

Supplementary Information

Porous Polyimide Frameworks Based on Perylene and Triazine for Reversible Potassium Ion Storage

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Figure S1. Photograph of 20 mg PIF suspended in 2 mL of blank electrolyte.

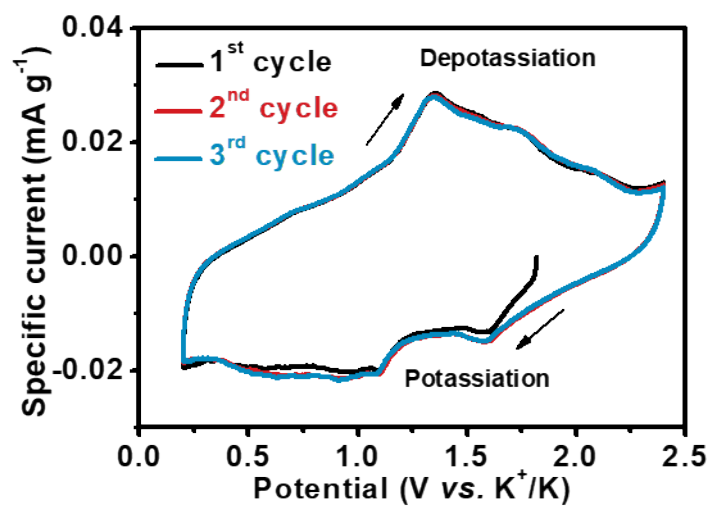


Figure S2. CV curves of PIF at 0.1 mV s⁻¹ for the first three cycles.

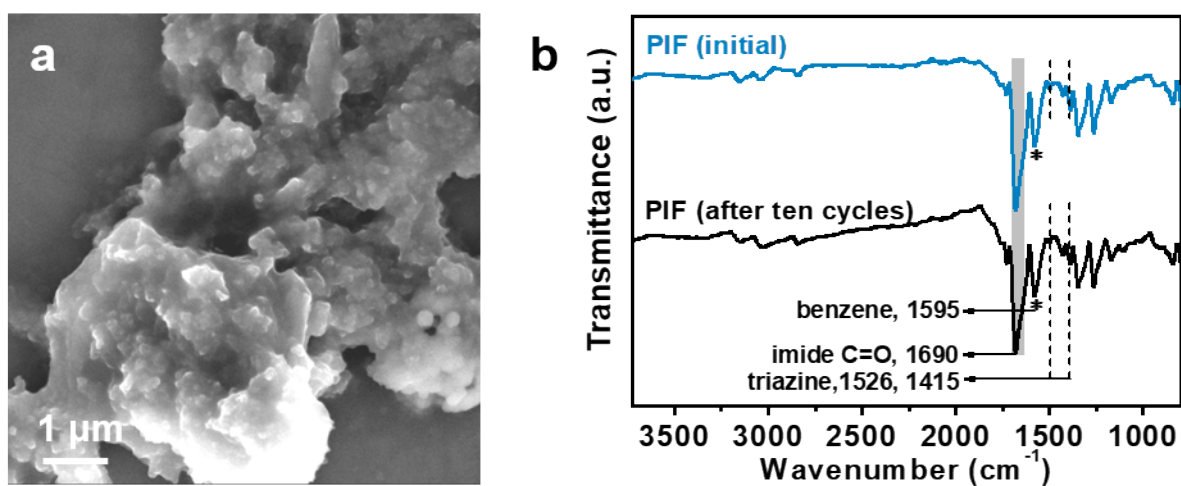


Figure S3. (a) SEM image of PIF recollected after cycles, its surface was covered by SEI films; (b) FT-IR spectrum of PIF before and after cycling.

