Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Oriented tube-array porous carbon anode prepared by self-blowing molding of salt templates for high-rate Potassium Storage

*Chenchen Shao, Yusheng Luo, Hongguang Fan, Yanpeng Wang, Tao Li, Qingping Li, Wei Liu**

School of Materials Science and Engineering, Ocean University of China, Qingdao 266100, People's Republic of China. Email: weiliu@ouc.edu.cn (W. Liu)

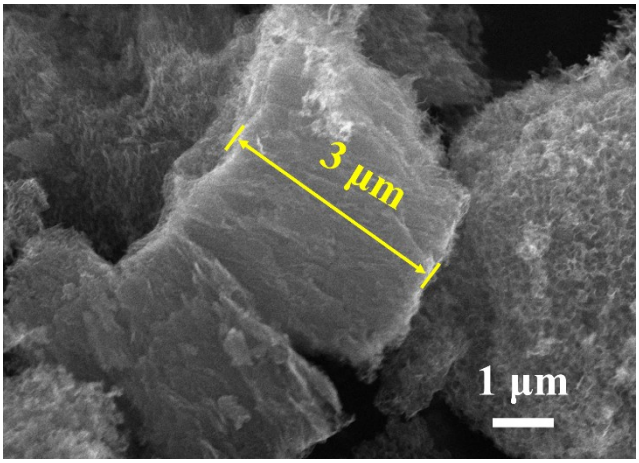

Figure S1. SEM images of TAPC samples.

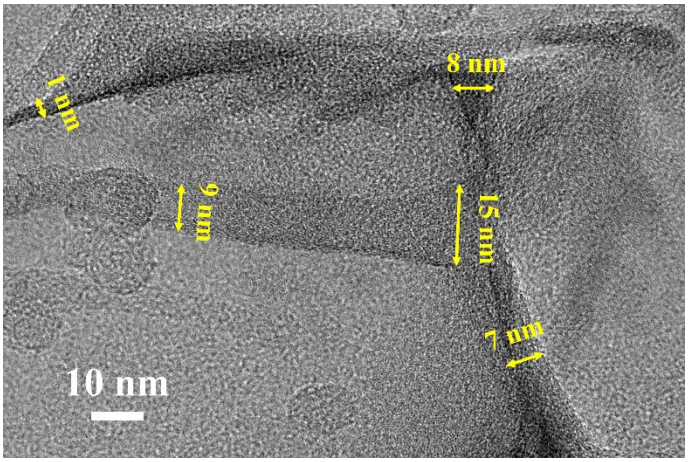

Figure S2. HRTEM images of TAPC samples.

