

Supporting Information

Hierarchical porous carbon derived from coal tar pitch by one step carbonization and activation combined with CaO template for supercapacitor

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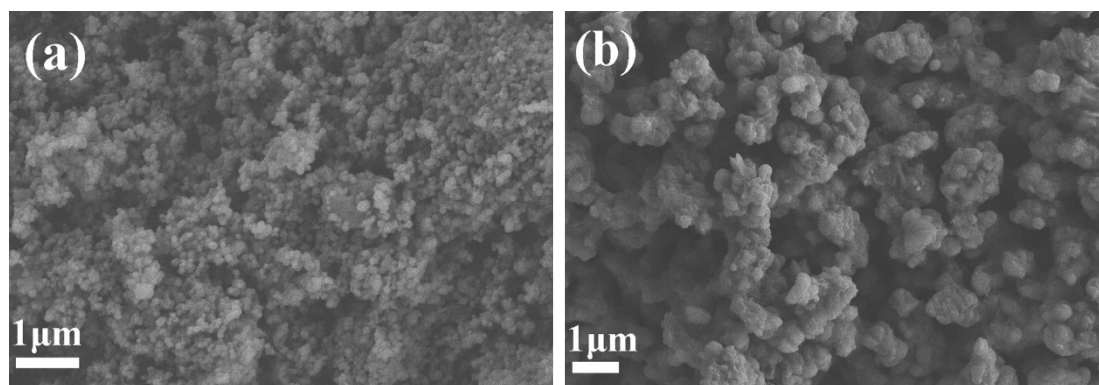


Fig. S1 The SEM images of (a) commercial CaCO_3 and (b) CaO .

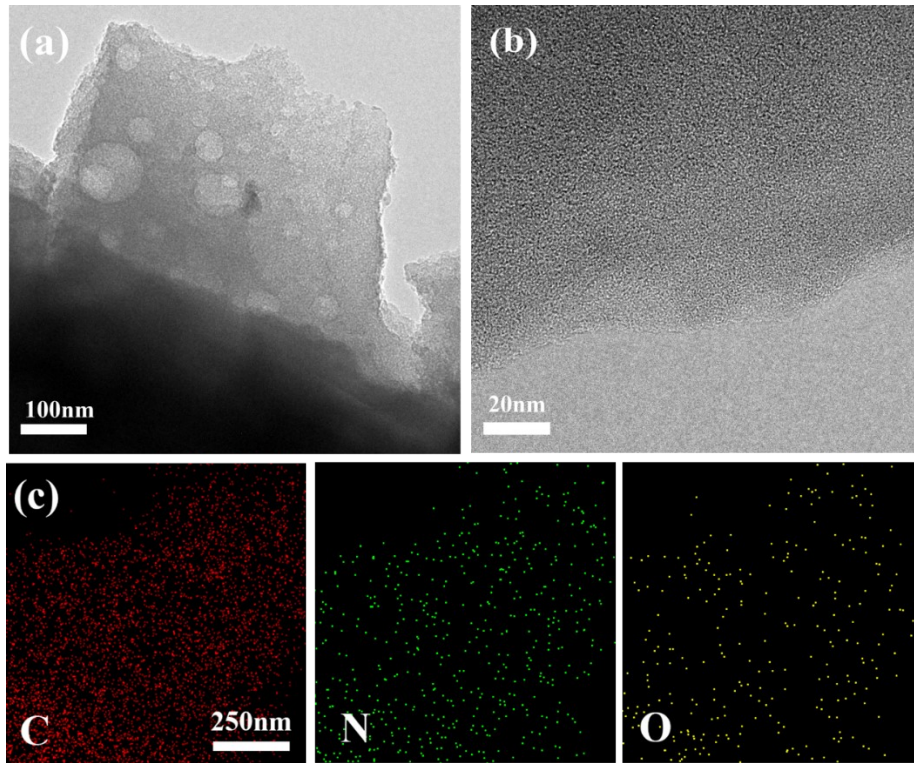


Fig. S2 (a) TEM image, (b) HRTEM image and (c) mapping images for C, N and O elements of HPCs-0.5-700-2.

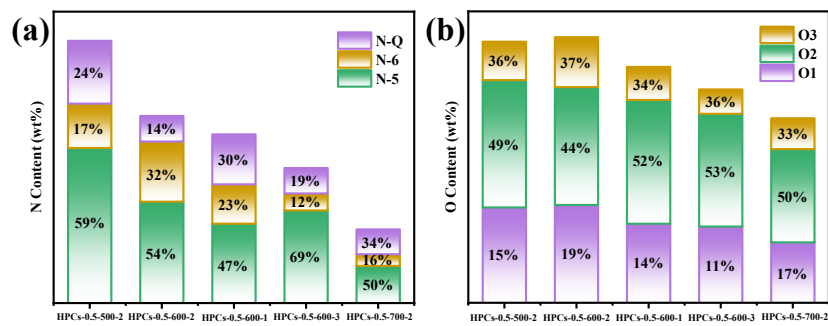


Fig. S3 Various types of N (a) and O (b) proportion comparison of the samples.

