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

Facile synthesis of reduced graphene oxide wrapped porous $NiCo_2O_4$ composite with superior performance as an electrode material for supercapacitors

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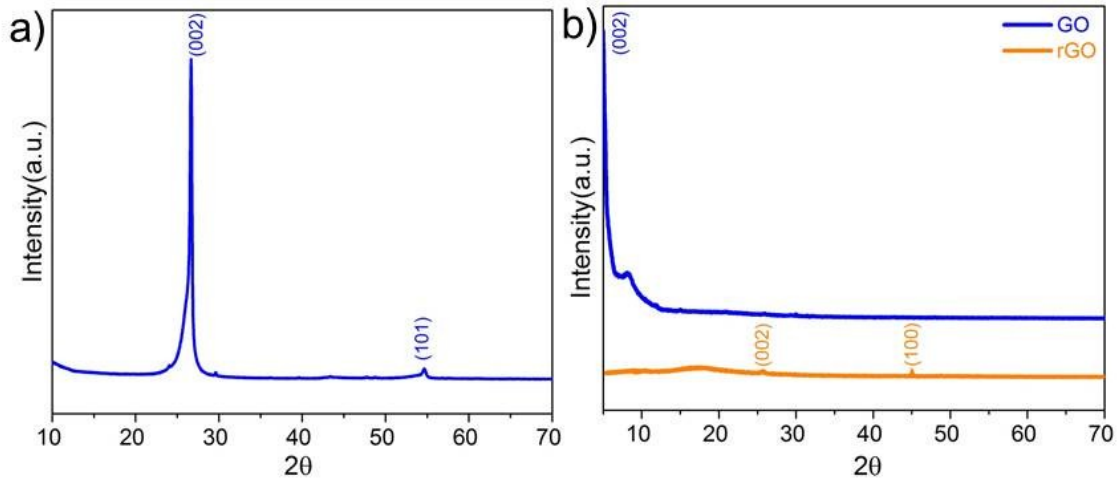

Fig. SI-I. XRD pattern of a) graphite powder, and b) graphene oxide and reduced graphene oxide.

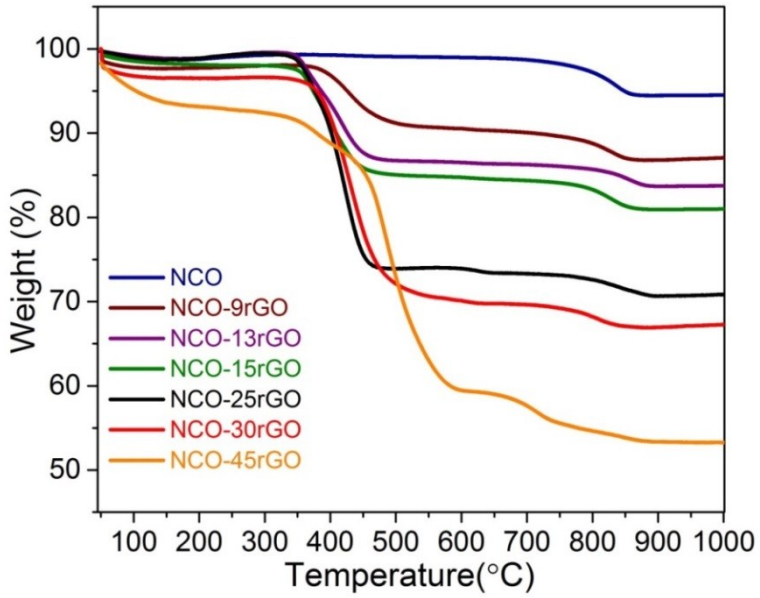

Fig. SI-II.TGA analysis of the NCO and different NCO- rGO nanocomposites.

