Supplementary information

Dual Coexisting Interconnected Graphene Nanostructures for High Performance Supercapacitor Applications

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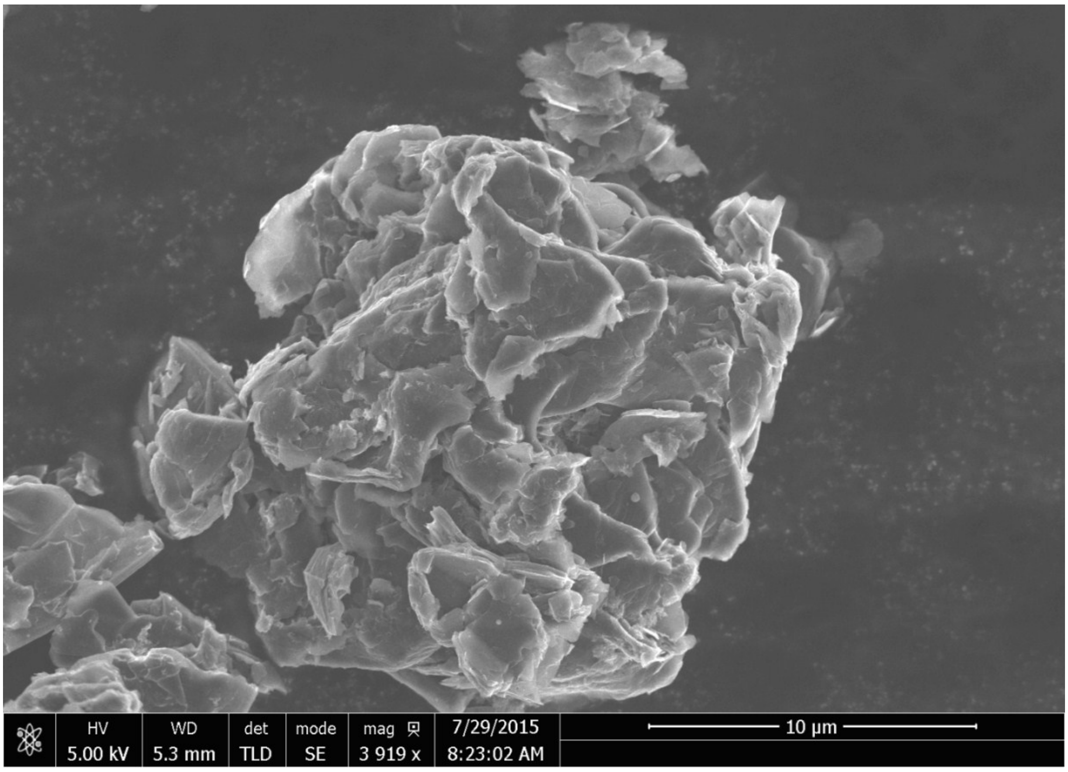

Figure 1S. SEM image of the as-received graphite material used as the cathode during the electrolysis process.

