Supporting Information

Facile synthesis of mesoporous Co_3O_4/CeO_2 hybrid nanowire arrays for high performance supercapacitors

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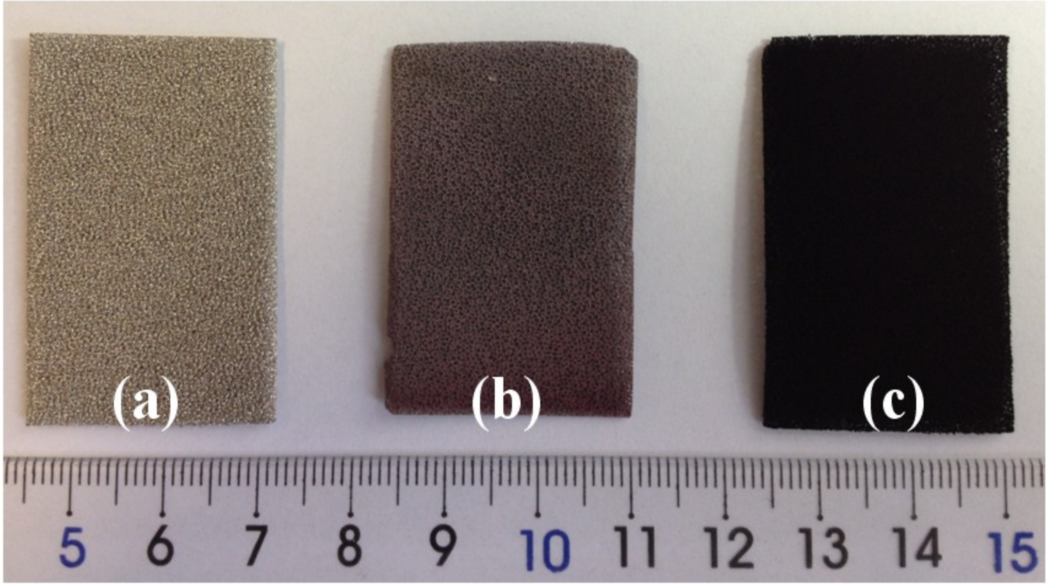

Fig. S1. Optical photos of (a) Ni foam, Ni foam with as-prepared samples before (b) and after (c) calcinations.