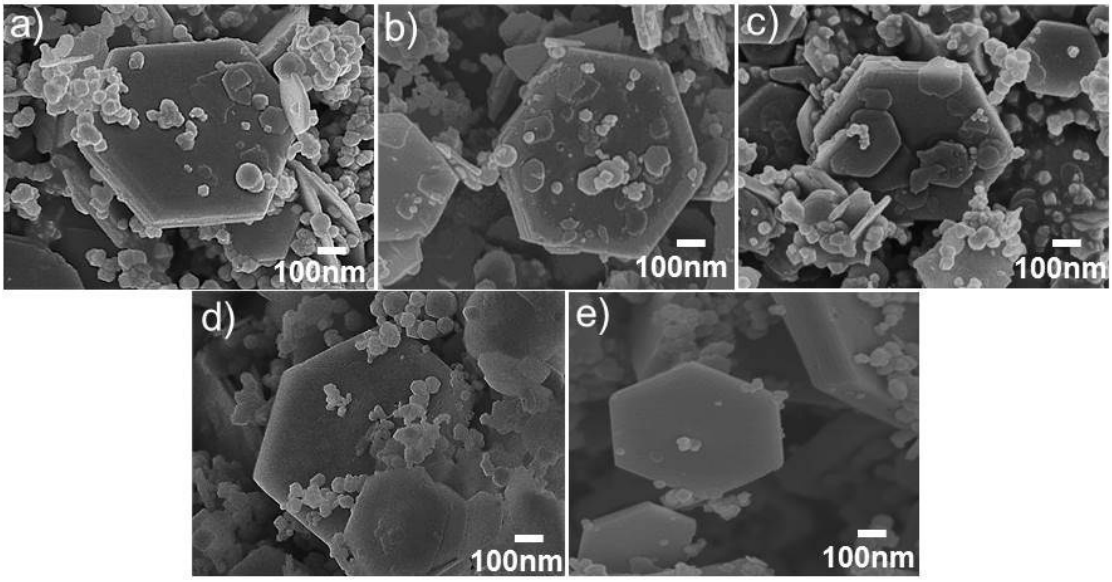

Fig. SI-III. FESEM images of a) NCO-9rGO, b) NCO-13rGO, c) NCO-15rGO, d) NCO-25rGO, and e) NCO-45rGO hexagonalnanoplate composites.

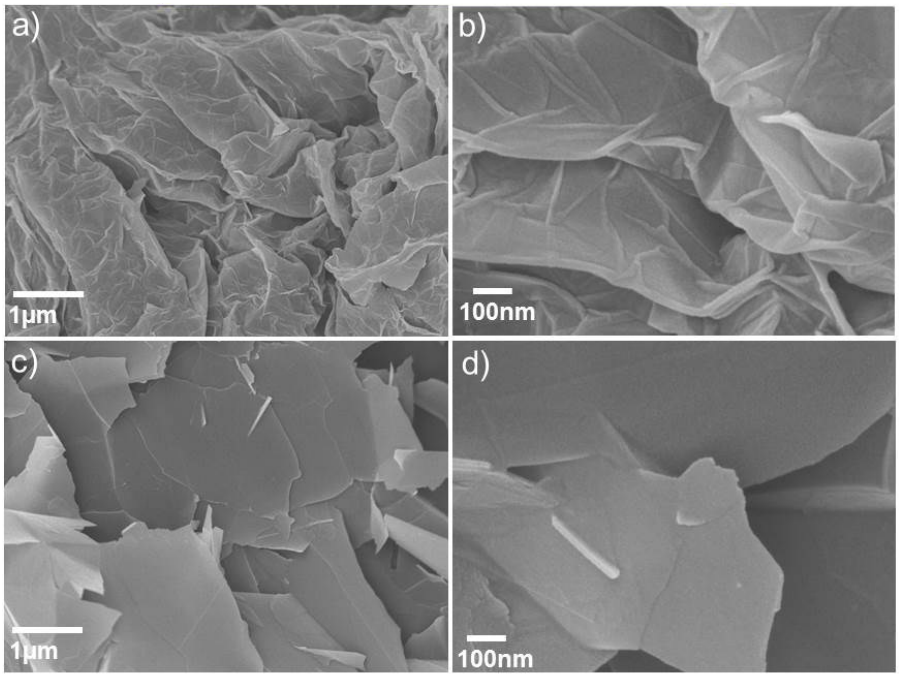

Fig. SI-IV.FESEM images of (a, b) GO and (c, d) rGO at different magnifications.

