Electronic Supplementary Information (ESI)

3D Mesoporous Hybrid $NiCo_2O_4$@graphene Nanoarchitecture as Electrode Materials for Supercapacitors with Enhanced Performances

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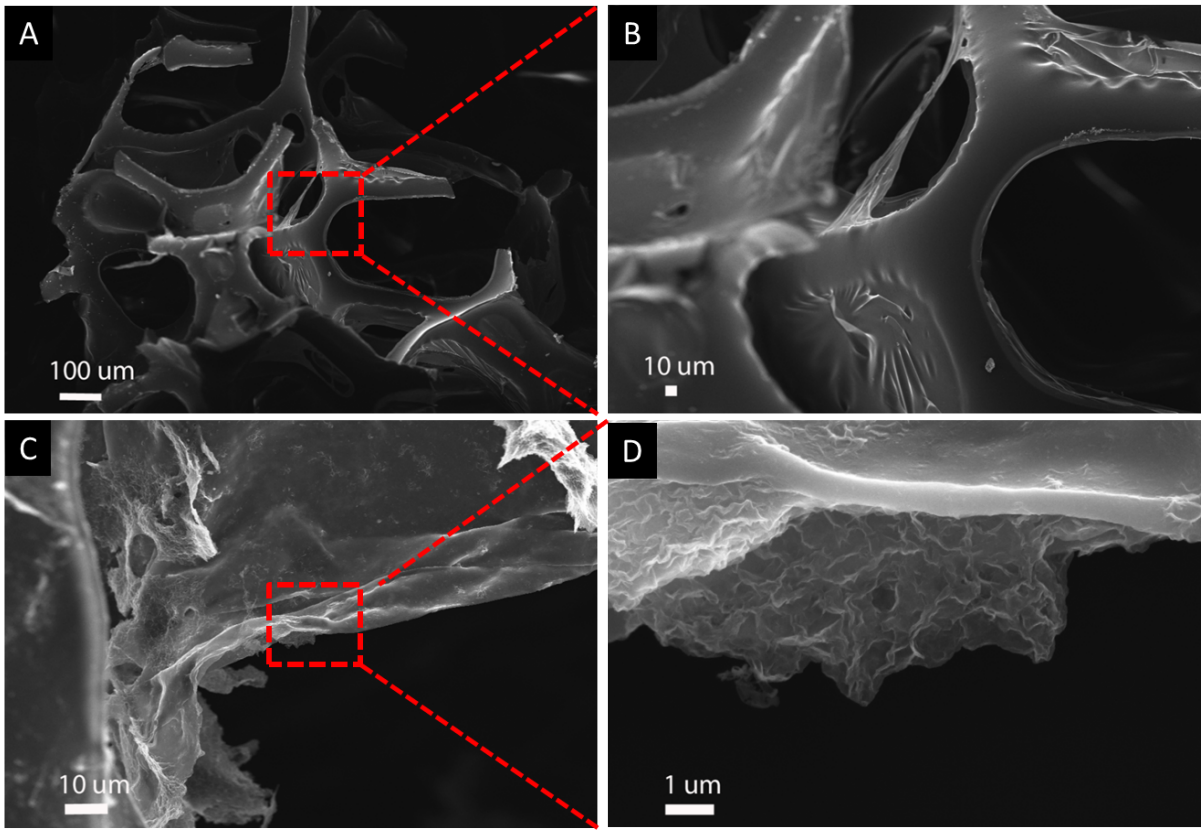

Fig. S1 The SEM images of the (A, B) PU-sponge, showing macroporous structure; (C, D) RGO-PU-sponge, indicating RGO was coated onto PU-sponge.