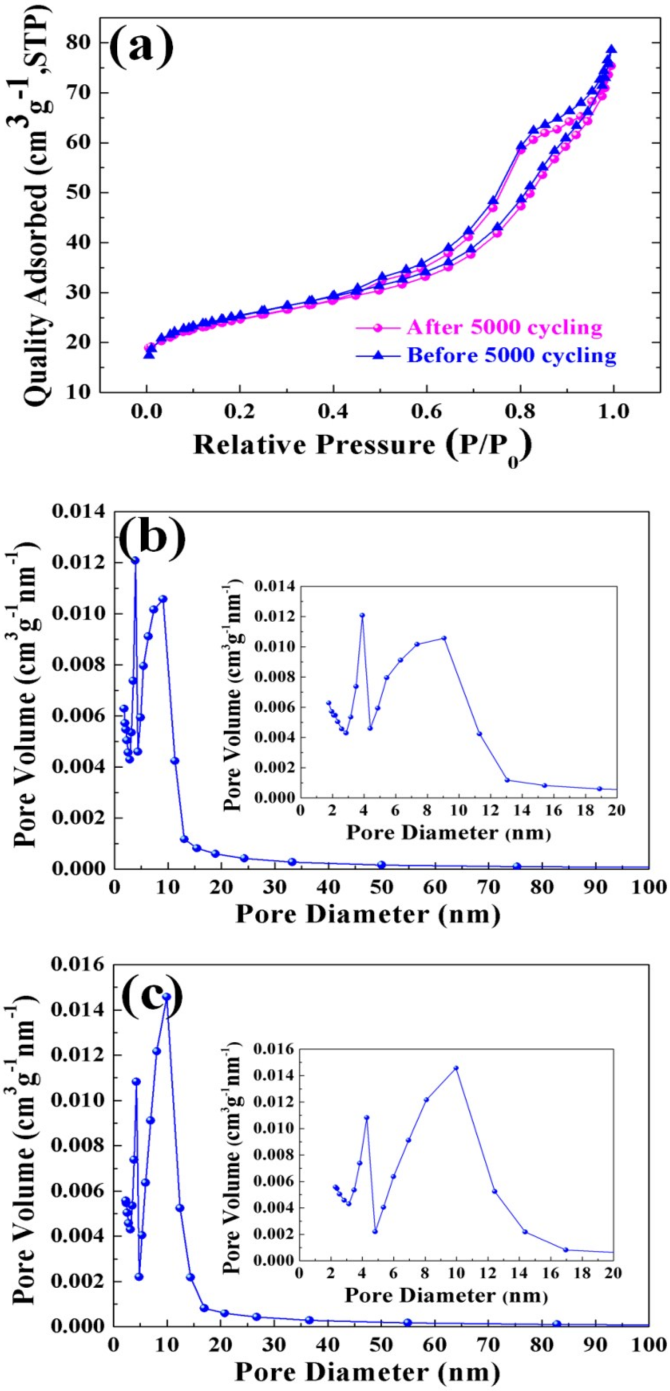

Fig. S2 (a) N_2 adsorption and desorption isotherms of pre- and post-cycled Co_3O_4/CeO_2 hybrid NWAs. (b) Pore size distributions of pre-cycled Co_3O_4/CeO_2 hybrid NWAs. (c) Pore size distributions of post-cycled Co_3O_4/CeO_2 hybrid NWAs.

