Supporting information

Graphene/NiO nanowires: controllable one-pot synthesis and enhanced pseudocapacitive behavior

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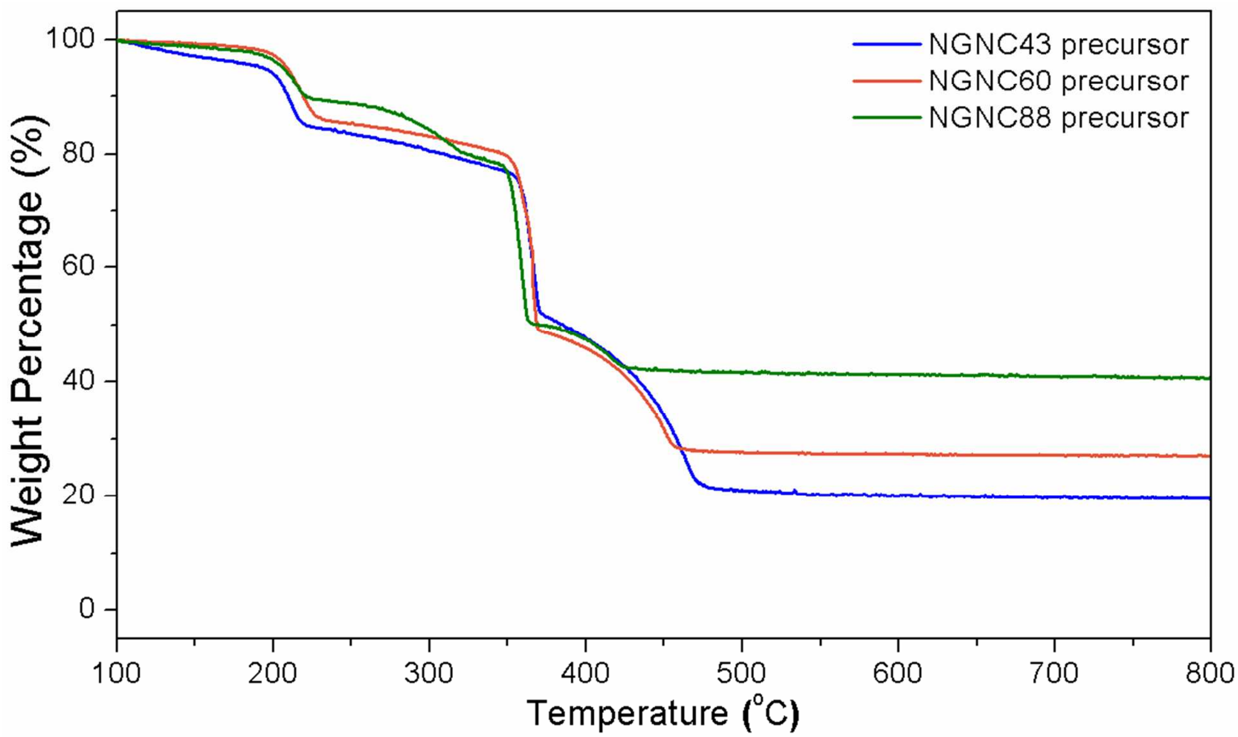

Figure S1. TGA plot of NGNC43, NGNC60 and NGNC88 precursors.