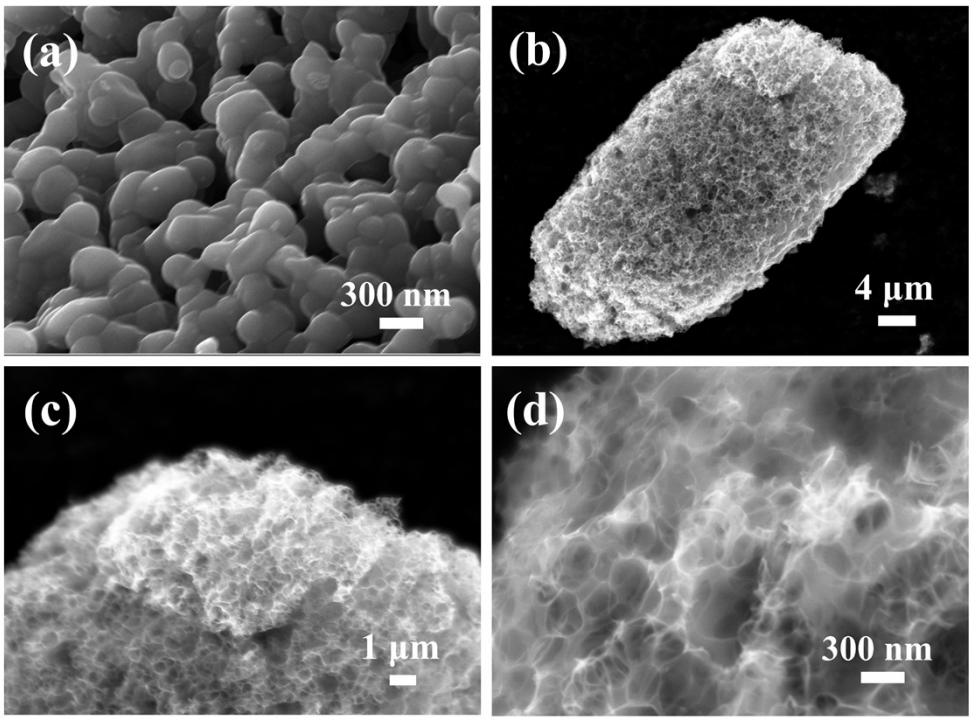

Figure S3. (a) SEM image of the Na_2CO_3 crystal skeleton obtained from the decomposition of $NaHCO_3$ crystal at 200°C. (b-d) SEM images of SPC samples.

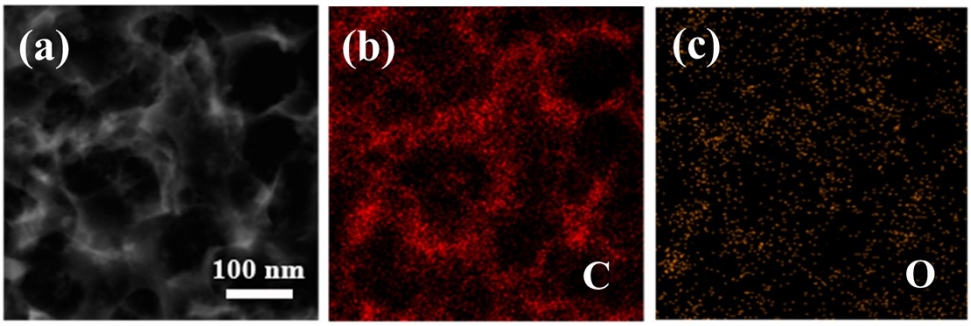

Figure S4. (a-c) EDS spectra of TAPC samples.

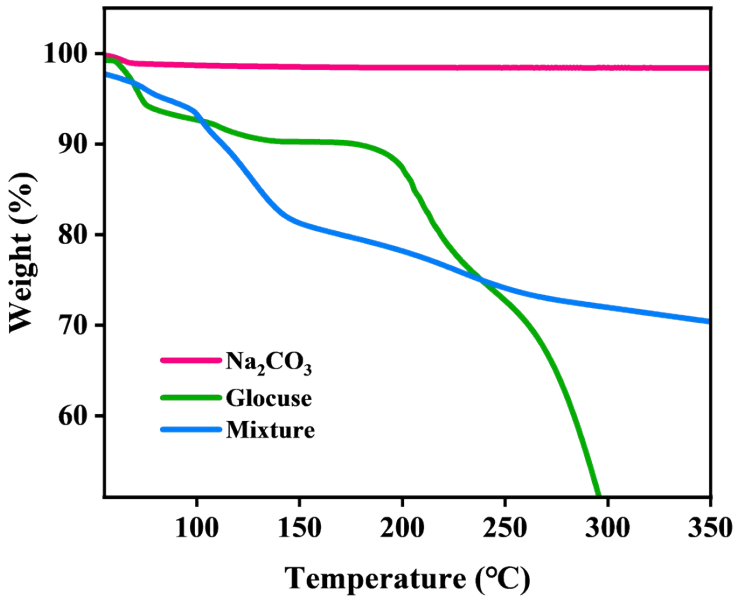

Figure S5. The TG curves of raw materials of SPC sample under nitrogen atmosphere.