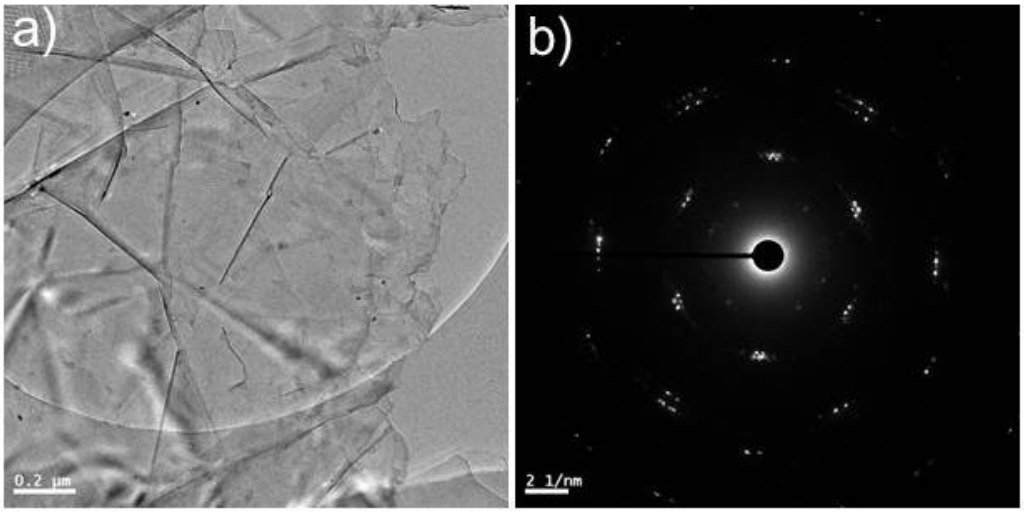

Fig.SI-V.a) HRTEM image of rGO, and b) the corresponding SAED pattern

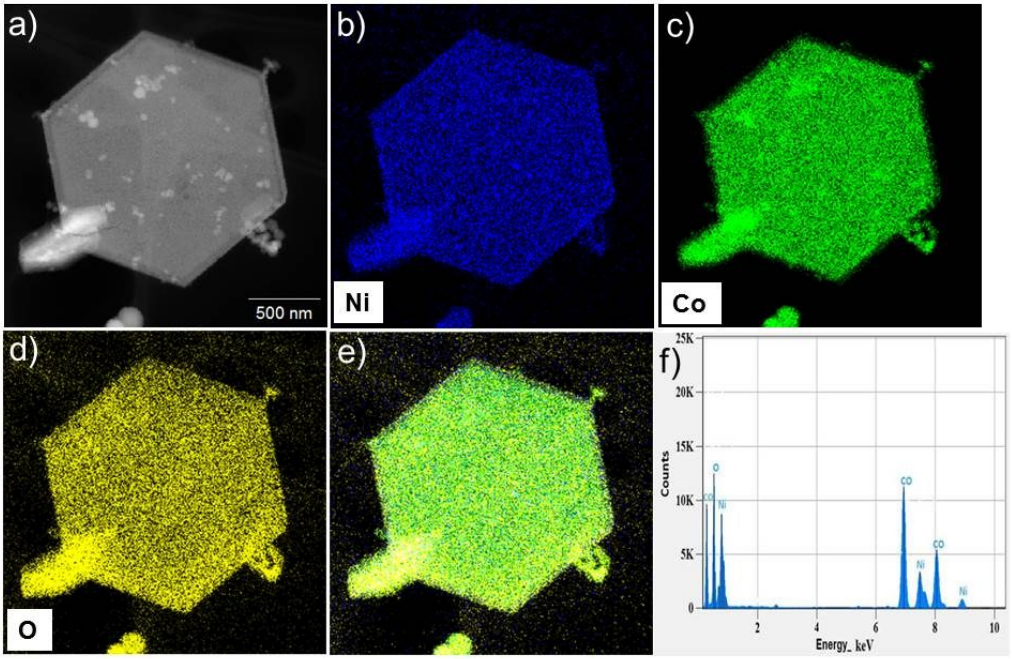

Fig. SI-VI. a) TEM image, b) nickel, c) cobalt d) oxygen, e) combined elemental mapping of NCO, and f)EDS spectrum of NCO nanoplate.