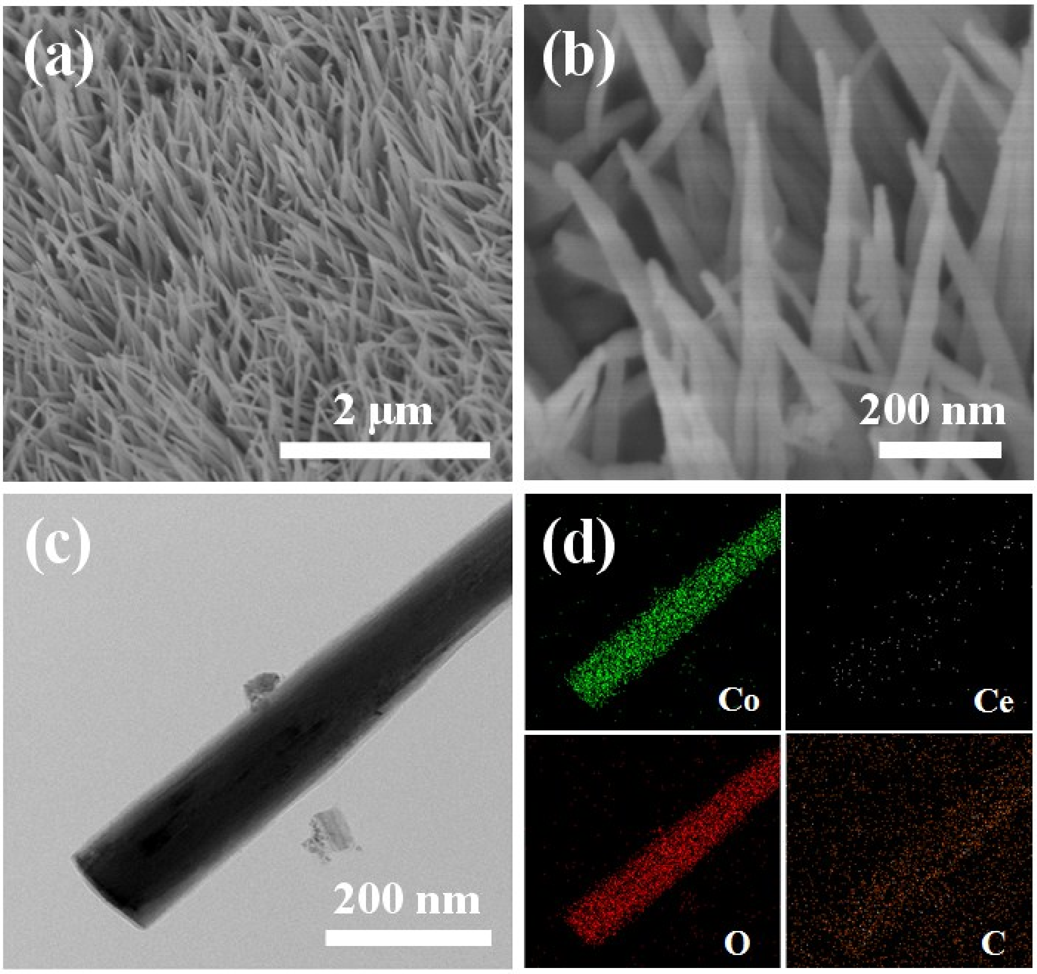

Fig. S3. SEM images of Co_3O_4/CeO_2 hybrid NWAs precursor with low (a) and high (b) magnifications. (c) TEM image of an individual Co_3O_4/CeO_2 nanowire precursor and (d) EDX mapping of corresponding Co_3O_4/CeO_2 nanowire in Fig. S3(c).

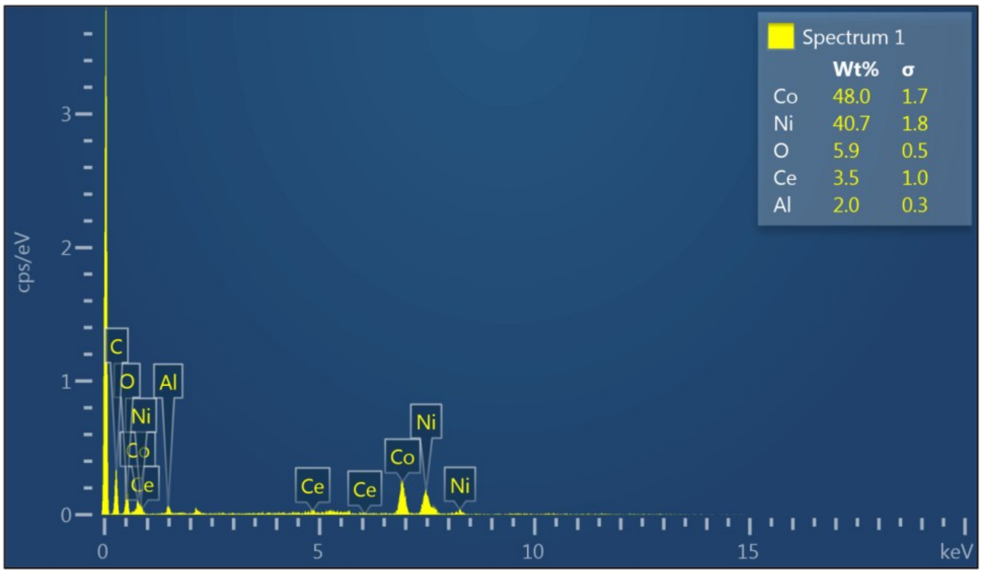

Fig. S4. EDS analysis of an individual Co_3O_4/CeO_2 hybrid nanowire.