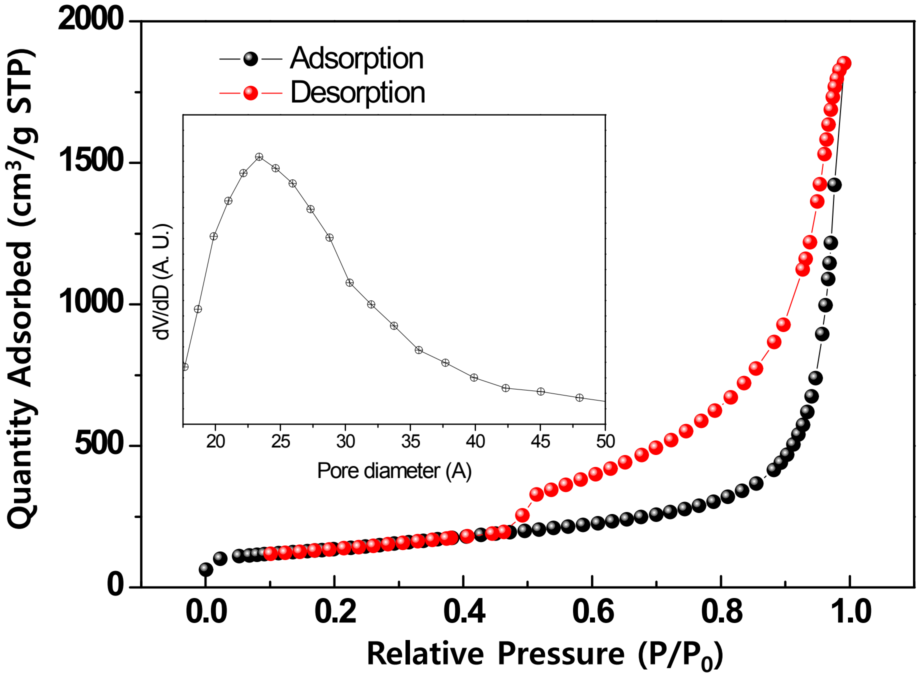

Figure 2S. Adsorption-desorption isotherms and pore distribution (inset) of the interconnected graphene nanosheets-nanoscrolls.

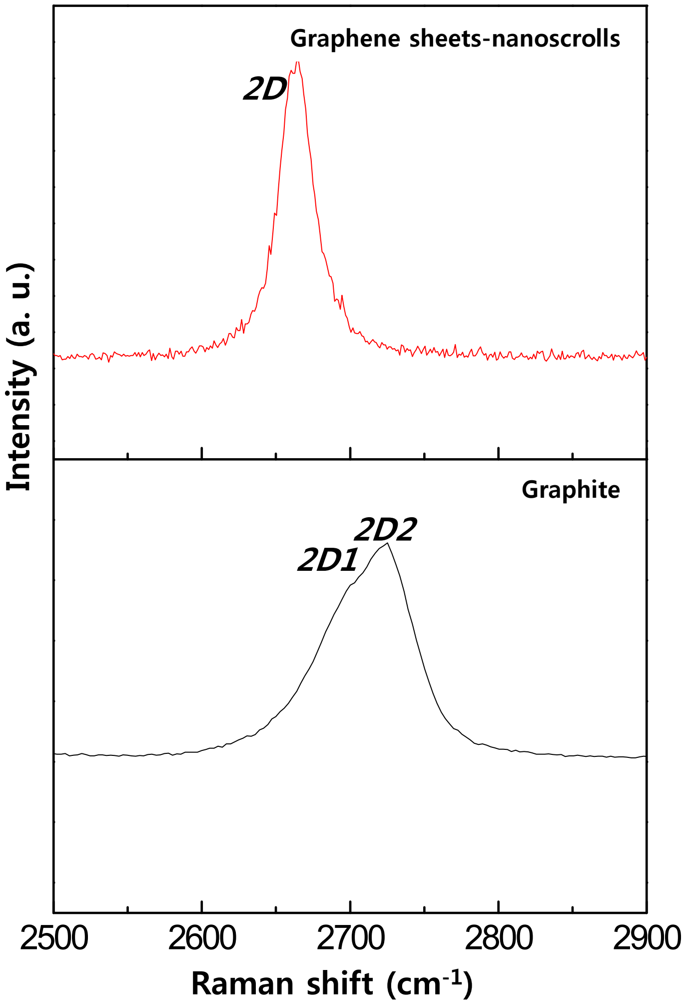

Figure 3S. 2D Raman spectra of natural graphite and the interconnected graphene nanosheets-nanoscrolls produced by the molten salt method.