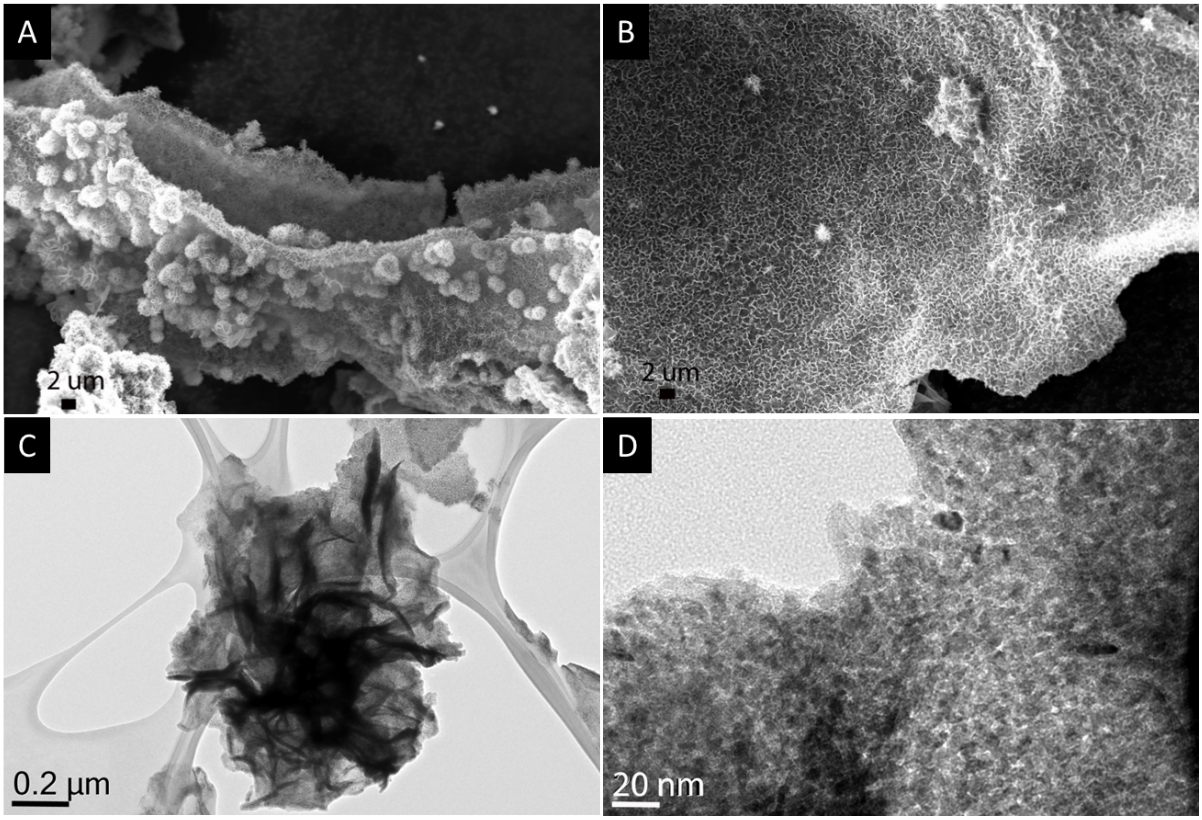

Fig. S2 The SEM images of (A, B) large-size $NiCo_2O_4$ @graphene obtained by annealing the precursor at 350 ^oC in air for 2 hours; TEM images of (C) $NiCo_2O_4$ @graphene nanoarchitectures with macropores, (D) mesopores ranging from 2-5nm.