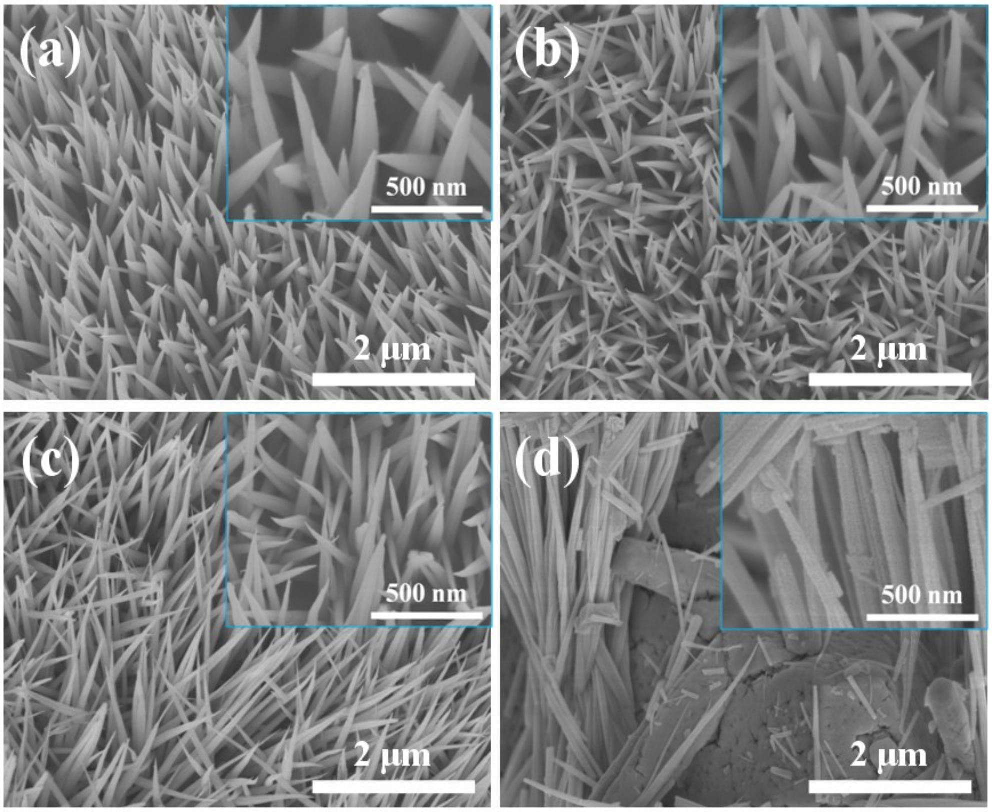

Fig. S5. SEM images of Co_3O_4/CeO_2 hybrid NWAs fabricated by hydrothermal method with different cerium nitrate concentrations. (a) 50 mM, (b) 100 mM, (c) 150 mM and (a) 200 mM.

