polymers

MDPI

Supplementary Materials

Cobalt-doped Porous Carbon Nanosheets Derived from 2D Hypercrosslinked Polymer with CoN_4 for High Performance Electrochemical Capacitors

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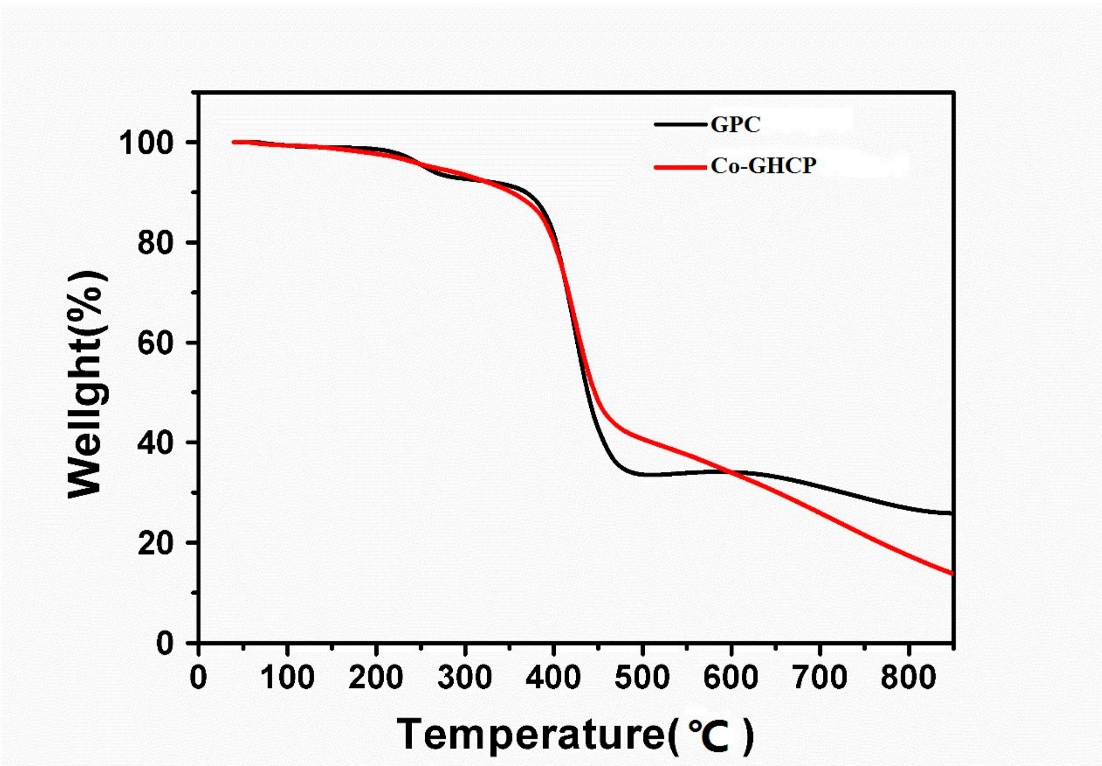


Figure S1. Thermo-gravimetric analysis (TGA) curve of Co-GHCP and GPC.