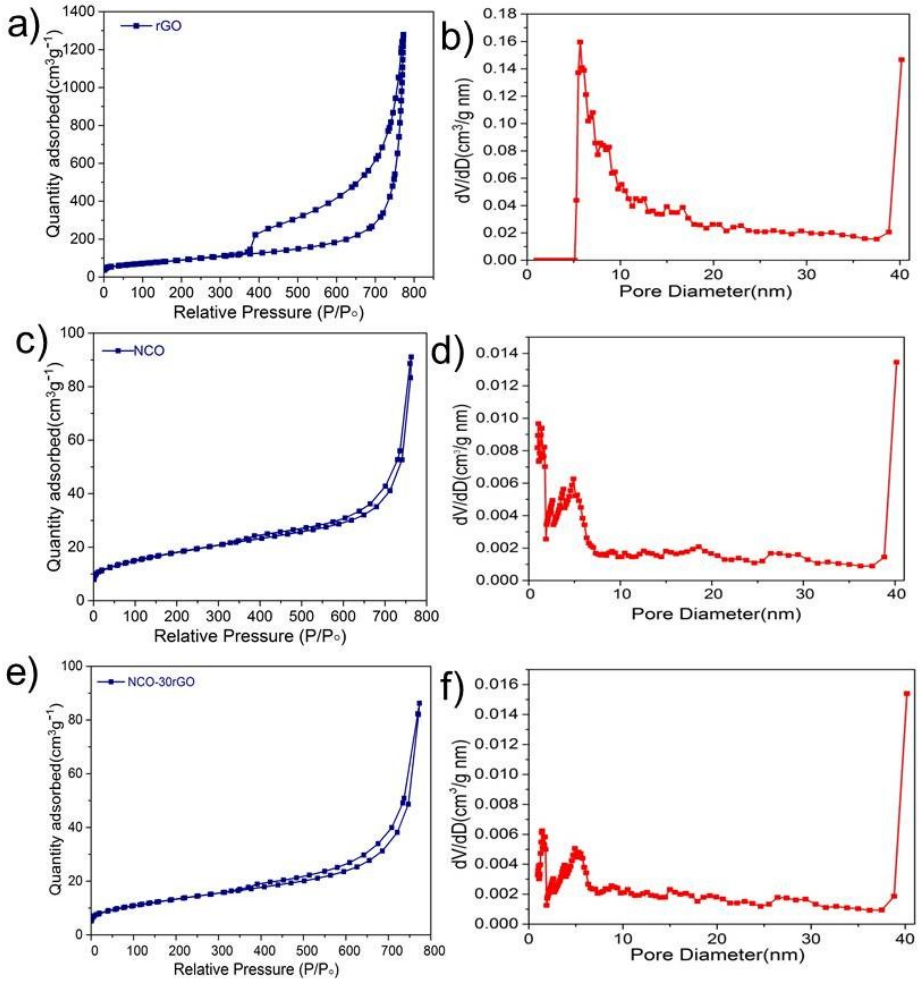

Fig.SI-VII. (a, c ,e) Nitrogen adsorption and desorption isotherms of rGO nanosheets, NCO, NCO-30rGO composite and (b, d, e) show the corresponding BJH pore size distributions.

