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

Supporting Information:

Incorporation of homogeneous Co_3O_4 within nitrogen-doped carbon aerogel via a facile in situ synthesis method: Implications for high performances asymmetric supercapcitors

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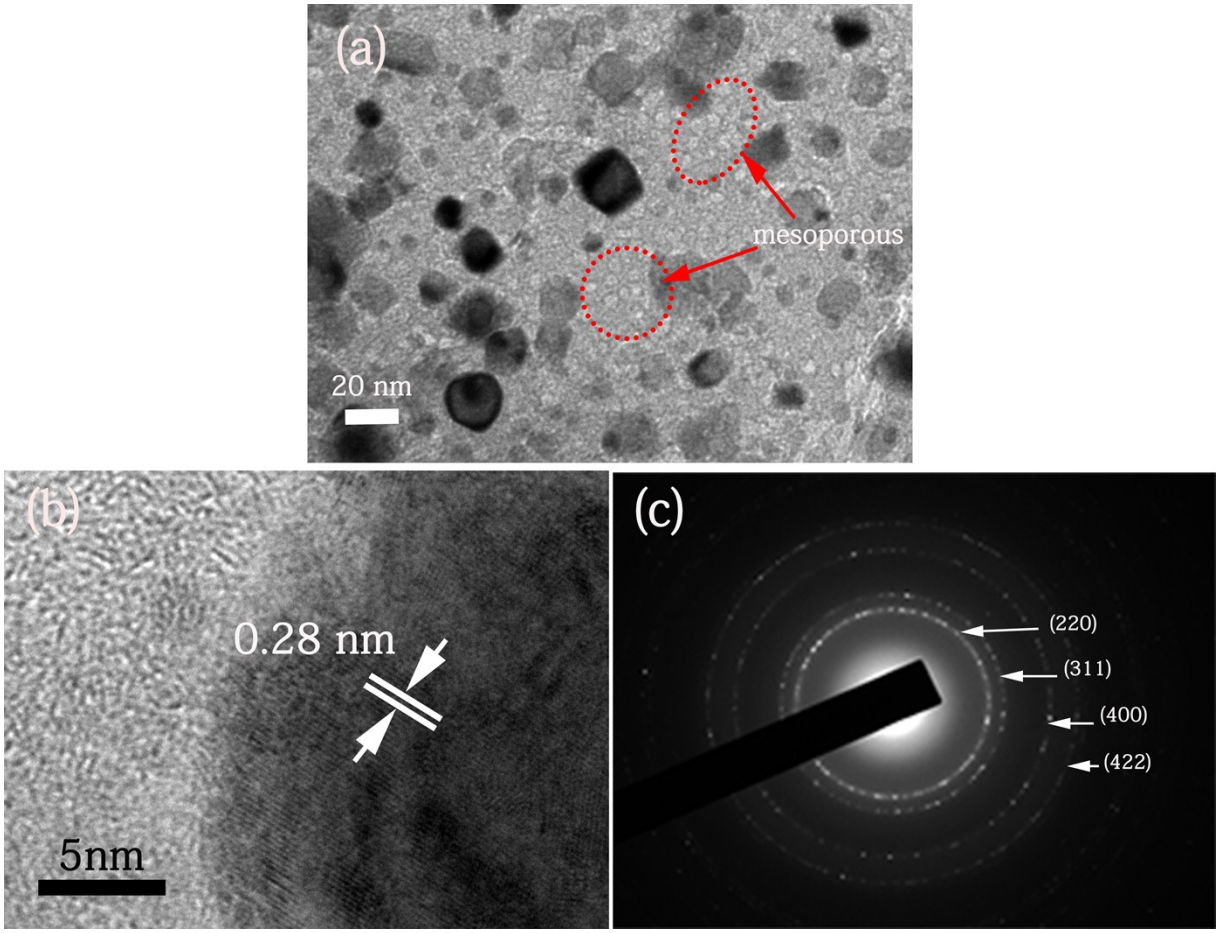

Figure S1 (a) TEM images of NCA/Co_3O_4-3 at high magnifications; (b) HRTEM image and (c) the corresponding SAED pattern of the NCA/Co_3O_4-3 sample.