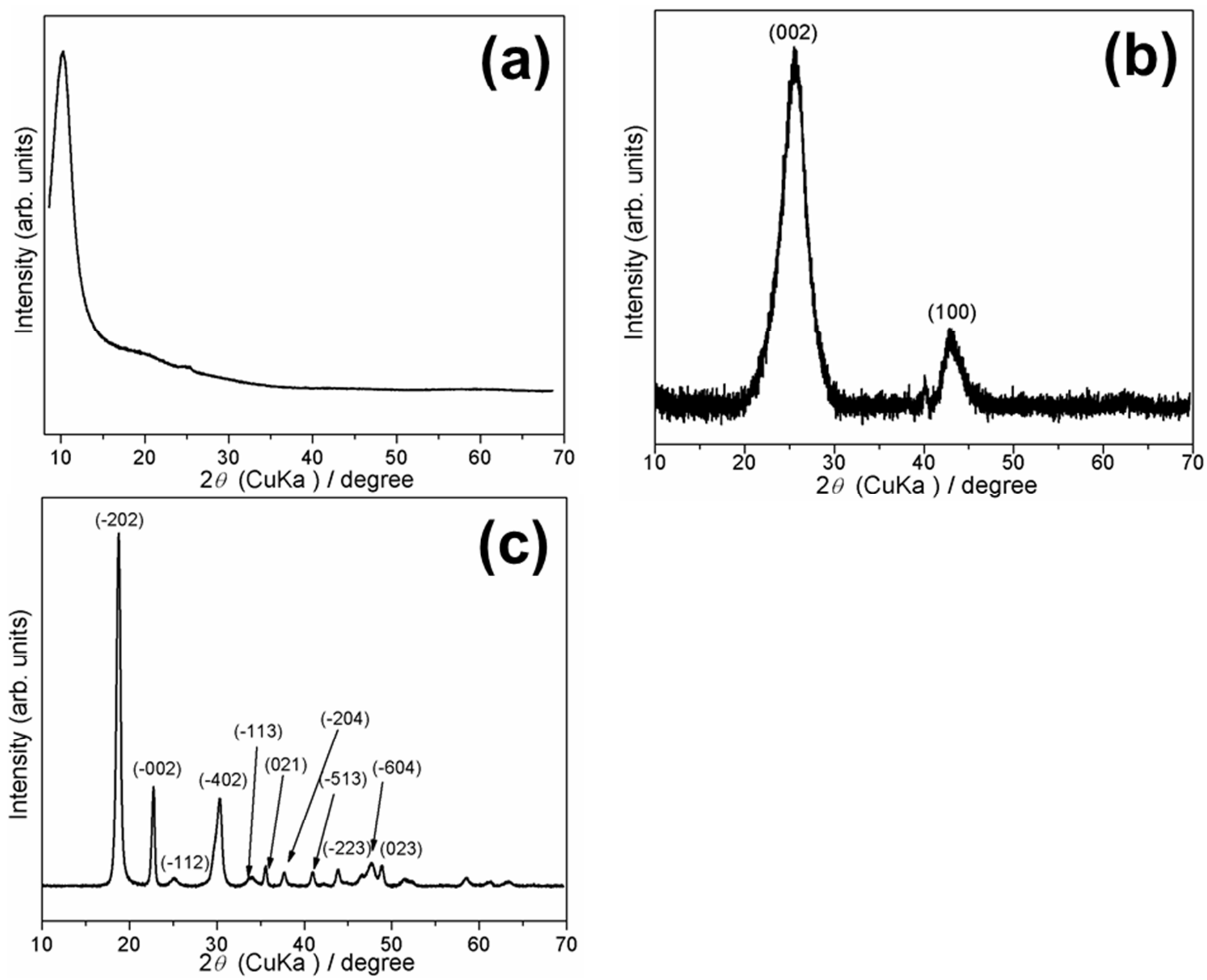

Figure S2. XRD patterns of (a) GO, (b) rGO reduced by ethylene glycol and hydrazine solution or thermally reduced graphene, (c) $NiC_2O_4.2H_2O$.