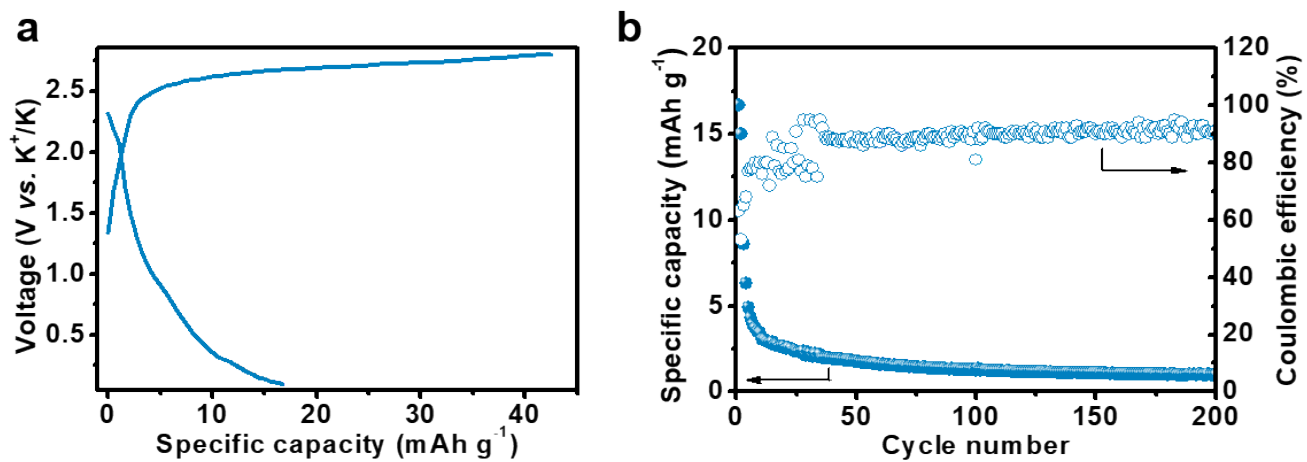


Figure S4. (a) Galvanostatic charge-discharge curves and (b) cycling stability of PTCDA at 0.2 A g⁻¹.