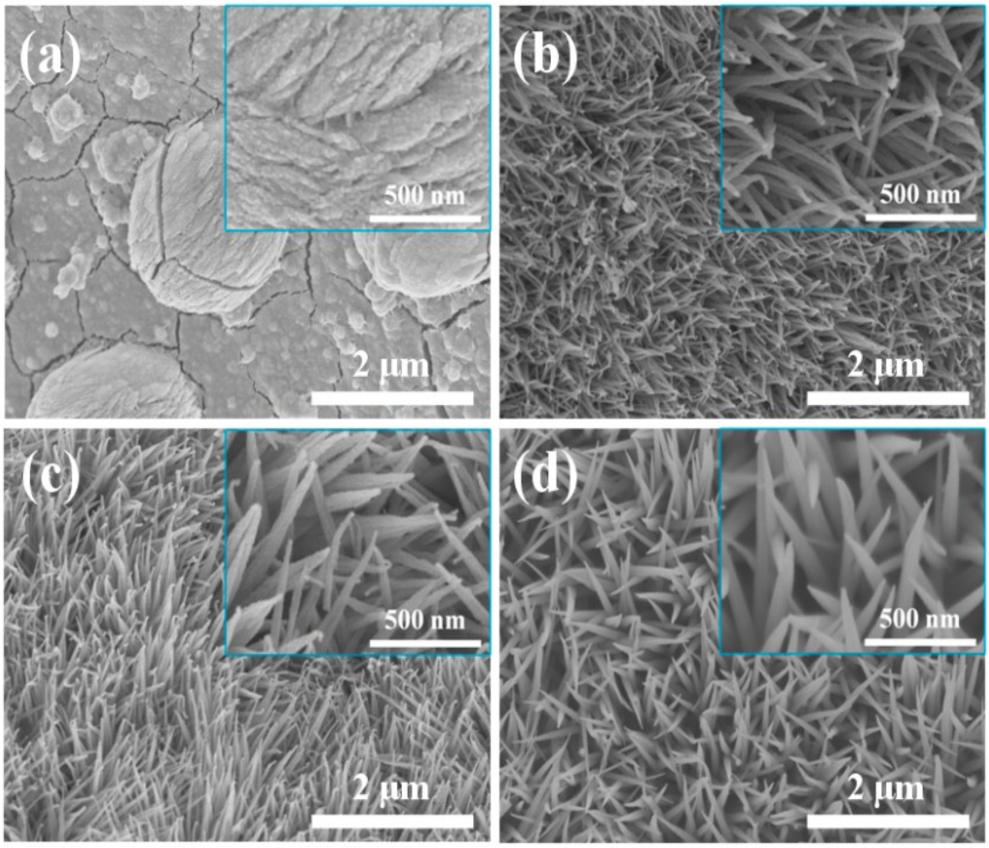

Fig. S6. SEM images of Co_3O_4/CeO_2 hybrid NWAs fabricated by hydrothermal method at different temperatures. (a) 90 ℃, (b) 100 ℃, (c) 110 ℃ and (d) 120 ℃.

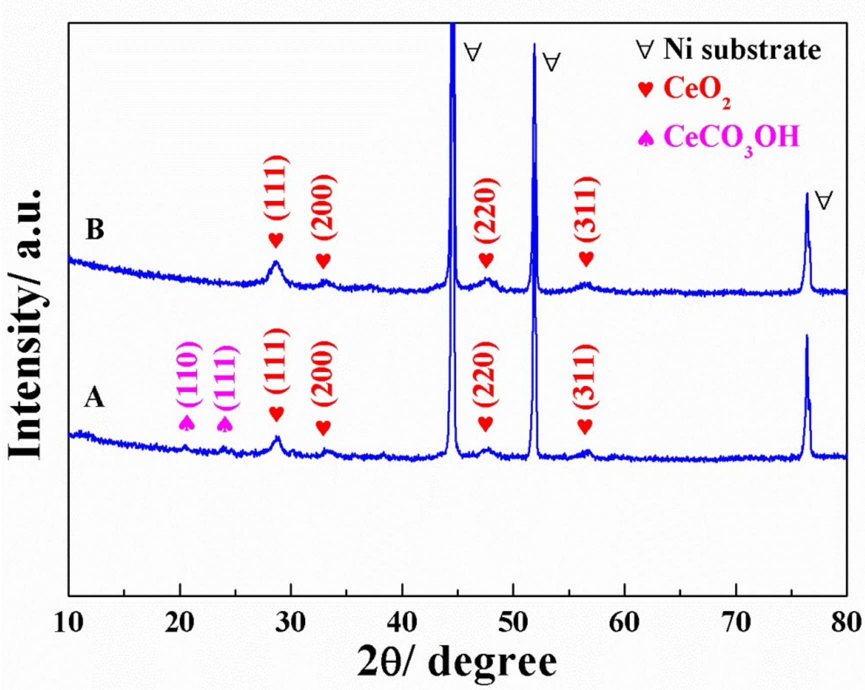

Fig. S7. XRD patterns of samples fabricated at 90 ℃ before (A) and after (B) calcinations.

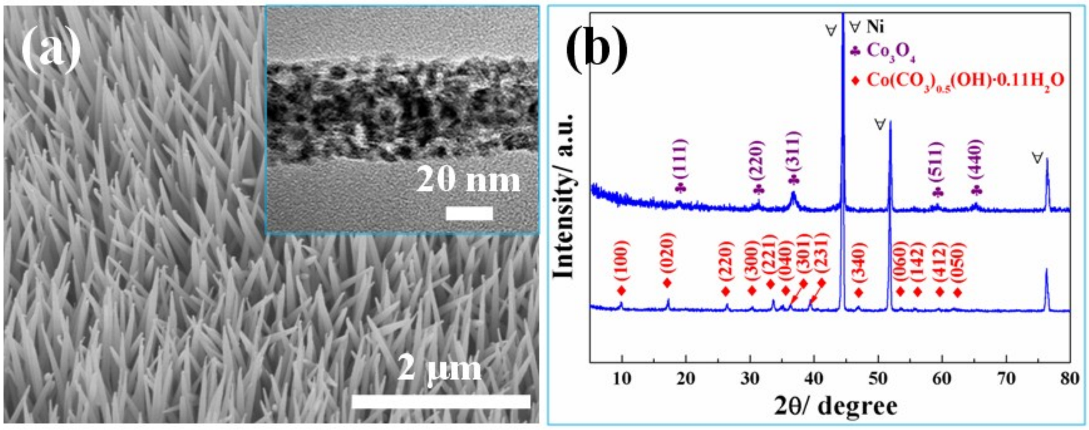

Fig. S8. (a) SEM of Co_3O_4 NWAs and TEM images of an individual Co_3O_4 nanowire, (b) XRD patterns of samples fabricated by hydrothermal method without addition of cerium nitrate before and after calcinations.

