

Supporting Information

Microstructure regulation of resin-based hard carbons via esterification cross-linking for high-performance sodium-ion batteries

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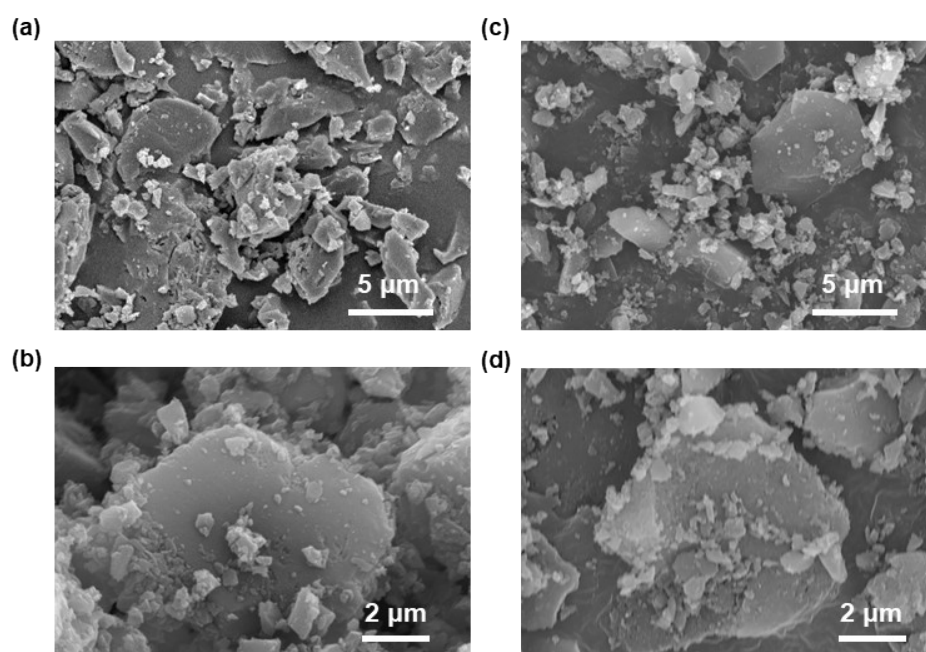


Figure S1. SEM images of (a-b) PPFC-1-10-1200 and (c-d) PPFC-1-2-1200.

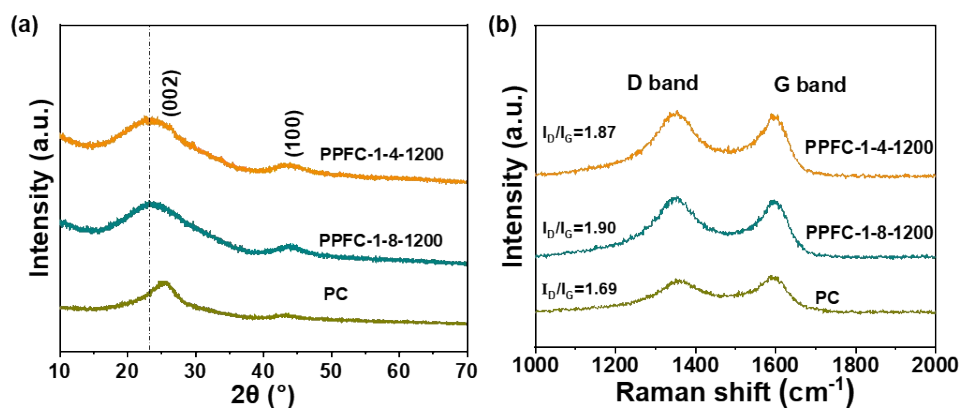


Figure S2. (a) XRD and (b) Raman pattern of PC, PPFC-1-8-1200, and PPFC-1-4-1200.