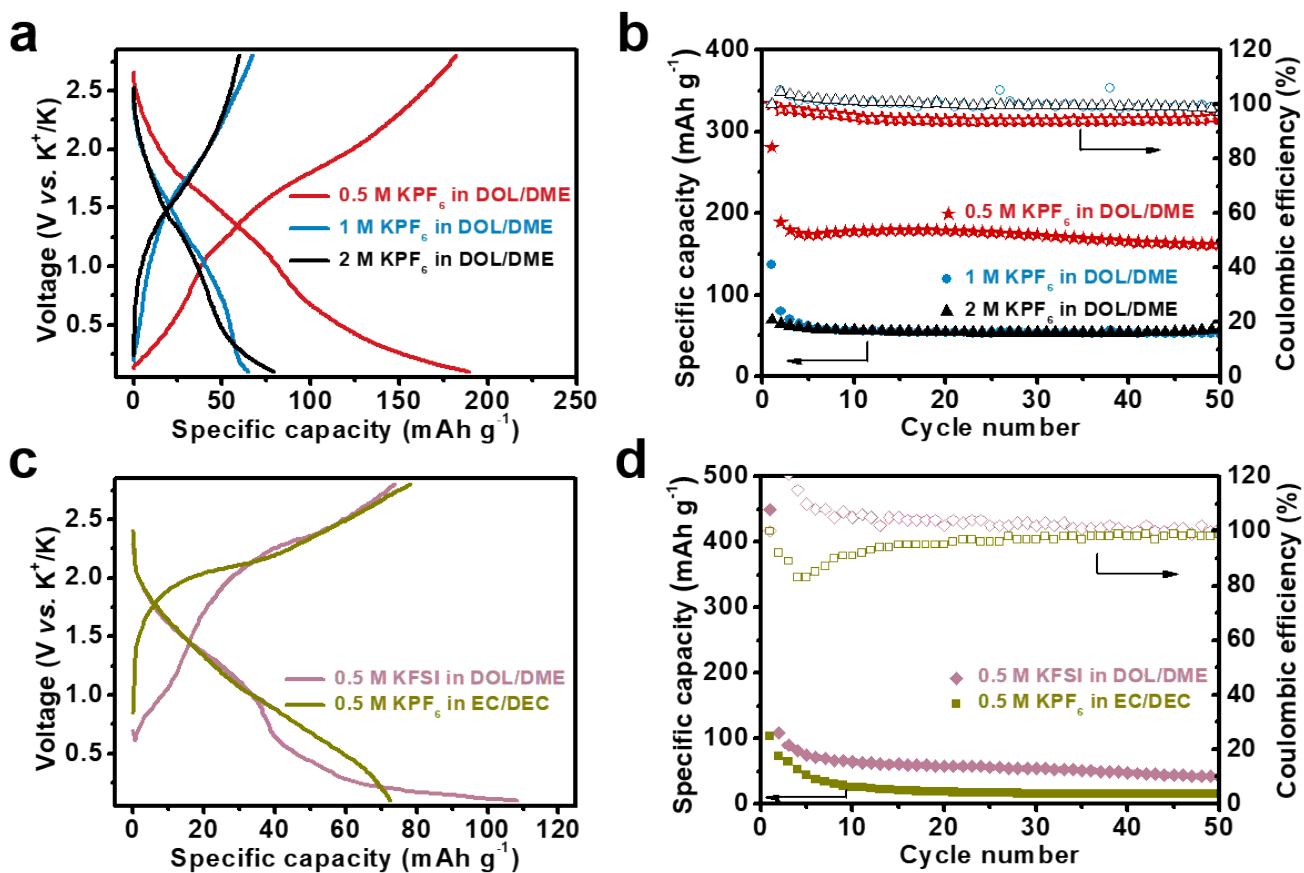


Figure S5. Electrochemical performances of PIF in different electrolytes. (a, c) Voltage profiles of the 2nd cycle at 0.2 A g⁻¹; (b, d) cycling stability at 0.2 A g⁻¹.

Table S1. Comparison of the electrochemical performance of our PIF with earlier literature results for KIBs.

Materials	Specific capacity (mAh g⁻¹)	Capacity retention (%) at specific current	Reference
PIF	190 at 0.2 A g⁻¹ 120 at 1 A g⁻¹ 95 at 5 A g⁻¹	75% after 200 cycles at 0.2 A g⁻¹	This work
K ₂ TP	110 at 0.22 A g ⁻¹ 79 at 0.44 A g ⁻¹	96% after 100 cycles at 0.044 A g ⁻¹	<i>Nano Energy</i> 2016, 33 , 350-355
K ₂ PC	94 at 0.22 A g ⁻¹ 55 at 0.44 A g ⁻¹	88% after 100 cycles at 0.044 A g ⁻¹	
ADAPTS	105 at 0.155 A g ⁻¹ 90 at 0.31 A g ⁻¹	67% after 1000 cycles at 0.155 A g ⁻¹ 57% after 1000 cycles at 0.31 A g ⁻¹	<i>Adv. Energy Mater.</i> 2019, 9 , 1802986
K ₄ PTC	132 at 0.05 A g ⁻¹ 73 at 0.5 A g ⁻¹	73% after 500 cycles at 0.05 A g ⁻¹ 57% after 2500 cycles at 0.5 A g ⁻¹	<i>Chem. Commun.</i> 2019, 55 , 1801-1804
PyBT	220 at 0.2 A g ⁻¹ 104 at 0.5 A g ⁻¹	82% after 500 cycles at 0.05 A g ⁻¹	<i>ACS Nano</i> 2019, 13 , 745-754
VK (Vitamin K)	200 at 0.01 A g ⁻¹	37.5% after 100 cycles at 0.1 A g ⁻¹	<i>J. Mater. Chem. A</i> 2018, 6 , 12559-12564
HC-B (hard carbon)	148 at 1 A g ⁻¹	49% after 1000 cycles at 1 A g ⁻¹	<i>Small</i> 2021, 17 , 2100397
Graphite	273 at 0.007 A g ⁻¹	50% after 50 cycles at 0.14 A g ⁻¹	<i>J. Am. Chem. Soc.</i> 2015, 137 , 11566-11569
Soft carbon	210 at 0.28 A g ⁻¹ 185 at 0.14 A g ⁻¹	81.4% after 50 cycles at 0.558 A g ⁻¹	