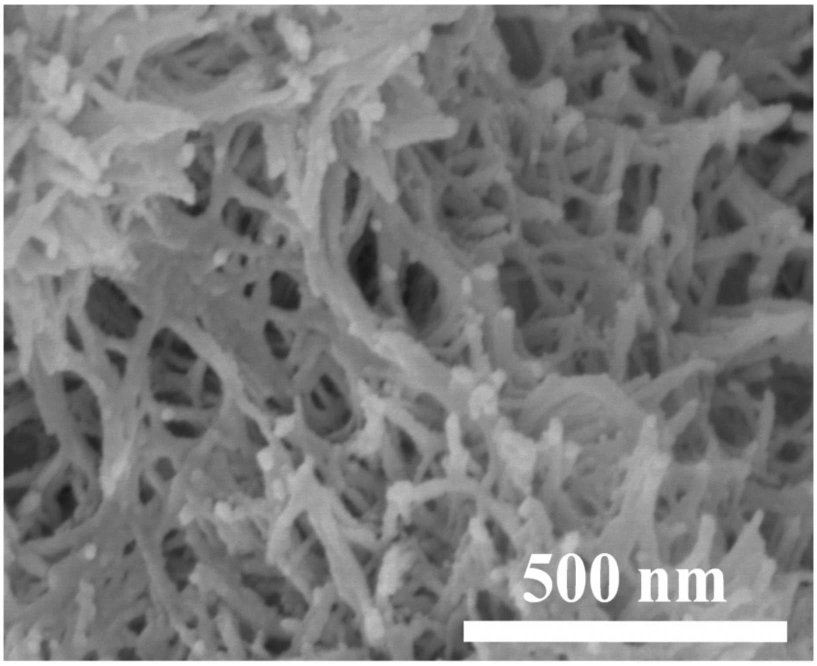

Fig. S9. SEM image of CeO_2 NWAs fabricated by hydrothermal method.

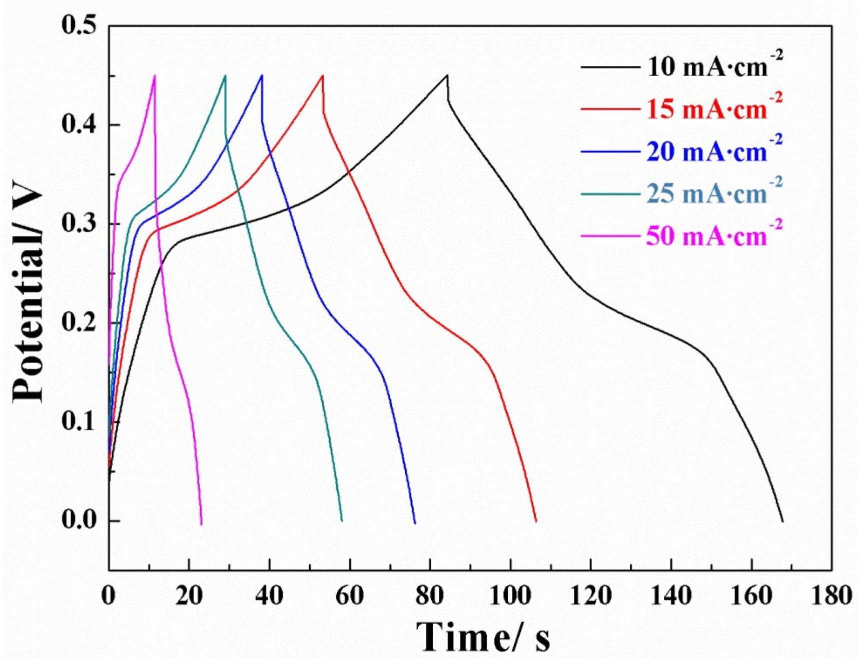

Fig. S10. Charge/discharge plots of Co_3O_4 NWAs at different current densities.