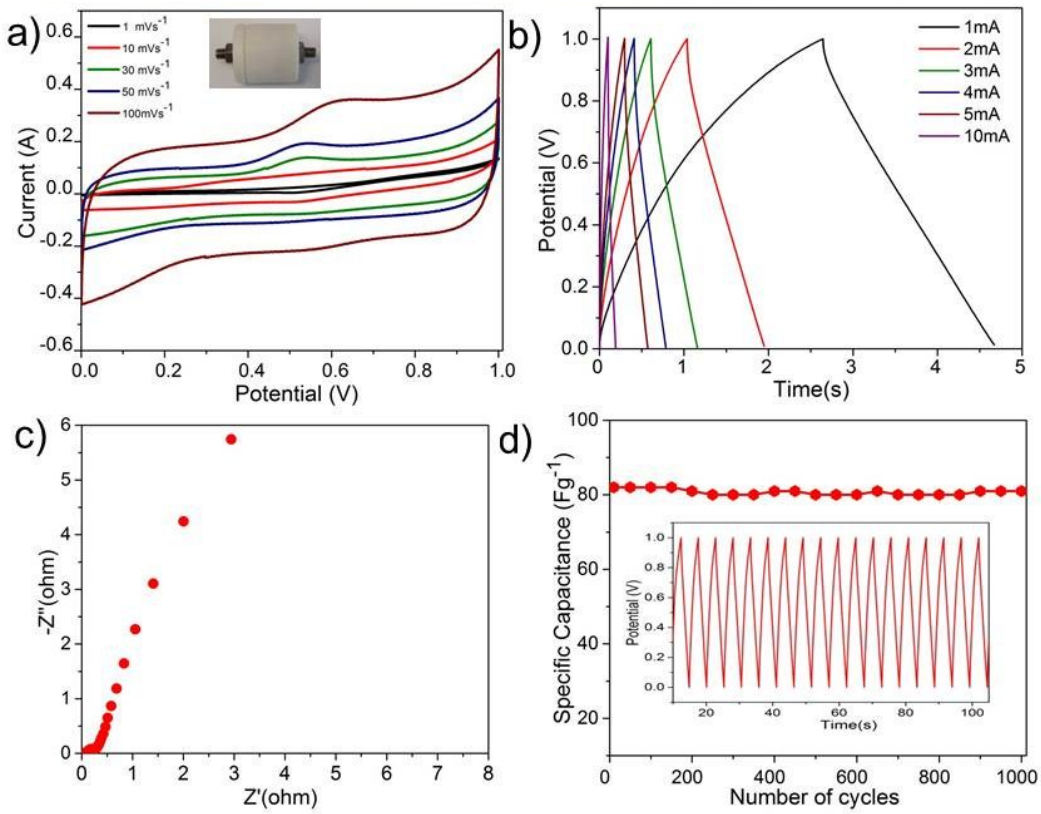

Fig.SI-VIII. a) CV curves, b) charge /discharge curves, c) Nyquist plots recorded between 1 Hz and 100 kHz, and d) cycling performance of the NCO-30rGO device in 2 M KOH solution.

Table. SI-1. BET and BJH parameters.

Samples	BET specific surface area (m^2 g^{-1})	BJH pore volume (cc g^{-1})	Average pore size (nm)
rGO	301.603	2.445e-01	5.2
NCO	75.2	4.103e-02	3.1
NCO-30rGO	144.3	3.259e-02	2.2

Table. SI-2 Comparison of the electrochemical performance of NCO-30rGO in the present study with reports in the literature.

Electrode material	Processing technique	Specific capacitance (F g^{-1})	No. of cycles	Stability	Ref. No.
$NiCo_2O_4$@graphene	Hydrothermal reaction	778 (1Ag^{-1})	1000	90%	19
$NiCo_2O_4$-rGO	Composite self assembly	1050 (2Ag^{-1})	4000	-	20
$NiCo_2O_4$-rGO	Hydrothermal	947 (0.5Ag^{-1})	3000	92%	21
$NiCo_2O_4$@graphene	Hydrothermal	737 (1Ag^{-1})	3000	96%	22
$NiCo_2O_4$-rGO	Solvothermal	870 (2Ag^{-1})	5000	90%	30
$NiCo_2O_4$-rGO	Solution based	1186.3 (0.5Ag^{-1})	100	97%	31
$NiCo_2O_4$@graphene	Electrodeposition	1950(7.5Ag^{-1})	10000	92.8%	32
$NiCo_2O_4$-rGO	Electrostatic spray deposition (ESD)	777.1 (5Ag^{-1})	3000	99.3%	33
$NiCo_2O_4$@graphene	Hydrothermal	2300(1Ag^{-1})	5000	94.3%	34
$NiCo_2O_4$@graphene	Solvothermal	1060 (1.5Ag^{-1})	5000	93%	39
$NiCo_2O_4$@graphene	Coating	2173(6Ag^{-1})	14000	94%	40
$NiCo_2O_4$-rGO	Hydrothermal reaction	1222 (0.5Ag^{-1})	3000	97%	41
$NiCo_2O_4$-rGO	In situ assembling	1693 (1Ag^{-1})	2000	92%	42
$NiCo_2O_4$@graphene	Hydrothermal	1278(1Ag^{-1})	1000	95%	43
$NiCo_2O_4$-rGO	Solution method	1137.8 (1Ag^{-1})	1000	94%	44
$NiCo_2O_4$- carbon cloth	Hydrothermal	1843.3(1Ag^{-1})	4000	89%	47
$NiCo_2O_4$-rGO	Hydrothermal	1185 (2Ag^{-1})	10000	98 %	Present study