

Supporting Information

Carbon-encapsulated NiO nanoparticle decorated single-wall carbon nanotube thin films for binderless flexible electrodes of supercapacitors

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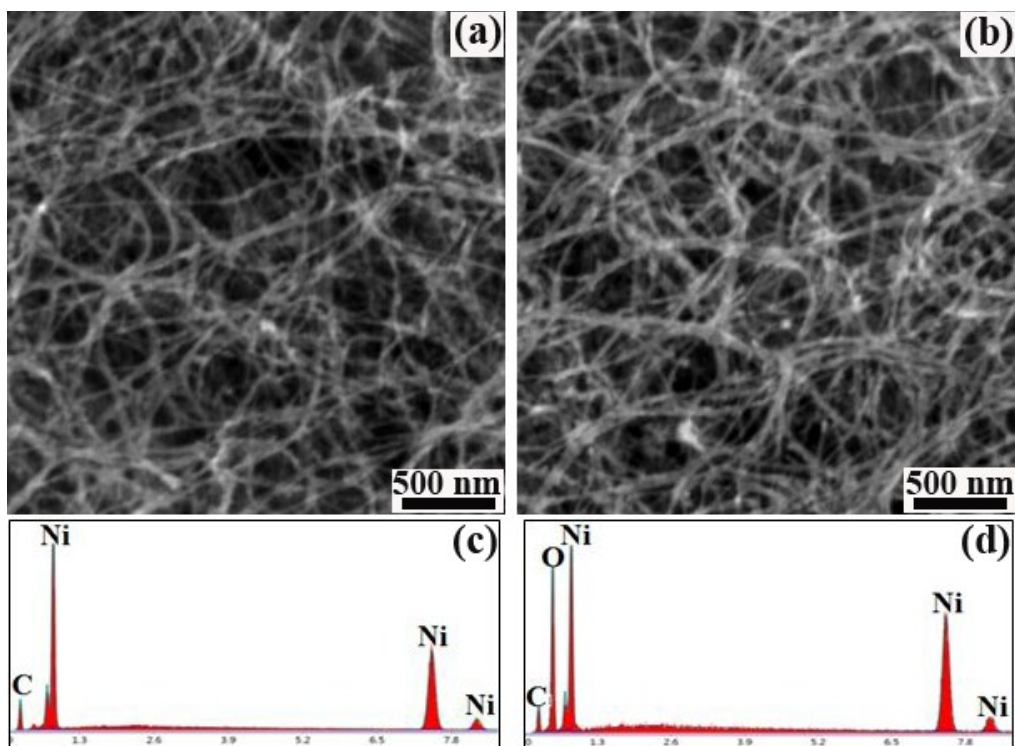


Fig. S1 SEM images of the (a) an as-grown CENi/SWCNT film and (b) CENiO/SWCNT film. (c) EDS spectra of a CENi/SWCNT film. (d) EDS spectra of a CENiO/SWCNT film.