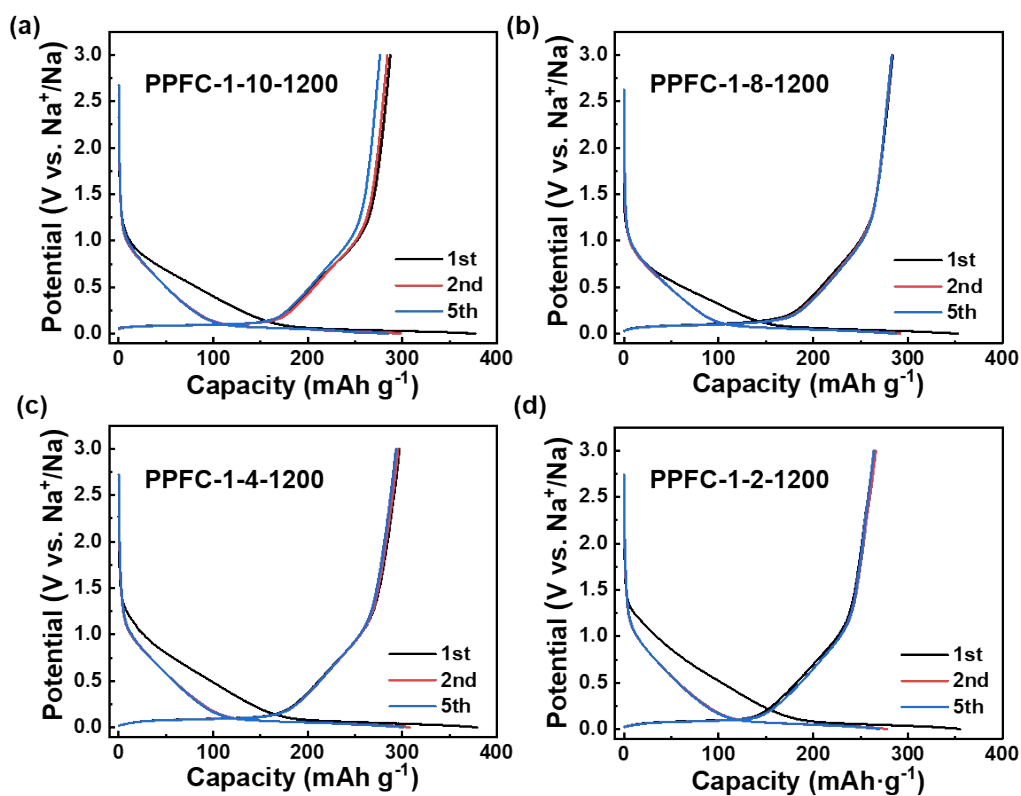


Figure S3. The charge/discharge curves at 0.1 C of PPFC electrodes with different PTCDA/PF ratios: (a) PPFC-1-10-1200, (b) PPFC-1-8-1200, (b) PPFC-1-4-1200, and (b) PPFC-1-2-1200.

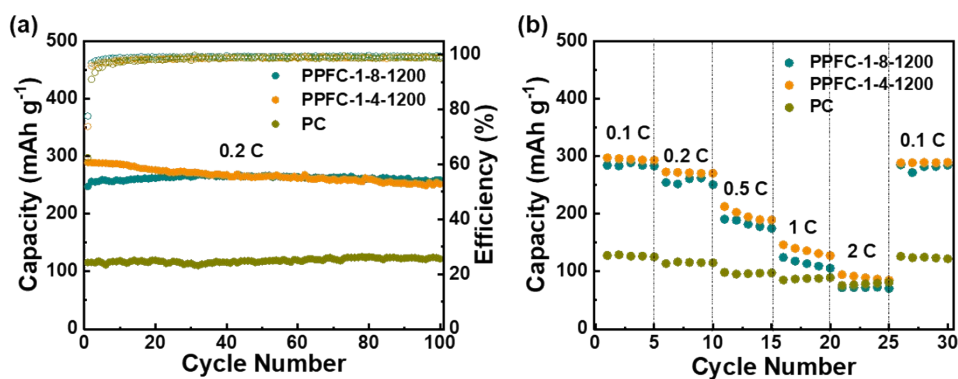


Figure S4. Cycle performance at 0.2 C and rate capability of PC, PPFC-1-8-1200, and PPFC-1-4-1200.

Table S1. Structure and electrochemical properties of PTCDA modified phenolic resin-based carbon prepared by different PTCDA/phenolic resin proportions.

	d_{002} /nm	I_D/I_G	Reversible capacity /mAh g ⁻¹	ICE /%	Capacity at 0.2 C over 100 cycles/mAh g ⁻¹	Capacity at 2 C/mAh g ⁻¹
PFC	0.348	1.63	163.3	73.3	118.6	23.0
PPFC-1-10-1200	0.381	1.89	287.3	76.2	242.0	63.2
PPFC-1-8-1200	0.384	1.90	284.0	80.5	258.3	71.7
PPFC-1-6-1200	0.394	1.91	308.7	77.9	279.8	84.7
PPFC-1-4-1200	0.383	1.87	297.2	78.3	254.2	94.5
PPFC-1-2-1200	0.374	1.85	264.4	74.4	246.8	101.2
PC	0.351	1.69	127.7	61.5	121.7	75.6

Table S2 Structure and electrochemical properties of PTCDA modified phenolic resin-based carbon prepared at different carbonization temperatures.

	d_{002} /nm	I_D/I_G	Reversible capacity /mAh g ⁻¹	ICE /%	Capacity at 0.2 C over 100 cycles/mAh g ⁻¹	Capacity at 2 C/mAh g ⁻¹
PPFC-1-6-1100	0.408	2.14	276.8	75.5	228.6	83.7
PPFC-1-6-1200	0.394	1.91	308.7	77.9	279.8	84.7
PPFC-1-6-1300	0.379	1.87	276.0	80.4	226.9	56.5