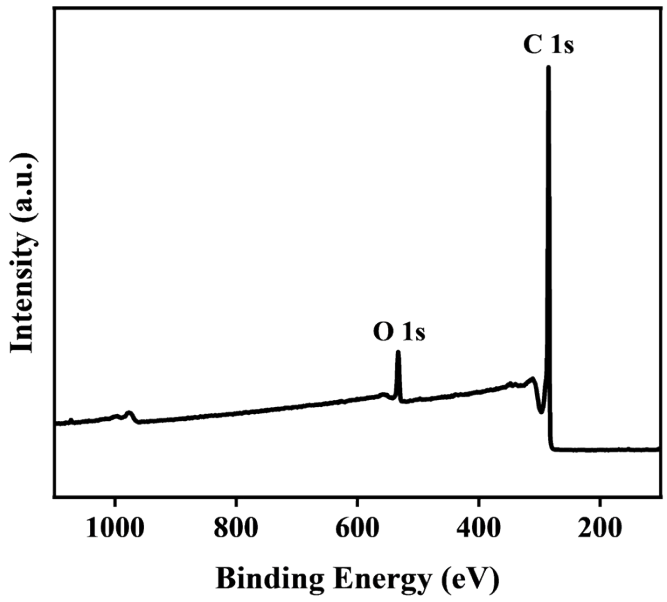

Figure S6. The XPS survey spectra of TAPC samples.

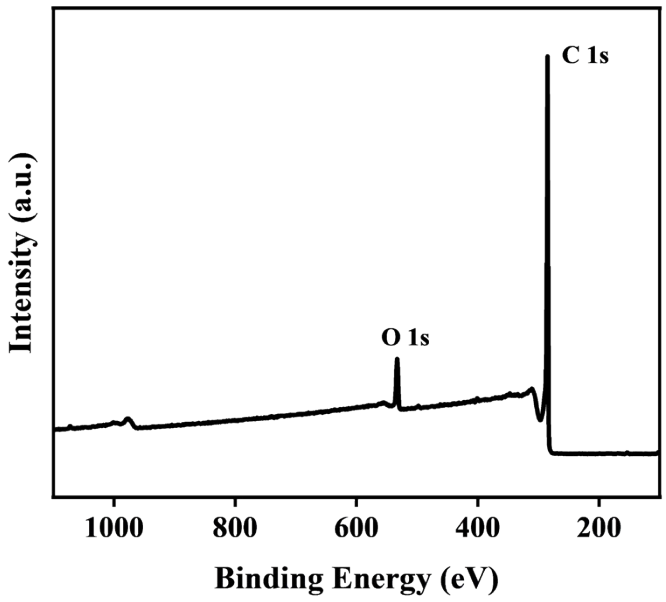

Figure S7. The XPS survey spectra of SPC samples.

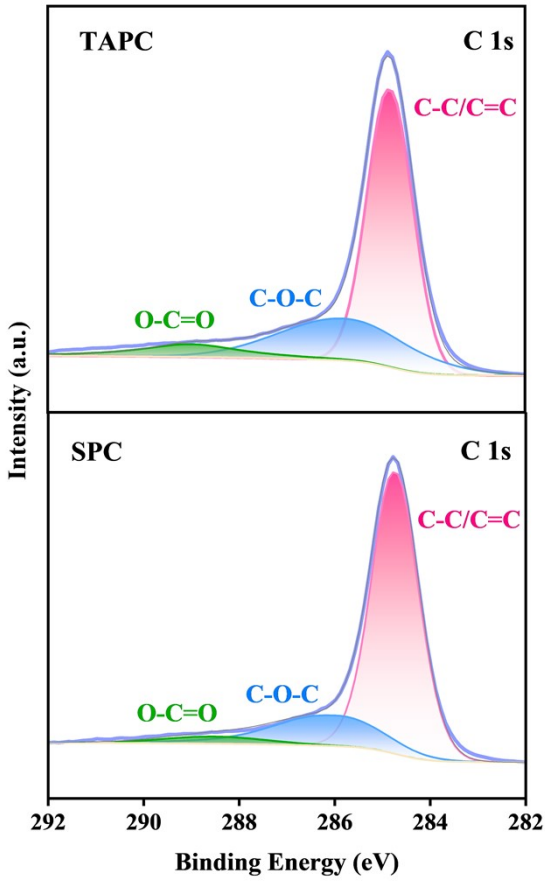

Figure S8. The high solution XPS C 1s spectra of various samples.