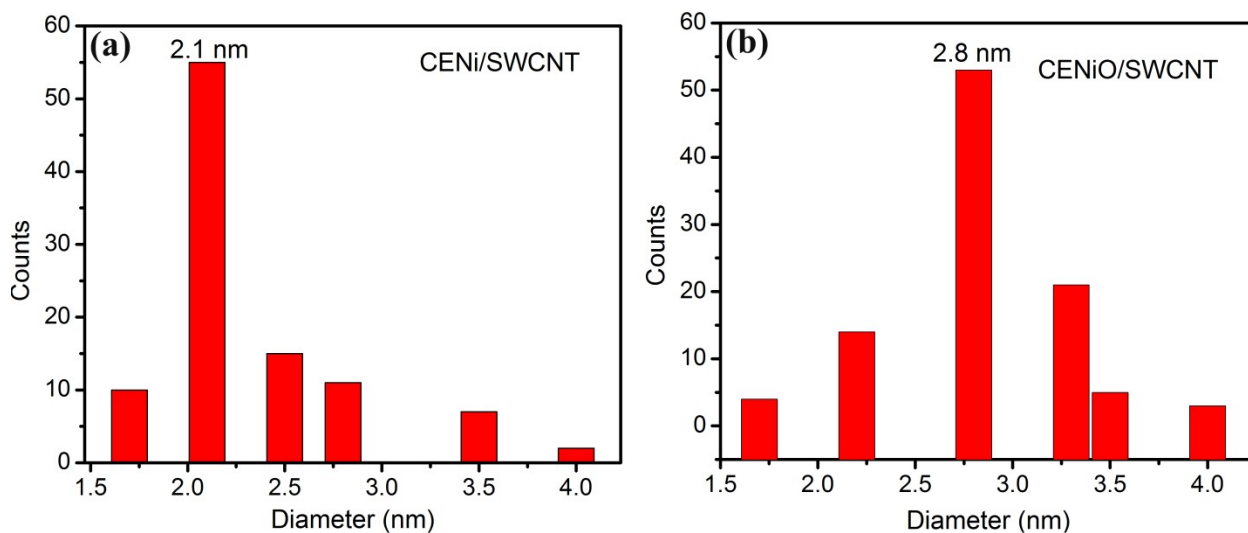


Fig. S2 Size distributions of (a) Ni nanoparticles in a CENi/SWCNT film and of (b) NiO particles in a CENiO/SWCNT film based on TEM observations.

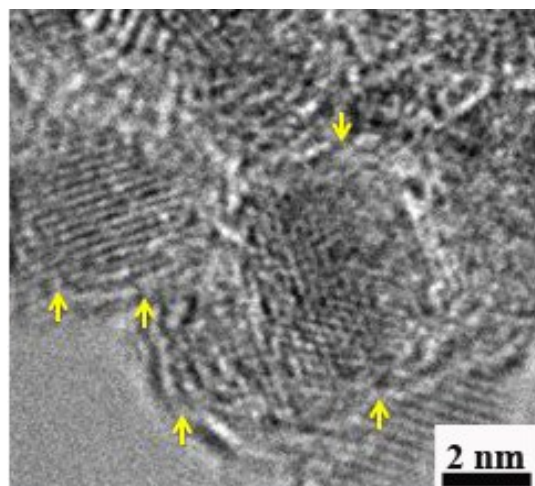


Fig. S3 HRTEM image of CENiO/SWCNT film (arrows indicate the small cracks in the carbon shell around NiO particles).