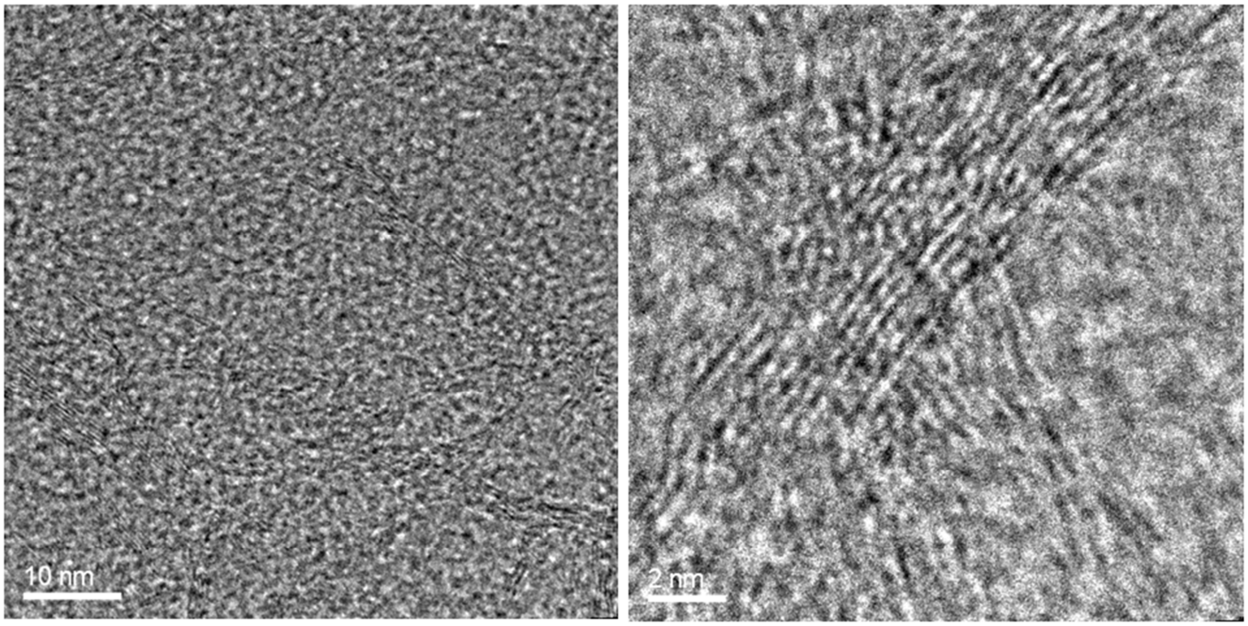

Figure S3. TEM images of rGO at different magnifications indicating disordered stacking of nanosheets.

