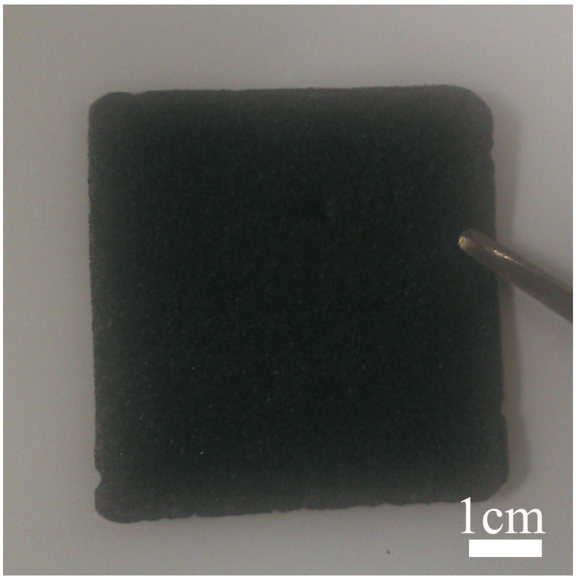


Figure S3 (a-c) SEM images of ERGO/Ni Foam. (d) SEM image of 3D ERGO.

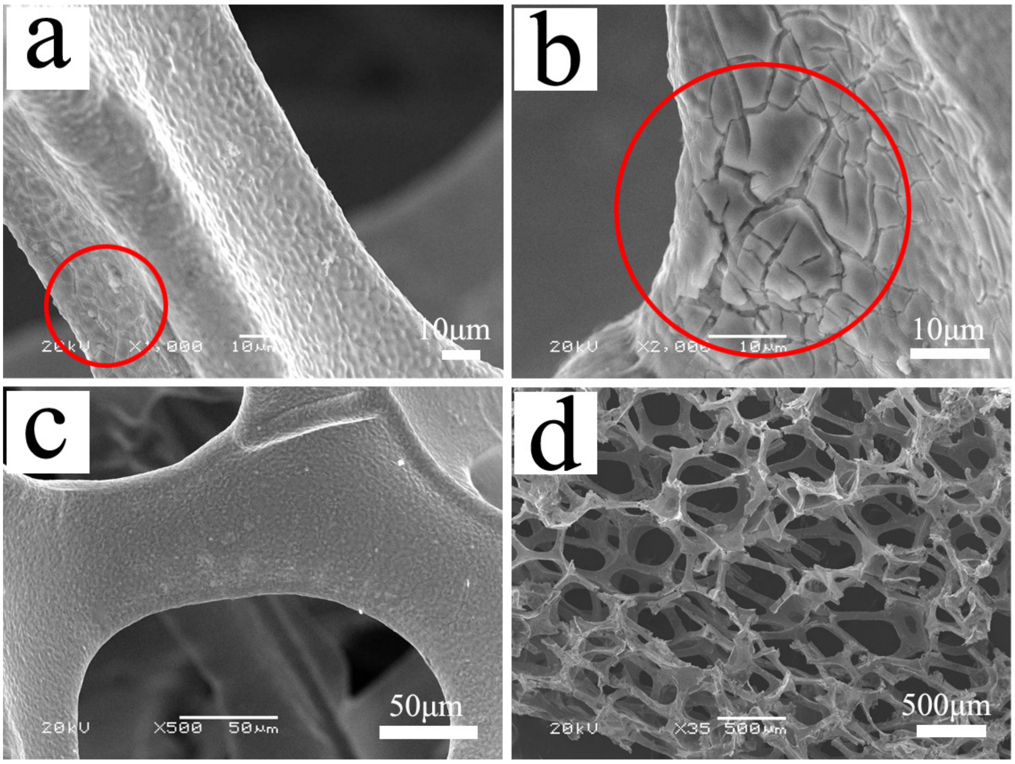
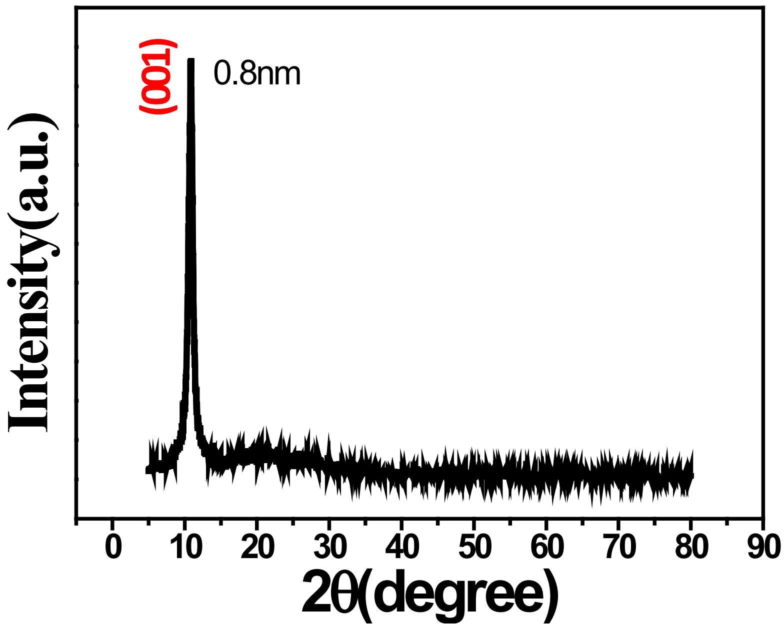