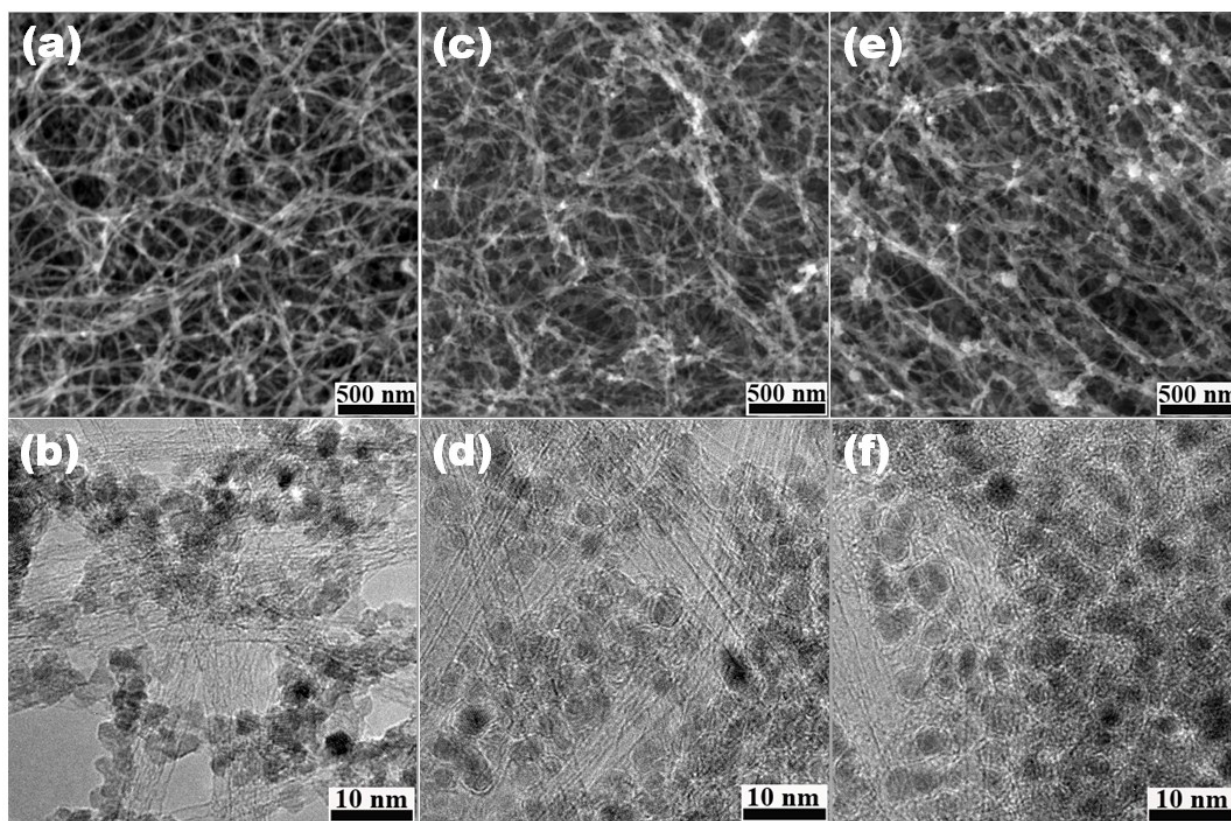


Fig. S4 (a, c, e) SEM and (b, d, f) TEM images of the (a, b) CENiO₆₉/SWCNT, (c, d) CENiO₇₈/SWCNT and (e, f) CENiO₈₈/SWCNT films

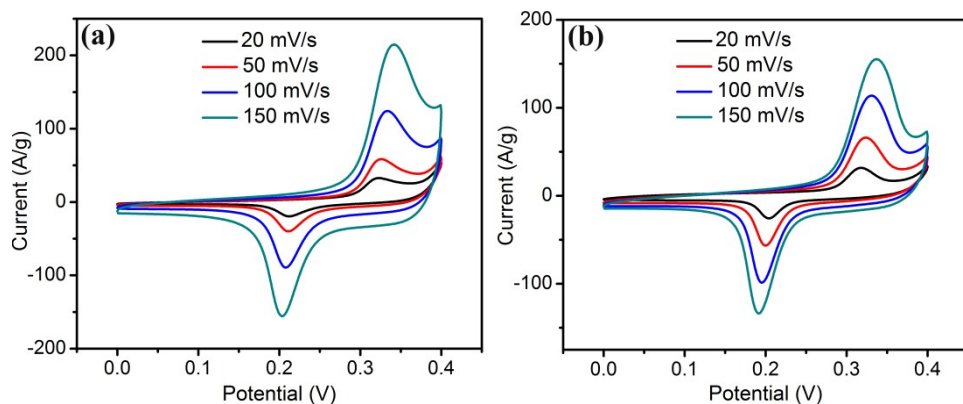


Fig. S5 CV curves of (a) CENiO₆₉/SWCNT and (b) CENiO₈₈/SWCNT films at different scan rates (20-150 mV s⁻¹).

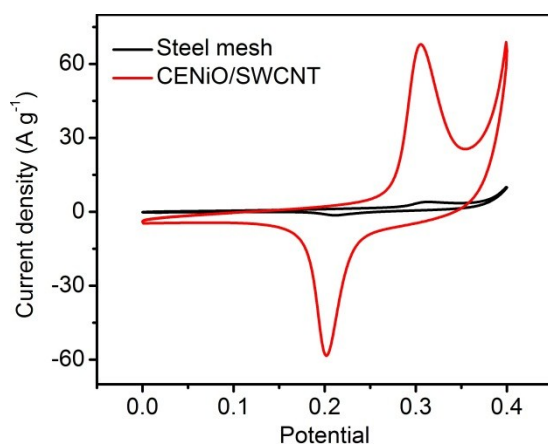


Fig. S6 CV curves of a bare steel mesh substrate and a CENiO/SWCNT film in 6 M KOH solution at 20 mV s⁻¹ after 200 cycles.