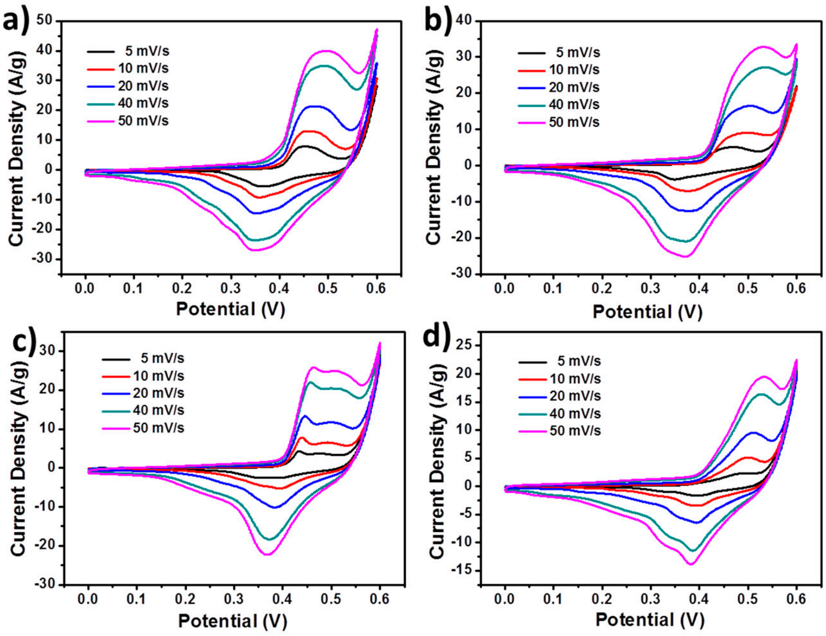


Figure S2. CV curves of (a) Co-GPC, (b) Co-GHCP, (c) GPC and (d) GHCP electrodes at various scan rates of 5, 10, 20, 40 and 50 mV s^{-1} in the range of 0~0.6 V.

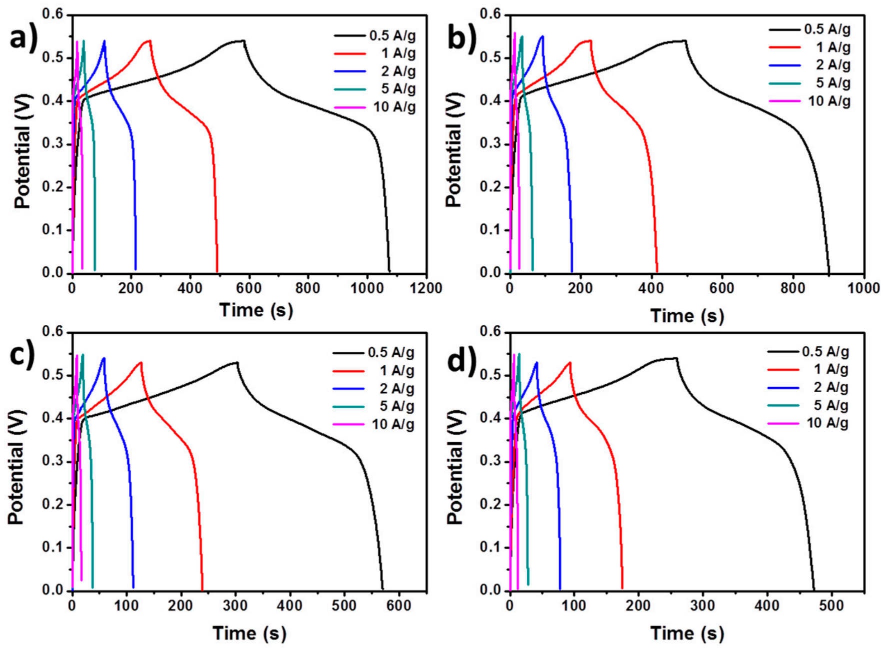
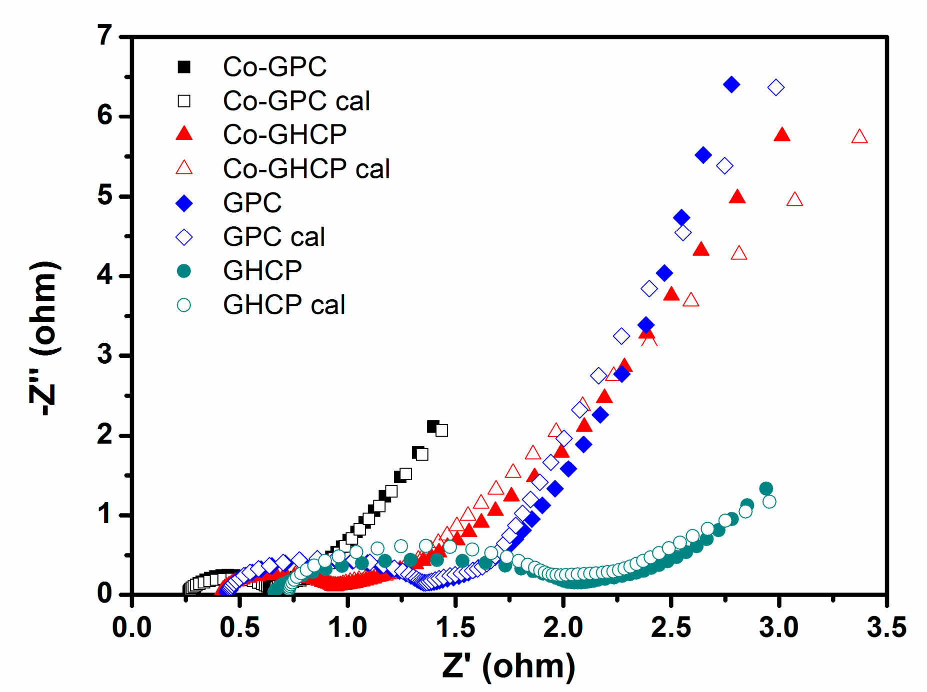