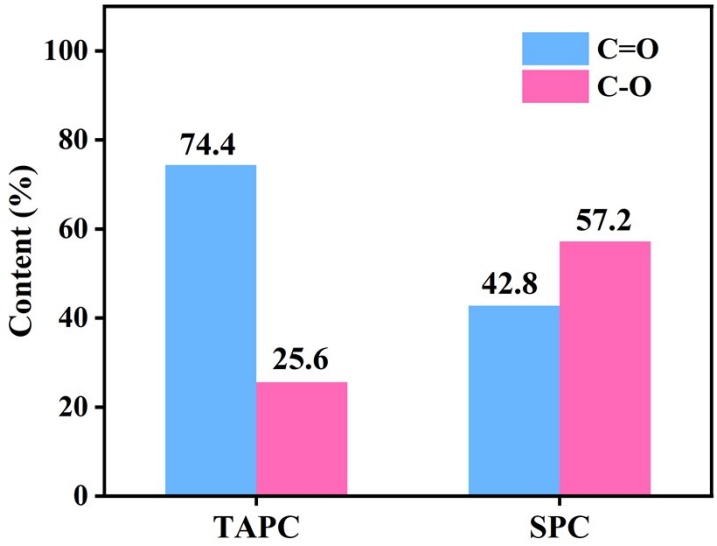

Figure S9. The content of C–O and C=O functional groups of various samples.

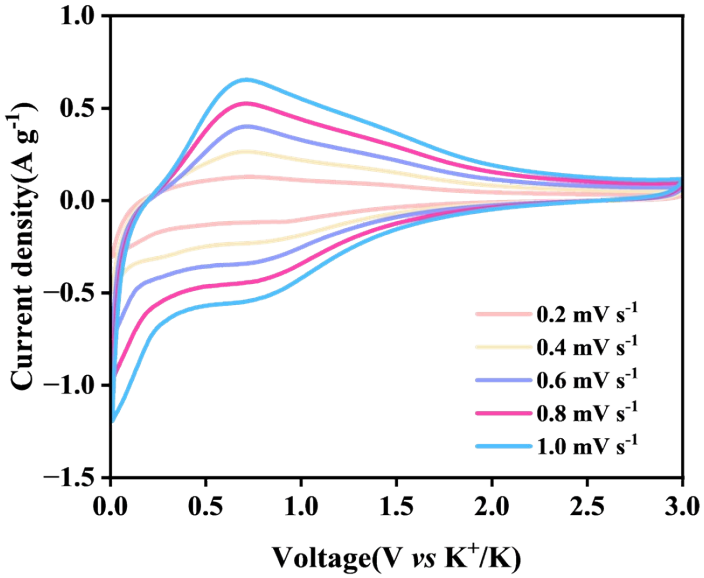

Figure S10. CV curves of SPC electrodes at different scanning rates.

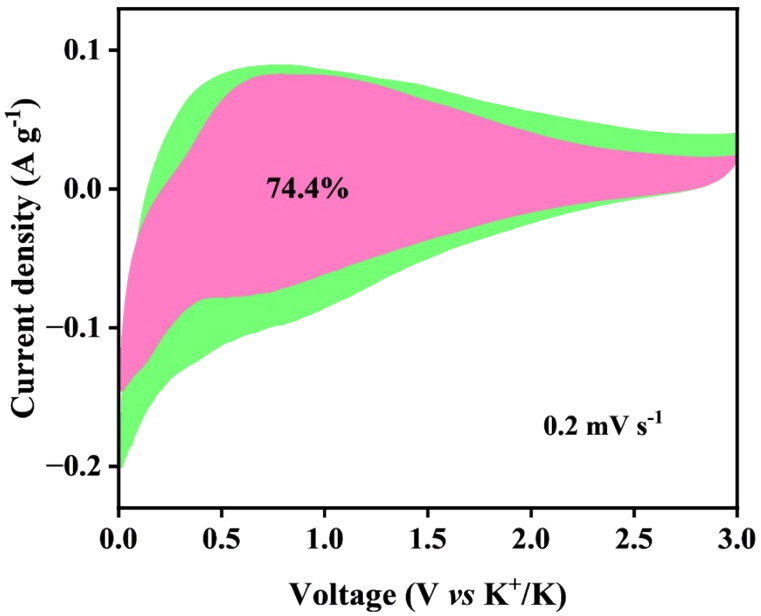

Figure S11. Contribution ratio of the capacitive-controlled and diffusion-controlled charge at 0.2 mV s^{-1} for TAPC anode.