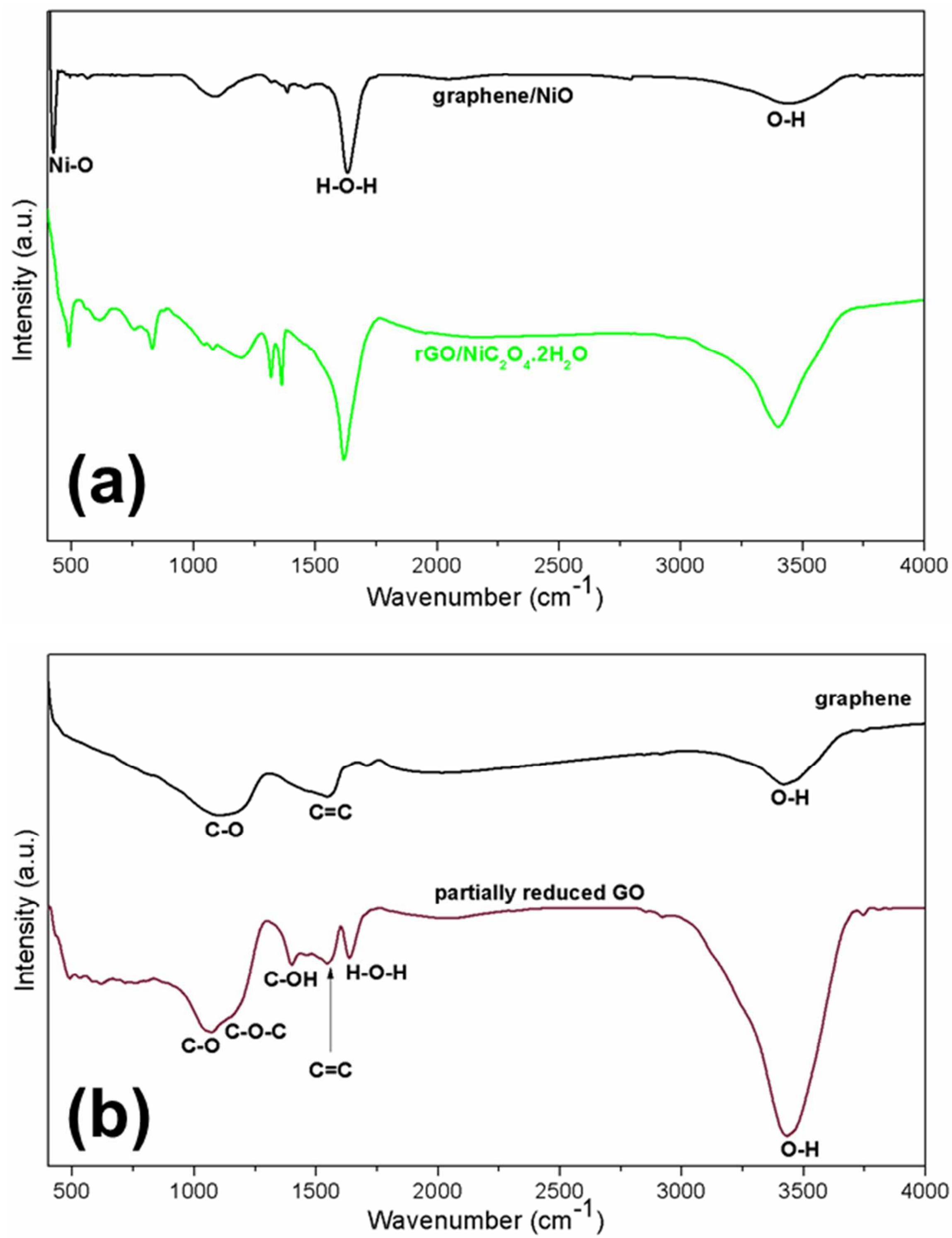

Figure S4. FTIR spectra of (a) rGO/$NiC_2O_4.2H_2O$ and graphene/NiO composite, (b) partially reduced GO and graphene.