Figure S4. XRD patterns of graphene oxide.



Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Figure S5. Comparison of specific capacitances at different current density (based on the mass of Co_3O_4).

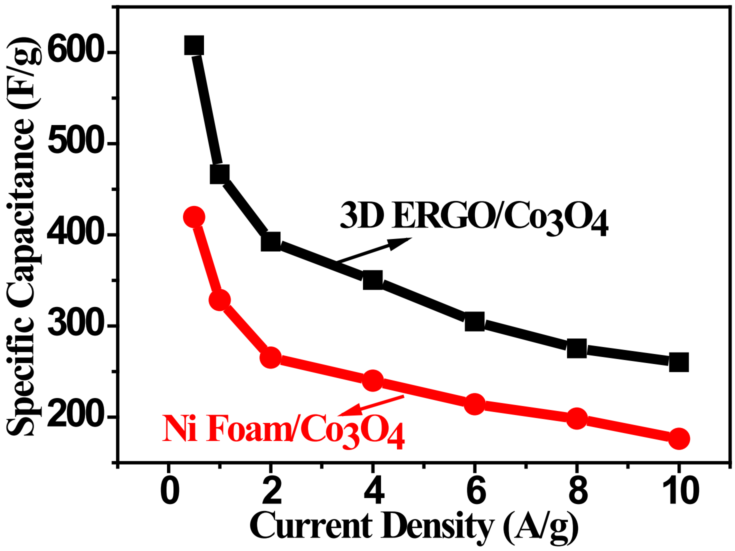


Figure S6. The SEM images of the compared Co_3O_4/Ni Foam.

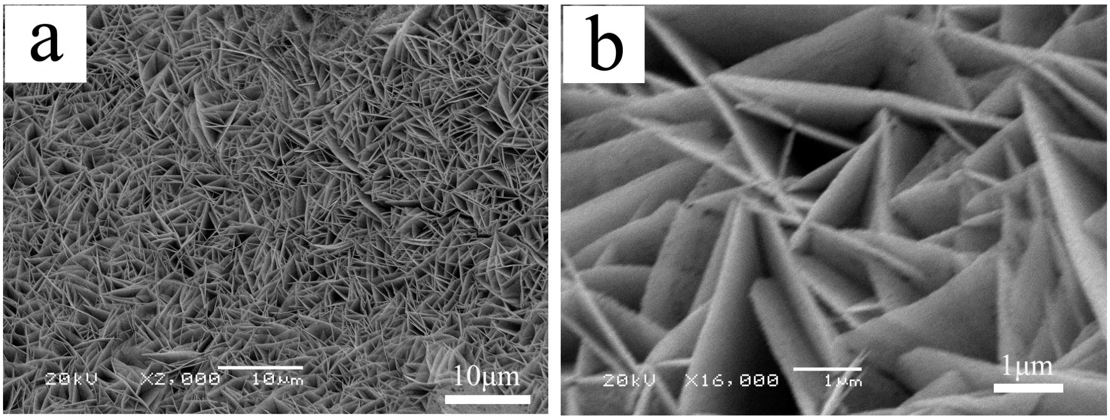


Figure S7. Mechanical property of 3D ERGO.