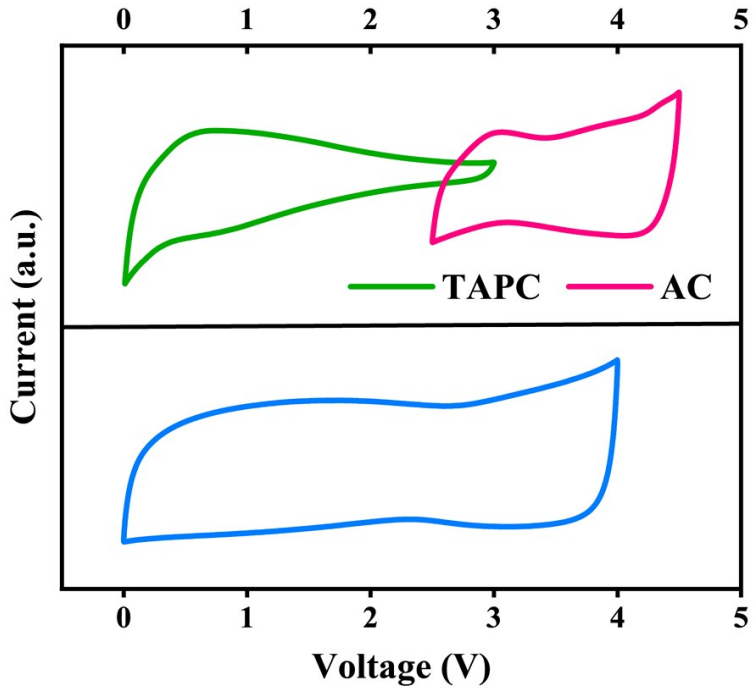

Figure S12. CV curves of TAPC and AC in K half-cell at a scan rate of 1 mV s^{-1} (top), CV curves of TAPC//AC with a mass ratio of 1:1 (bottom).