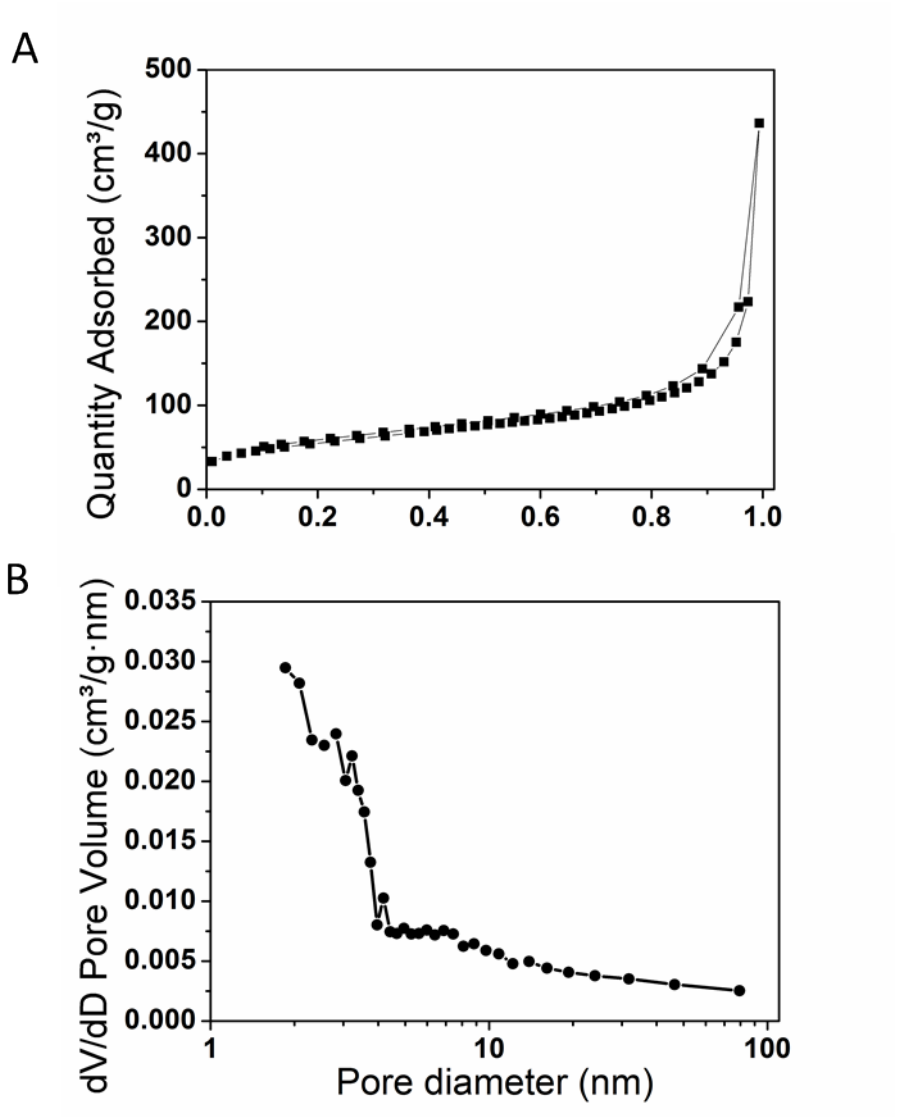

Fig. S3 (A) Nitrogen adsorption/desorption isotherms; (B) pore size distribution of $NiCo_2O_4$@ graphene nanoarchitectures.