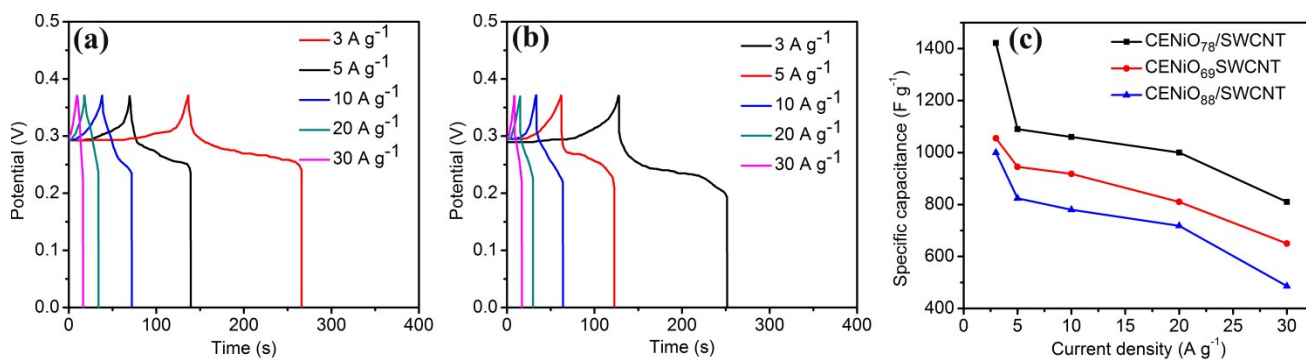


Fig. S7 (a, b) Galvanostatic charge/discharge profiles at different current densities (3-30 A g⁻¹) of CENiO₆₉/SWCNT and CENiO₈₈/SWCNT films respectively. (c) Specific capacitance versus current density for CENiO₆₉/SWCNT, CENiO₇₈/SWCNT and CENiO₈₈/SWCNT films.

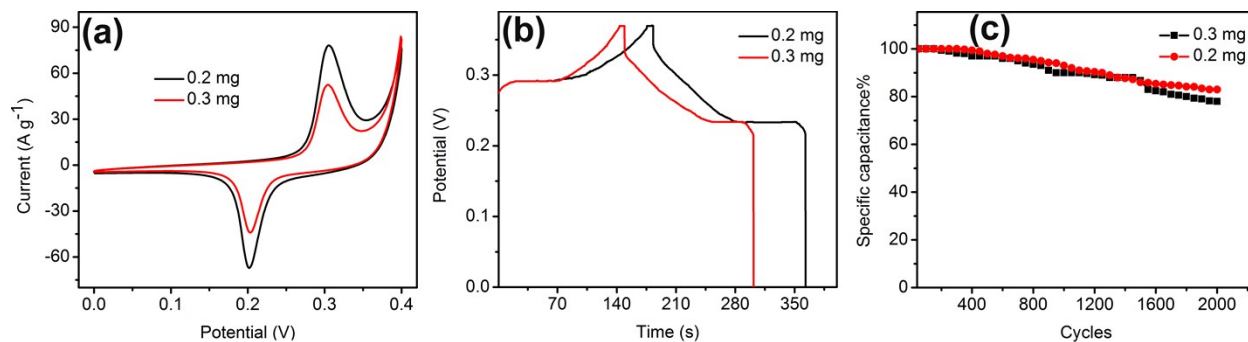


Fig. S8 (a) CV curves (b) charge-discharge profiles at a current density of 3 A g⁻¹ (c) stability test of CENiO₇₈/SWCNT film with different mass loading.