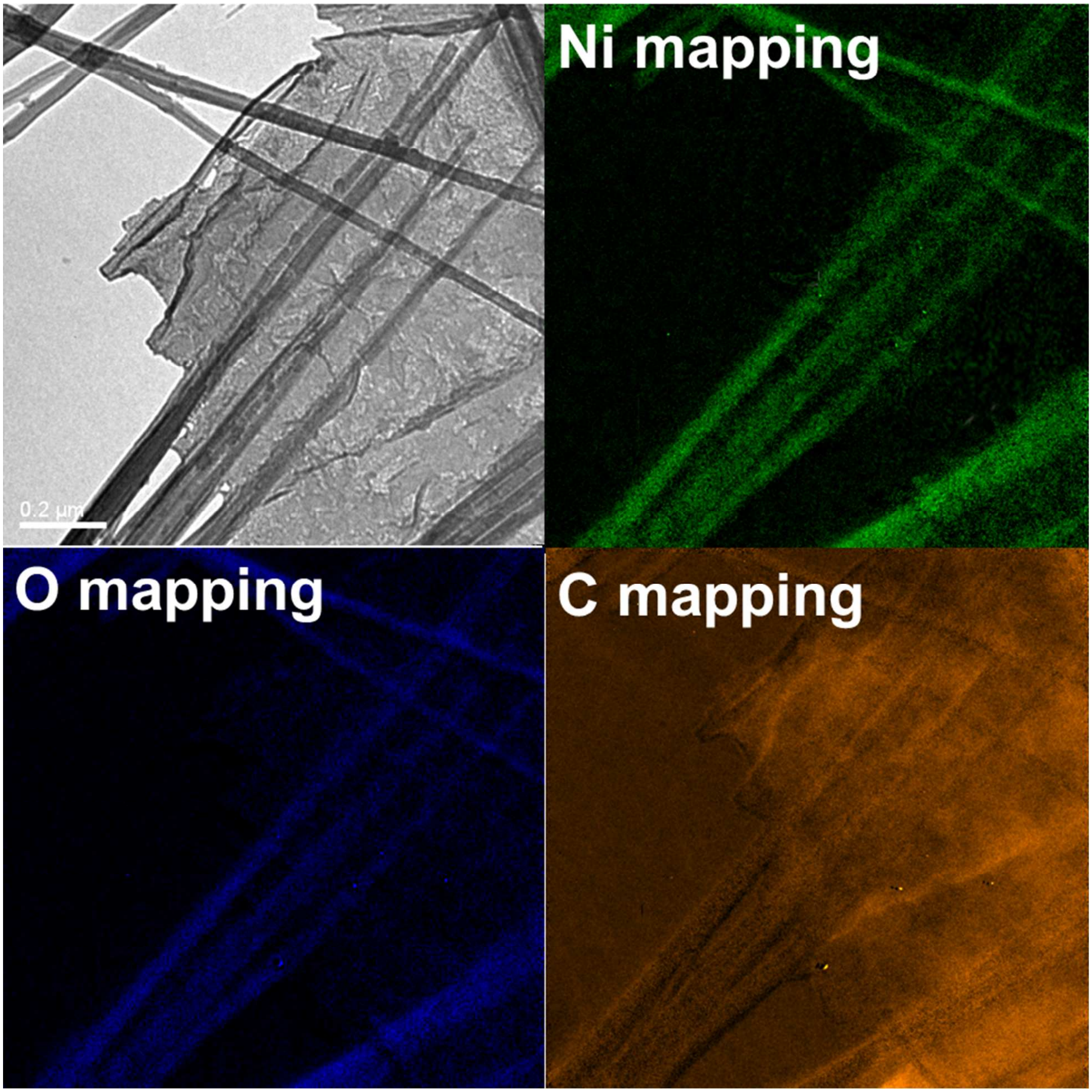

Figure S5. EFTEM mapping of rGO/$Ni_2C_2O_4$.$2H_2O$ nanowire hybrid structure.

Specific capacitance is calculate from CV curves based on following equation

$$C = \frac{\int i \, dE}{2 \, \Delta E \, m \, v}$$

where i is instantaneous current, E is the potential, m is active mass of electrode and v is the scan rate.

Scan rate	Specific capacitance values (F g^{-1})
200 mV s^{-1}	249.8
100 mV s^{-1}	307.1
50 mV s^{-1}	391.4
10 mV s^{-1}	459.6
5 mV s^{-1}	551.5
1 mV s^{-1}	611.3

Table S1. Specific capacitance values of NGNC79 derived from the CV curves at different scan rates.