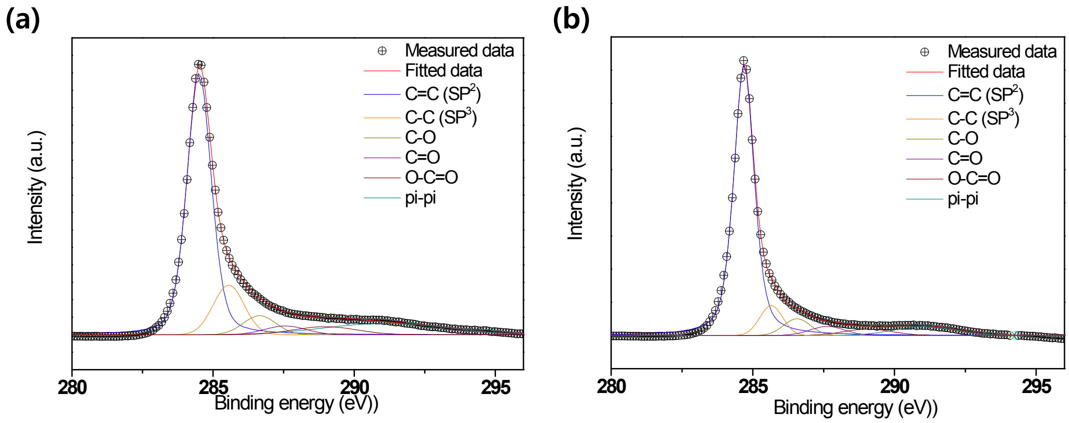

Figure 4S. C 1s XPS spectra of (a) interconnected graphene nanosheets-nanoscrolls electrode and (b) as-prepared graphite.

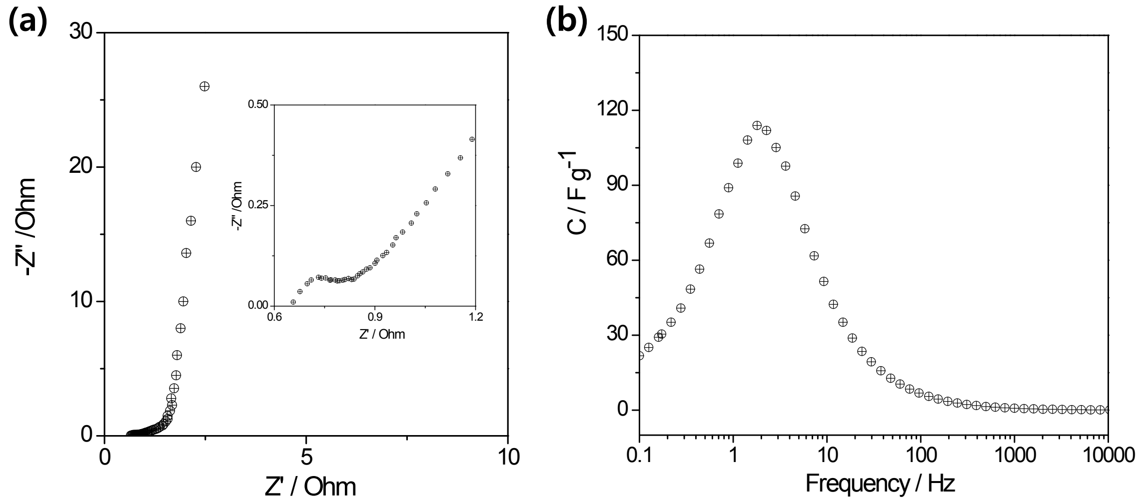

Figure 5S. (a) Nyquist plots and (b) Bode plots of interconnected graphene nanosheets-nanoscrolls electrode.