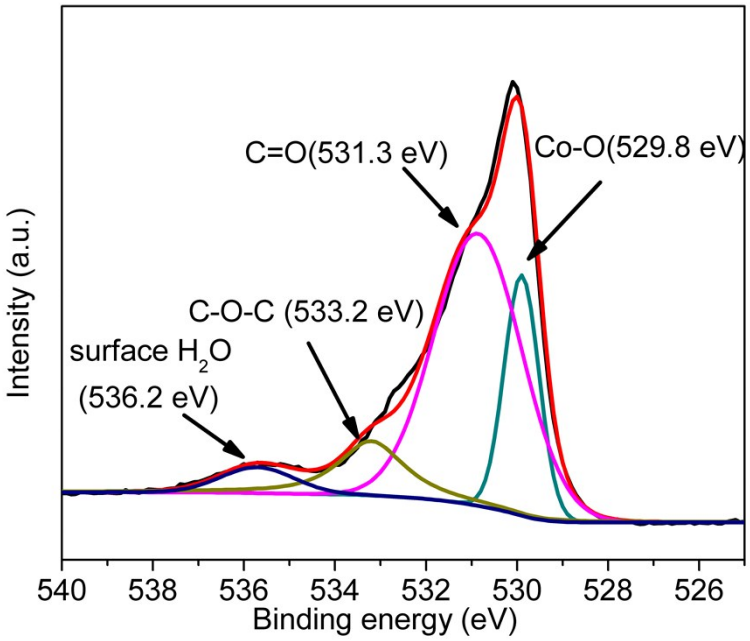

Figure S2 The high resolution O 1s XPS spectra of NCA/Co_3O_4-3

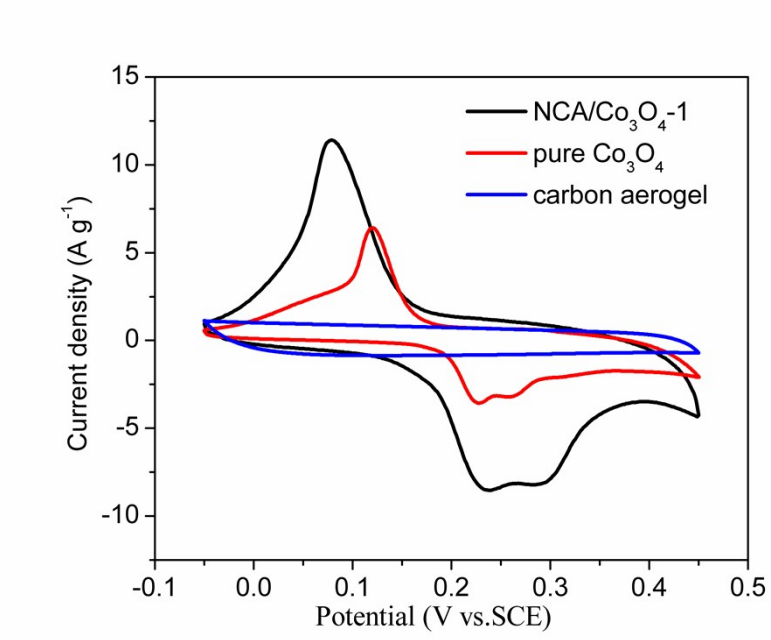

Figure S3 Comparative cyclic voltammograms for the typical NCA/Co_3O_4-3 hybrid, pure Co_3O_4 and carbon aerogel at a scan rate of 10 mV s^{-1}

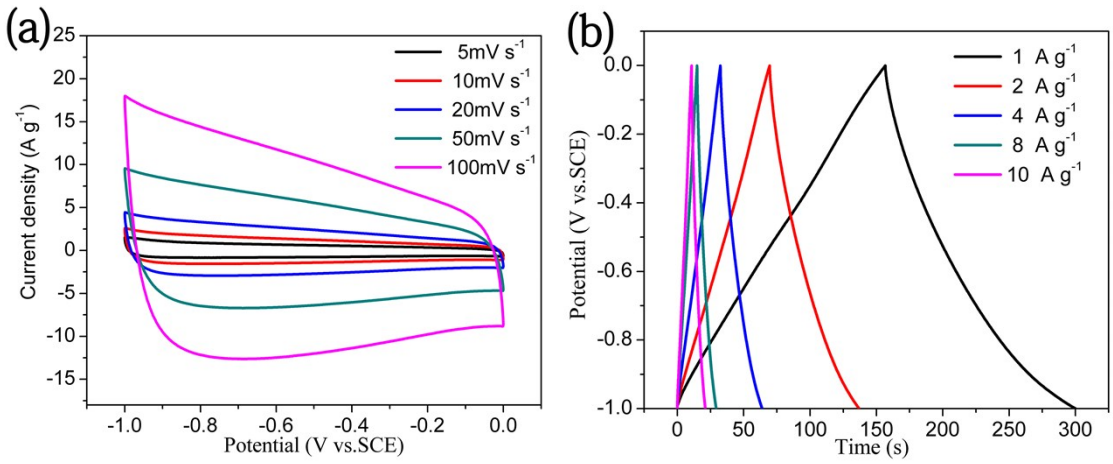

Figure S4 (a) CV curves of NCA at different scan rates; (b) GCD curves of NCA at different current densities.