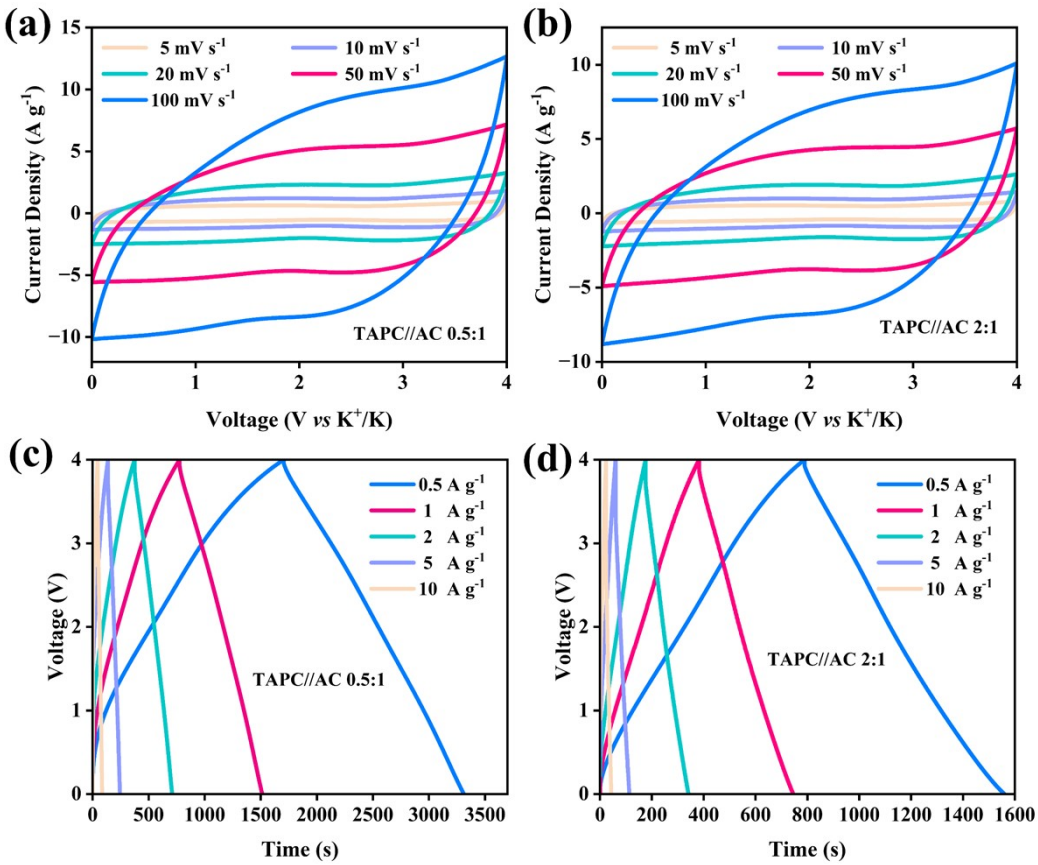

Figure S13. (a, b) CV curves at different scan rates. (c, d) Charge-discharge curves at different current densities of PIHCs with anode-to-cathode mass ratio of 0.5:1 and 2:1.

Figure S14. Ragone plots of PIHCs with various mass ratios.

Table S1. Composition of C and O element contents in various samples

Samples	at% of total C 1s			at% of total O 1s	
	C-C//C=C	C-O-C	O-C=O	C=O	C-O
TAPC	65%	27.6%	7.4%	74.4%	25.6%
SPC	81%	15.7%	3.3%	42.8%	57.2%

Table S2. Specific surface area and pore volume of various samples

samples	S_{BET} (m^2 g^{-1})	V_t (cm^3 g^{-1})	Pore vol (%)		
			0.3~2 nm	2~50 nm	>50 nm
TAPC	436.3	0.33	55.45	18.37	26.17
SPC	404.8	0.72	25.25	23.62	51.13

Table S3. Comparison of cycling performance between TAPC electrodes and other reported carbon-based anode materials for PIBs

Sample	Cyclability	Ref.
This work	244.5 mAh g^{-1}, 3000 cycles, 2 A g^{-1}	Our work
HG-CNTs	191.6 mAh g^{-1}, 3000 cycles, 1 A g^{-1}	1
H-NOCBs	178.8 mAh g^{-1}, 2500 cycles, 0.5 A g^{-1}	2
P-MgO	178 mAh g^{-1}, 2000 cycles, 1 A g^{-1}	3
MCS	113.9 mAh g^{-1}, 3600 cycles, 1 A g^{-1}	4
SAPC	161.7 mAh g^{-1}, 2000 cycles, 1 A g^{-1}	5
N-C	143 mAh g^{-1}, 2000 cycles, 1 A g^{-1}	6
SHC	128.2 mAh g^{-1}, 1500 cycles, 2 A g^{-1}	7
SNCCs	202.9 mAh g^{-1}, 1000 cycles, 2 A g^{-1}	8
N/P–HPCSs	137.6 mAh g^{-1}, 1500 cycles, 2 A g^{-1}	9
HDMC	195 mAh g^{-1}, 3500 cycles, 1 A g^{-1}	10
PGCNTs	148.1 mAh g^{-1}, 950 cycles, 0.2 A g^{-1}	11
OLSC	222 mAh g^{-1}, 1600 cycles, 1 A g^{-1}	12
3D-PNC@CNTs	143 mAh g^{-1}, 500 cycles, 1 A g^{-1}	13
CCS	116.4 mAh g^{-1}, 2700 cycles, 2 A g^{-1}	14
HCs	90.2 mAh g^{-1}, 850 cycles, 1 A g^{-1}	15
NPO-C-800	106.8 mAh g^{-1}, 600 cycles, 1 A g^{-1}	16
S-HMCNS	197 mAh g^{-1}, 1400 cycles, 2 A g^{-1}	17
S-PC	204.8 mAh g^{-1}, 3000 cycles, 1 A g^{-1}	18

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