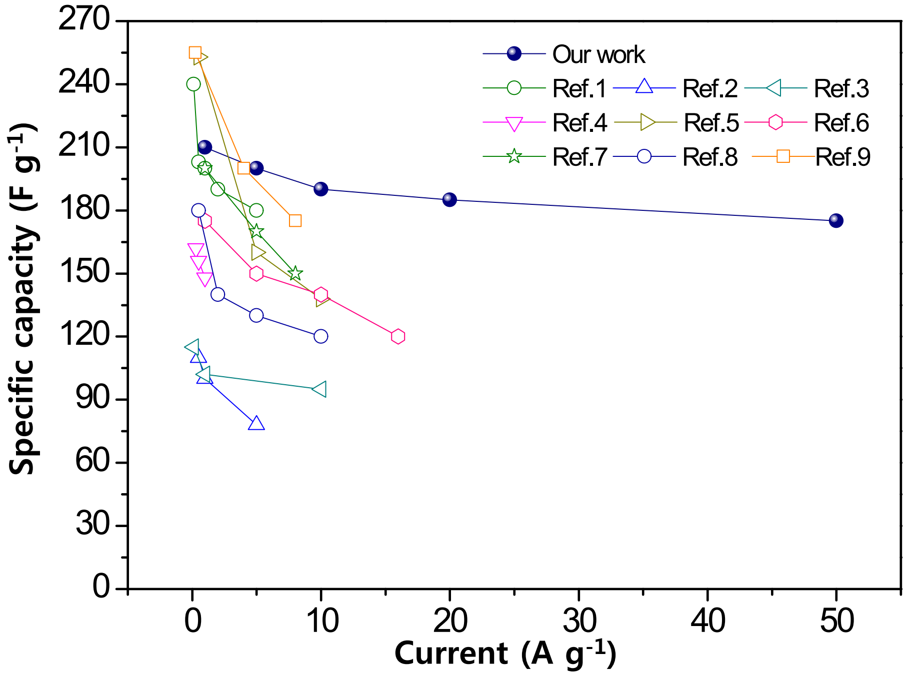

Figure 6S. Specific capacitances and rate capabilities of different hierarchical carbon nanostructures. The graphene-based material reported here is compared with those produced in organic solvents (refs. 1, 2, 3,4) and aqueous solvents (refs. 5, 6, 7, 8, 9).

Table 1S. Comparison of the electrochemical performance of different hierarchical carbon nanostructures.

Electrode material	Test method	Electrochemical performances ($C_{single\text{-}electrode}$)	Ref.
Porous graphene-based monolithic carbon	2-electrode cell (1 M $TEABF_4$/ACN)	238 F/g at 0.1 A/g ~180 F/g at 15 A/g	1 (Y. Tao *et al.*)
Graphene/ carbon Nanotube	2-electrode cell (1 M $TEABF_4$/ACN)	109.7 F/g at 0.5 A/g 78.3 F/g at 5 A/g	2 (N. Jung *et al.*)
Hierarchically Porous Graphite Particles	3-electrode cell (1 M $TEABF_4$/PC)	115 F/g at 0.1 A/g 95 F/g at 10 A/g	3 (Z. Chen *et al.*)
Hollow mesoporous carbon capsules	2-electrode cell (1 M $TEABF_4$/ACN)	162 F/g at 0.3 A/g 148 F/g at 1 A/g	4 (D. Bhattacharjya *et al.*)
Graphene/ Polypyrrole Nanotube	3-electrode cell (1 M H_2SO_4)	253 F/g at 0.5 A/g 138 F/g at 10 A/g	5 (S. Ye *et al.*)
Graphene/ carbon Nanotube	3-electrode cell (1 M H_2SO_4)	187 F/g at 0.5 A/g 135 F/g at 16 A/g	6 (H. Youn *et al.*)
Corrugated graphene	2-electrode cell (6 M KOH)	203 F/g at 0.2 A/g ~ 150 F/g at 8 A/g	7 (A. M. Abdelkader *et al.*)
Edge sulfonated graphite	3-electrode cell (6 M KOH)	180 F/g at 0.5 A/g 130 F/g at 1 A/g	8 (P. Wen *et al.*)
Corrugated graphene	2-electrode cell (6 M KOH)	255 F/g at 0.25 A/g ~ 175 F/g at 8 A/g	9 (A. M. Abdelkader *et al.*)
Graphene nanosheets - nanoscrolls	**2-electrode cell (1 M $TEABF_4$/ACN)**	**213 F/g at 1 A/g 185 F/g at 50 A/g**	**This work**

References

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