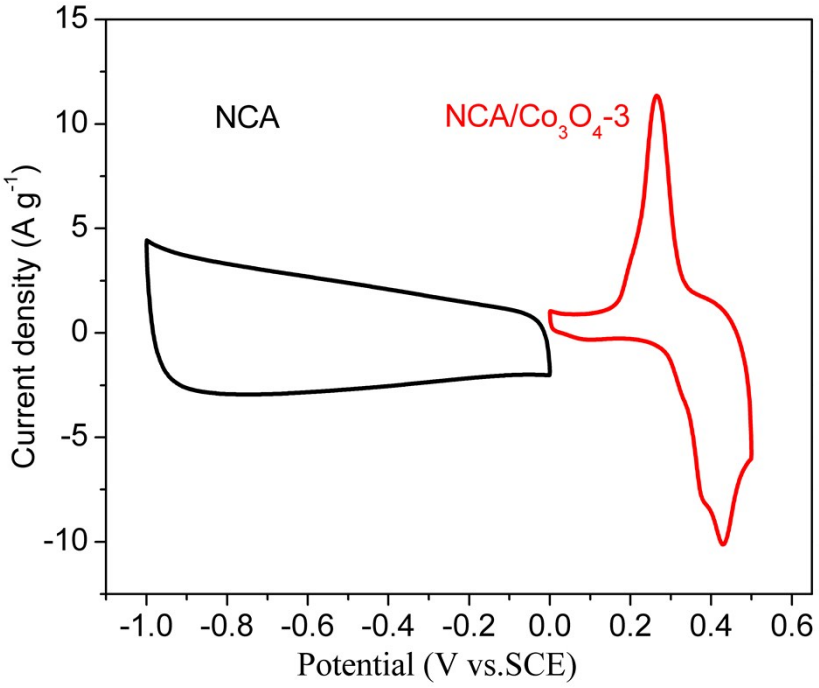

Figure S5 Comparative CV curves of NCA/Co_3O_4-3 and NCA electrodes performed at a scan rate of 20 mV s^{-1} in a three-electrode cell

Table S1 The elemental composition and atomic content of the NCA/Co_3O_4 composites.

Samples	C (%)	N (%)	O (%)	Co (%)
NCA/Co_3O_4-1	70.05	3.78	21.32	4.85
NCA/Co_3O_4-2	61.78	3.52	26.83	7.87
NCA/Co_3O_4-3	44.91	3.10	37.33	14.67

Table S2 Comparison of the electrochemical properties of the reported cobalt-based electrodes

Reference no.	Current density or scan rate	Specific capacitance	Material	Cycle Life
[1]	2.0 A/g	443 F/g	Hierarchical Co_3O_4 film	94.3% (3000 cycles)
[2]	1.0 A/g	556 F/g	Co_3O_4-CNFs hybrid porous films	99% (2000 cycles)
[3]	0.1 A/g	491 F/g	Co_3O_4/AC hybrids	89% (5000 cycles)
[4]	5 mV/s	504 F/g	nanoporous Co_3O_4	-
[5]	2 mV/s	154 F/g	Co_3O_4/Carbon composite	93.4 % (2000 cycles)
[6]	15 A/g	590 F/g	Co_3O_4@MWCNT nanocables	No capacitance fading
[7]	1.2 A/g	187 F/g	Co_3O_4 NSs–rGO	89% (1000 cycles)
[8]	1.0 A/g	150 F/g	Porous Co_3O_4	No capacitance decay after 3400 cycles
[9]	2.0 A/g	570 F/g	*In-situ* encapsulated Co_3O_4 nanoparticles on carbon nanofibers	74% (2000 cycles)
[10]	1.0 A/g	583 F/g	α -$Co(OH)_2$/Co_3O_4 Flakes	104% (2000 cycles)
[11]	5 mV/s	478 F/g	Co_3O_4/graphene nanocomposite	-
[12]	5 mV/s	262 F/g	Co_3O_4 Nanorods	90% (500 cycles)
[13]	2 mV/s	472 F/g	rGO–Co_3O_4 composite	95.6% (1000 cycles)
This work	**1 A/g**	**616 F/g**	**nitrogen-doped carbonaceous aerogel/cobalt oxide composites**	**93.6% (5000 cycles)**

References

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