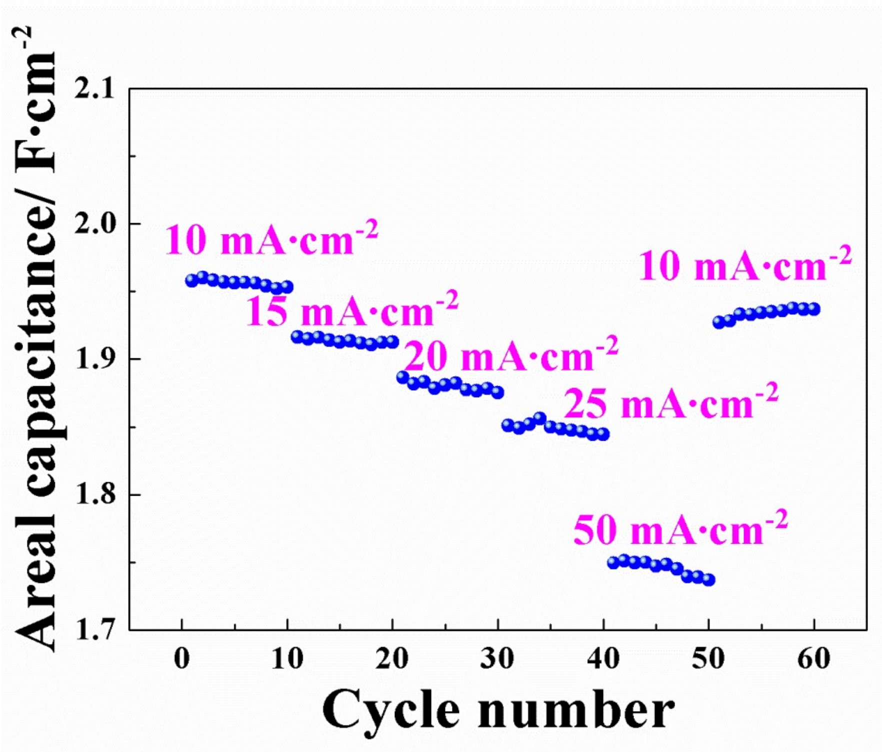

Fig. S11. Areal capacitances of Co_3O_4 NWAs at different current densities

Table S1 Comparison of supercapacitors based on Co_3O_4/CeO_2 NWAs and other Co_3O_4-based hybrid NWAs

Electrode materials	Synthesis Approach	Mass loading ($mg{\cdot}cm^{-2}$)	Specific capacitance ($F{\cdot}g^{-1}$)	Current density($A{\cdot}g^{-1}$)	Ref.
Co_3O_4/CeO_2 NWAs	One-step Hydrothermal	4.8	1037.5	2.08	This work
Co_3O_4@MnO_2 NWAs	Two-step Hydrothermal	1.5	480.0	2.67	1
Co_3O_4@MnO_2 NWAs	Two-step Hydrothermal	1.67	1396.0	2.0	2
Co_3O_4@MnO_2 NWAs	Two-step Hydrothermal	-	1209.4	1.0	3
Co_3O_4@MnO_2 NWAs	Two-step Hydrothermal	1.3	1072.6	1.54	4
Co_3O_4@PPy@MnO_2 NWAs	Hydrothermal Electrodeposition CBD	1.8	629.0	0.67	5
Co_3O_4@Pt@MnO_2 NWAs	Hydrothermal Vacuum deposition Hydrothermal	-	539.0	1.0	6
Co_3O_4@Au-decorated PPy NWAs	Hydrothermal Polymerization	3.1	2062.0	2.06	7
Co_3O_4@$NiCo_2O_4$ NWAs	Hydrothermal Electrodeposition	1.5	526.7	20.0	8
Co_3O_4/NiO NWAs	Hydrothermal CBD	3.0	853.0	2.0	9
Co_3O_4@$NiMoO_4$ NWAs	Two-step Hydrothermal	5.2	1230.0	1.92	10
Co_3O_4@Ag NWAs	Hydrothermal Chemical deposition	-	1006.0	2.0	11

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