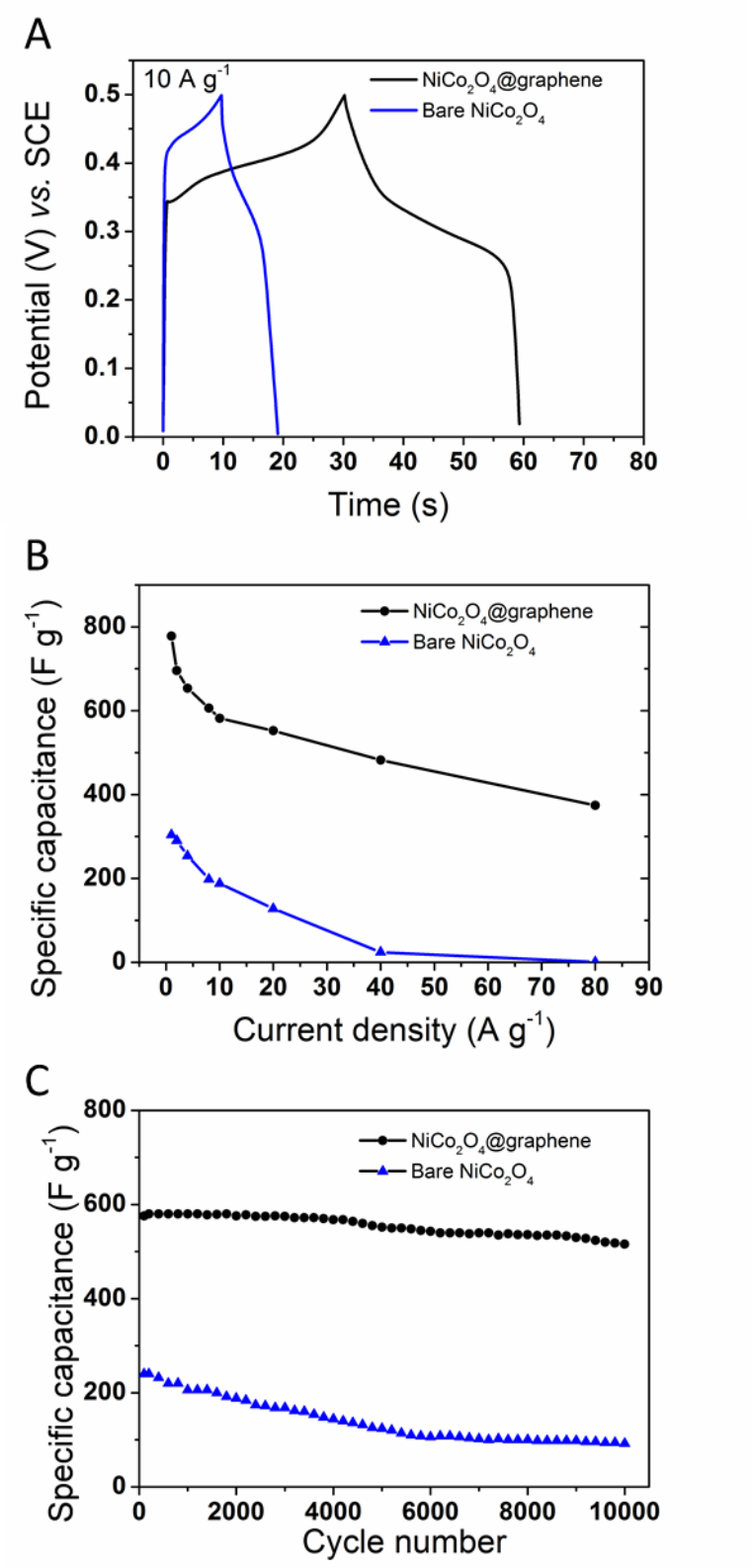

Fig. S4 Electrochemical performance of $NiCo_2O_4$@graphene nanoarchitectures and bare $NiCo_2O_4$ (A) Charging/discharging curves at a current density of 10 A g^{-1}; (B) Specific capacitances at current densities of 1 to 80 A g^{-1}; (C) Capacities retention up to 10000 cycles at 10 A g^{-1};

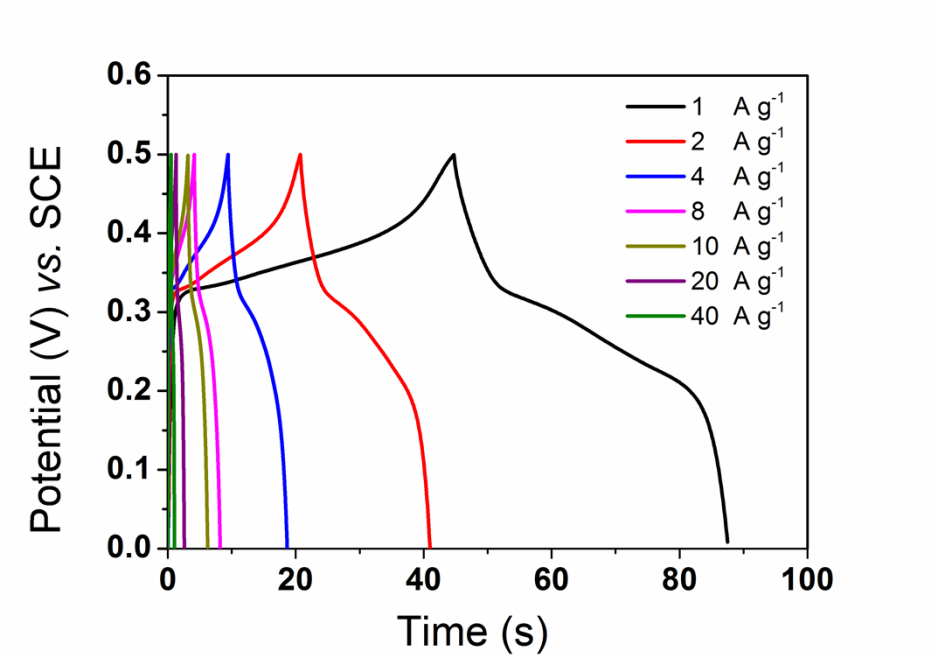

Fig. S5 Charging/discharging profile of pure Ni foam at different current densities, ranging from 1 to 40 A g^{-1};

Table S1. Comparison of the electrochemical performance of as-prepared $NiCo_2O_4$@graphene with $NiCo_2O_4$ materials reported in the literatures

References	Mass loading	2 or 3 electrode configuration	Specific Capacitance (F g^{-1}) at 1 A g^{-1}	Maximum Current Densities (A g^{-1})	Capacity Retention Cycle and Current Densities	Cycles
As-prepared $NiCo_2O_4$@graphene	1 mg cm^{-1}	3	778	80	90% at 10 A g^{-1}	10000
W. Chen et. al[1]	----	3	743	40	93.8% at 1 A g^{-1}	3000
Te-Yu Wei et. al[2]	0.4 mg cm^{-1}	3	719 (at 25mV s^{-1})	25mV s^{-1}	91% at 25mV s^{-1}	2000
H. Wang et. al[3]	1 mg cm^{-1}	3	722	20	80% at 10 A g^{-1}	3000
H. W. Wang et. al[4]	2 mg cm^{-1}	3	835	16	----	4000

References:

1. H. Jiang, J. Ma and C. Li, *Chemical Communications*, 2012, **48**, 4465-4467.
2. T. Y. Wei, C. H. Chen, H. C. Chien, S. Y. Lu and C. C. Hu, *Advanced materials*, 2010, **22**, 347-351.
3. H. Wang, Q. Gao and L. Jiang, *Small*, 2011, **7**, 2454-2459.
4. H.-W. Wang, Z.-A. Hu, Y.-Q. Chang, Y.-L. Chen, H.-Y. Wu, Z.-Y. Zhang and Y.-Y. Yang, *Journal of Materials Chemistry*, 2011, **21**, 10504-10511.