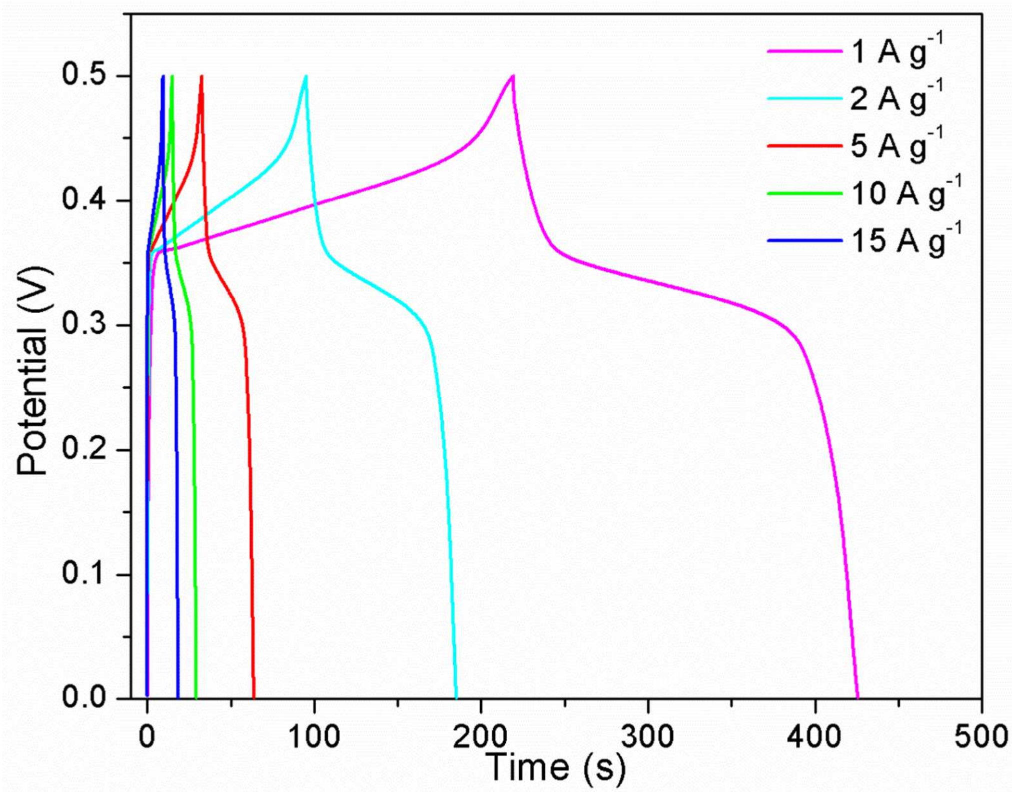

Figure S6. Charge/discharge plots of pure NiO nanowire at different current densities in potential window of 0 – 0.5 V.