The 3D ERGO network has not changed after bending, which shows the material has sufficient mechanical strength.

Figure S8. The SEM images of the Co_3O_4 sheets after cycling.

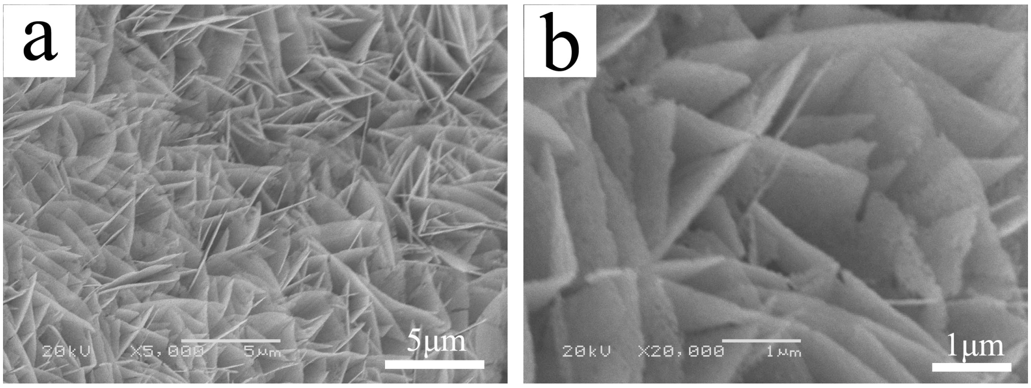


Table S1: Comparison of charge and discharge voltage range, maximum Cs and energy of the reported metal oxide/hydroxide coated on the Ni foam and the present work.

Materials	V(v)	Energy Density (Wh/kg)	Power Density (kW/kg)	Ref.
Co_3O_4/3D ERGO (10A/g)	0.5	78	2.5	our report
Co_3O_4 nanowire array/NF (10A/g)	0.35	45.7	≈0.34	Ref.1
$Co(OH)_2$ nanowire array/NF (10A/g)	0.36	43.9	≈0.11	Ref.2
Co_3O_4 Nanosheet @ nanowire arrays/NF (30 mA/cm^2)	0.45	72.4	≈1	Ref.3
Co_3O_4 nanowire array/NF (30 mA/cm^2)	0.45	76	≈2.2	
Co_3O_4 nanosheet array/NF (30 mA/cm^2)	0.45	39.5	≈1.26	
Co_3O_4 nanosheet array/NF (10A/g)	0.45		2.24	Ref.4
Co_3O_4 film/NF (10A/g)	0.55	49.2	≈2.7	Ref.5
$Ni_{0.25}Co_{0.75}(OH)_2$ nanoarrays/NF (30mA/cm^2)	0.5	116	1.25	Ref.6
MnO_2/Graphene gel/NF (10mV/s)	0.8	106		Ref.7
MnO_2/NF (10mV/s)	0.8	47		
Graphene gel/NF (10mV/s)	0.8	23.3		
Ni-Al LDH/NF (10A/g)	0.35	43	0.4	Ref.8
Co_3O_4/3D graphene	0.5	96		Ref.9
$Ni(OH)_2$ /3D UGF (10A/g)	0.5		1.9	Ref.10
$Ni(OH)_2$-MnO_2 hybrid nanosheets/NF (10A/g)	0.5	81.2	2.5	Ref.11
Ni-Al LDH/NF (10A/g)	0.5	99.2	2.4	Ref.12
Ni_3S_2/NF (8A/g)	0.5	89	2	Ref.13
$Co(OH)_2$/graphene/NF (8A/g)	0.45	70.2	1.8	Ref.14

Note: The comparative max energy density is calculated based on the highest specific capacitance according to the literature. And the power density is calculated based on the current density of 10 A/g.

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