Figure S3. The galvanostatic charge-discharge curves of (a) Co-GPC, (b) Co-GHCP, (c) GPC and (d) GHC electrodes at various specific currents of 0.5, 1, 2, 5 and 10 A g^{-1} in the range of 0~0.54 V.

a)



b)

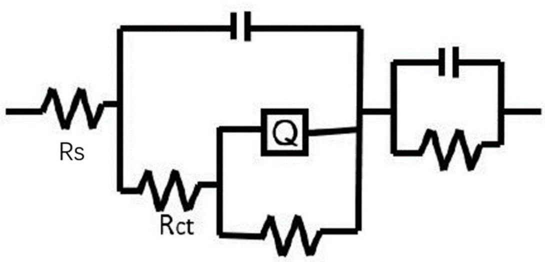


Figure S4. (a) The magnified EIS plot of the low frequency region (solid: experimental data; open: fitting data); (b) the equivalent circuit used for fitting of EIS data.

Table S1. The charge-transfer resistance values (Rct) and the solution resistance values (Rs) of the samples as electrodes of supercapacitors in 1 M KOH.

Sample	**Rct (Ω)**	**Rs (Ω)**
Co-GPC	0.28	0.26
Co-GHCP	0.35	0.42
GPC	0.47	0.45
GHCP	0.38	0.72

Table S2. Comparison of capacitance performance with other porphyrin-containing porous polymers or porous carbons.

Sample	Electrolyte	Maximum C_s	Rate performance	Reference
Co-doped porous carbons nanosheets from 2D hypercrosslinked polymer containing Co porphyrin	1 M KOH	455 F g^{-1} at 0.5 A g^{-1}	C_s retention of 69.2% at 10 A g^{-1}	This work
		418 F g^{-1} at 1.0 A g^{-1}	C_s retention of 75.4% at 10 A g^{-1}	
2D CoSNC nanocomposites from porphyrin-based MOF	2 M KOH	360.1 F g^{-1} at 1.5 A g^{-1}	C_s retention of 74.3% at 15.0 A g^{-1}	Ref. 1
Microporous Poly(zincporphyrin)	0.1 M Bu_4NPF_6	142 F g^{-1} at 5.0 A g^{-1}	C_s retention of ~70% at 50 A g^{-1}	Ref. 2
Cu-porphyrin@PPy nanocomposites	0.5 M H_2SO_4	~496 F g^{-1} at 1.0 A g^{-1}	C_s retention of ~57% at 10 A g^{-1}	Ref. 3
Fe-doped porous carbon from Fe porphyrin-based microporous conjugated polymer	1 M H_2SO_4	~182 F g^{-1} at 1.0 A g^{-1}	C_s retention of ~67 % at 10 A g^{-1}	Ref. 4
Nanoporous carbons from porphyrin-based MOF	1 M H_2SO_4	425 F g^{-1} at 2.0 A g^{-1}	C_s retention of ~57.4 % at 10 A g^{-1}	Ref. 5
Fe-doped porous carbons from Fe porphyrin-based coordination polymers	-	380 F g^{-1} at 1.0 A g^{-1}	C_s retention of ~52 % at 10 A g^{-1}	Ref. 6
Co-doped porous carbons from Co porphyrin-based coordination polymers	-	100 F g^{-1} at 1.0 A g^{-1}	C_s retention of ~35 % at 10 A g^{-1}	

Reference

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