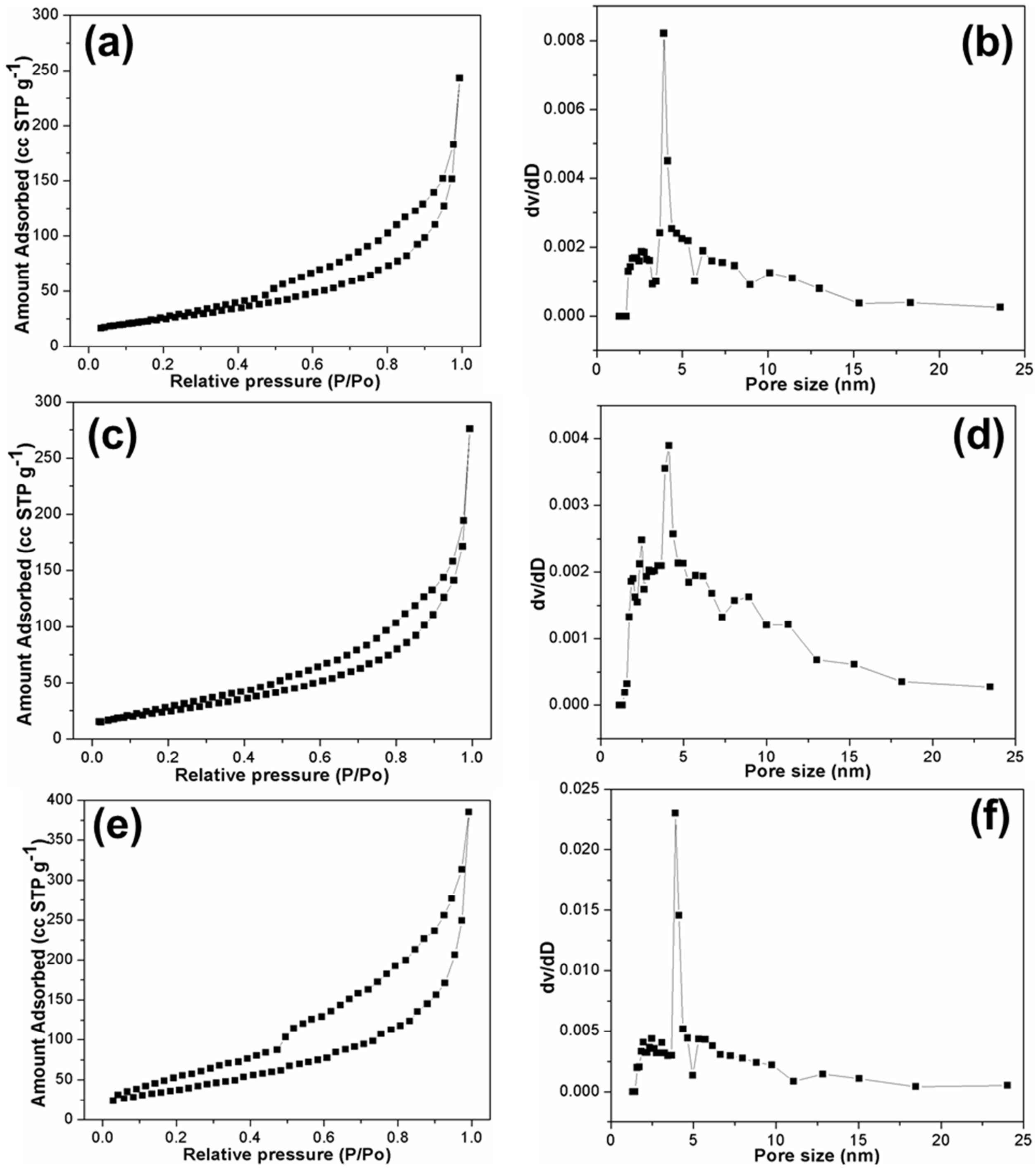

Figure S7. (a, c and e) Nitrogen adsorption–desorption isotherms of NGNC43, NGNC60 and NGNC88 (b, d and f) Pore size distribution of NGNC43, NGNC60 and NGNC88 samples.

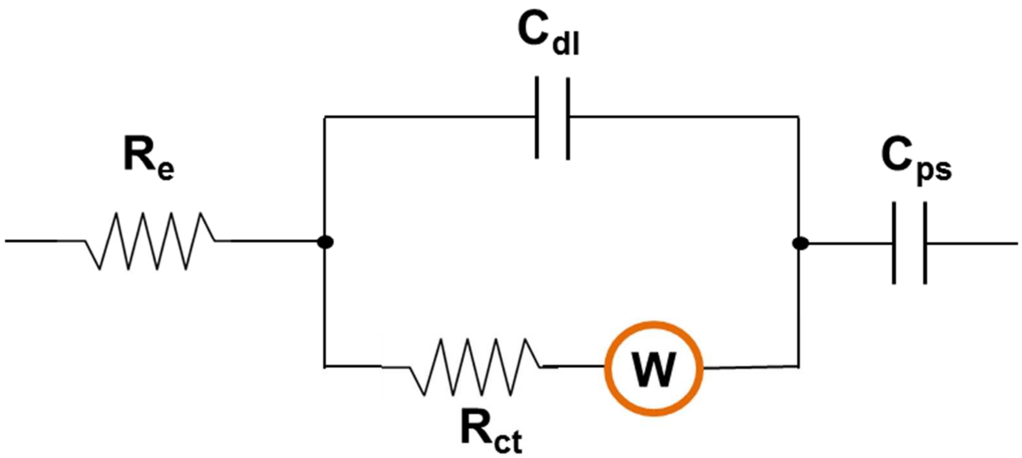

Figure S8. Electrical equivalent circuits.

R_e and R_{ct} are electrolyte and charge-transfer resistances, respectively.

C_{dl} and C_{ps} demonstrate double-layer capacitance and pseudocapacitance, respectively. The resistance of interfacial diffusionurg is represented by “W” as Warburg impedance.

Samples	BET surface area (m^2 g^{-1})	Mean pore diameter (nm)
NiO	81.6	10.5
NGNC43	91.9	10.5
NGNC60	92.4	10.5
NGNC79	109	11.1
NGNC88	132	12.0
graphene	602	14.9

Table S2. Calculated BET surface areas and mean pore diameters of all as-prepared samples.