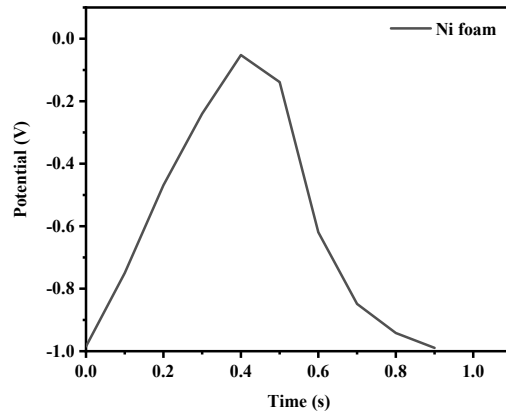


Fig. S4 the GCD curves of Ni foam at 1 A g^{-1} in three-electrode system.

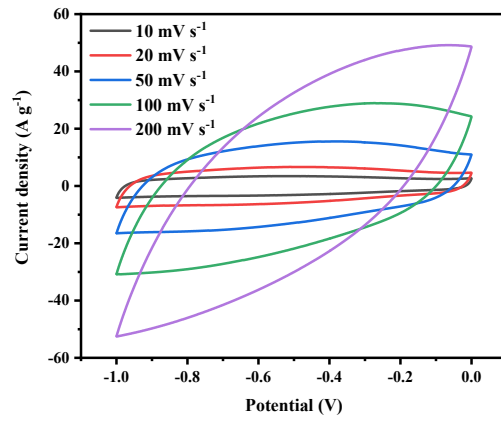


Fig. S5 the CV curves of HPCs-0.5-600-2 at different scan rate in three-electrode system.

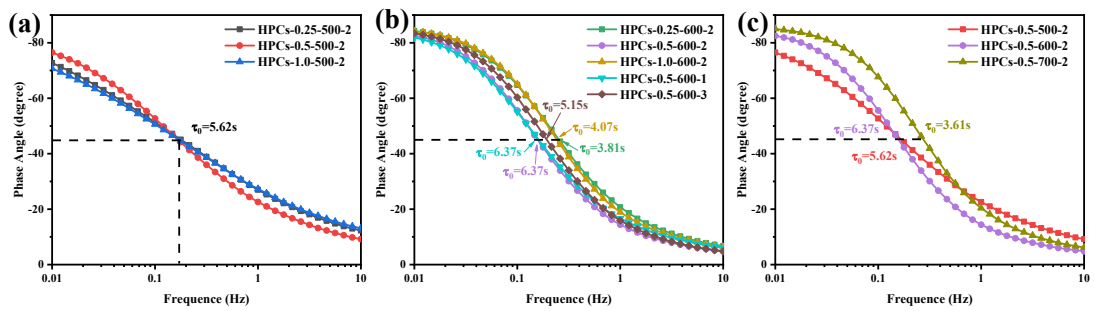


Fig. S6 (a, b and c) the Bode plots of all HPCs electrodes.

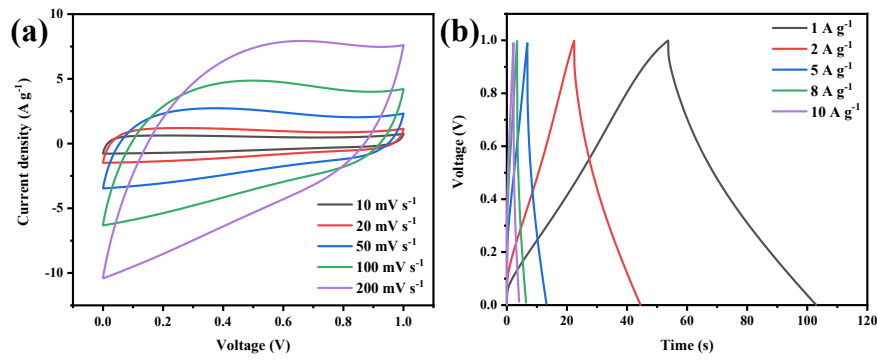


Fig. S7 (a) the CV curves at different scan rate and (b) the GCD curves at different current density of HPCs-0.5-600-2 in two-electrode system.

Table S1 The C, N and O contents of samples obtained from XPS analysis.

Samples	C (wt %)	N (wt %)	O (wt %)
HPCs-0.5-500-2	81.28	1.71	17.02
HPCs-0.5-600-2	81.46	1.22	17.32
HPCs-0.5-600-1	83.51	1.1	15.38
HPCs-0.5-600-3	85.21	0.88	13.91
HPCs-0.5-700-2	87.5	0.48	12.03

Table S2 The equivalent series resistance (R_s) values and the charge transfer resistance (R_{ct})

values of different electrodes.

Samples	R_s (Ω)	R_{ct} (Ω)
HPCs-0.25-500-2	0.79	1.19
HPCs-0.5-500-2	0.75	1.05
HPCs-1.0-500-2	0.80	1.43
HPCs-0.25-600-2	0.70	0.55
HPCs-0.5-600-2	1.13	0.71
HPCs-1.0-600-2	0.74	0.57

HPCs-0.5-600-1	0.95	0.86
HPCs-0.5-600-3	1.03	0.53
HPCs-0.5-700-2	0.77	0.39