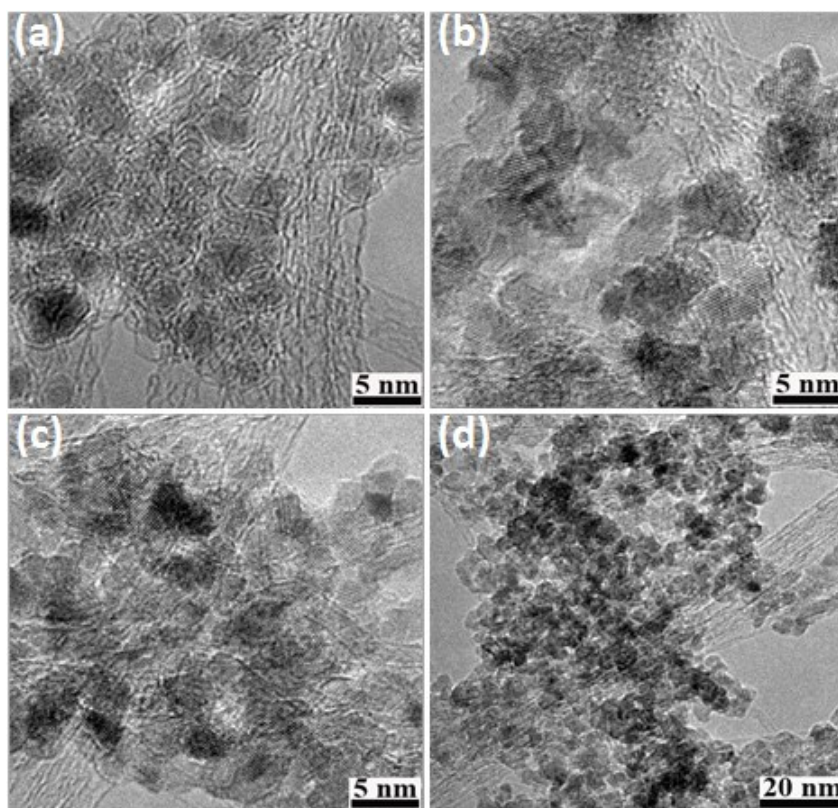


Fig. S9 TEM images of the CENiO₇₈/SWCNT film after (a) 1000, (b) 3000 and (c, d) 5000 cycles.

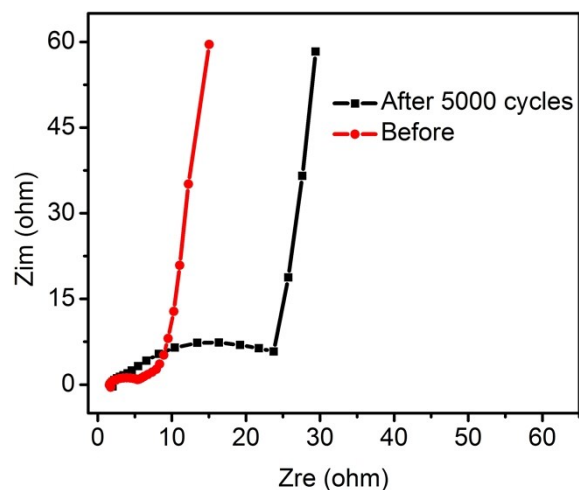


Fig. S10 EIS measurements of CENiO₇₈/SWCNT film before and after cyclic stability test of 5000 cycles.

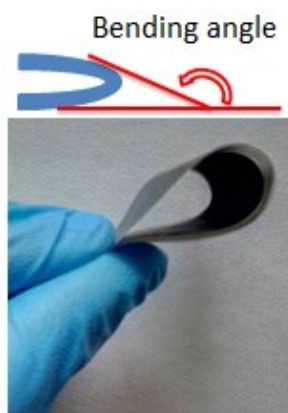


Fig. S11 Optical photograph and schematic of a CENiO₇₈/SWCNT film for a bending test at an angle of 130°.

Table S1. Experimental parameters for the preparation of CENiO/SWCNT hybrid electrodes with different weight ratios of SWCNTs and NiO nanoparticles.

Composite	Toluene (wt%)	Thiophene (wt%)	Nickelocene (wt%)	Injection rate (ml/h)
CENiO ₆₀ /SWCNT	96.26	0.62	3.12	0.70
CENiO ₇₈ /SWCNT	96.26	0.62	3.12	0.72
CENiO ₈₈ /SWCNT	95.99	0.64	3.35	0.74