

基于一体化正极与电解质膜的高性能固态电池

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High Performance Solid-state Battery with Integrated Cathode and Electrolyte

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Materials

Succinonitrile (SN, $C_4H_4N_2$) and polyacrylonitrile (PAN, $[CH_2CH(CN)]_n$) are from Sigma-Aldrich, dimethylformamide (DMF, C_3H_7NO) are from Alfa Aesar, lithium iron phosphate ($LiFePO_4$) are from Bamo Technology Co., Ltd. Tianjin.

Material characterization

Morphology of the samples were characterized by scanning electron microscope (SEM, Hitachi S-4800, 5 kV) equipped with Energy dispersive X-ray spectroscopy (EDX).

Electrochemical characterization

The EIS measurement (Bio-Logic, VMP300) was conducted with a voltage amplitude of 10 mV at a frequency of 4 MHz to 1 Hz. And the galvanostatic charge-discharge was measured between 4.2–2.5 V at room temperature at ($1C = 170 \text{ mAh}\cdot\text{g}^{-1}$).

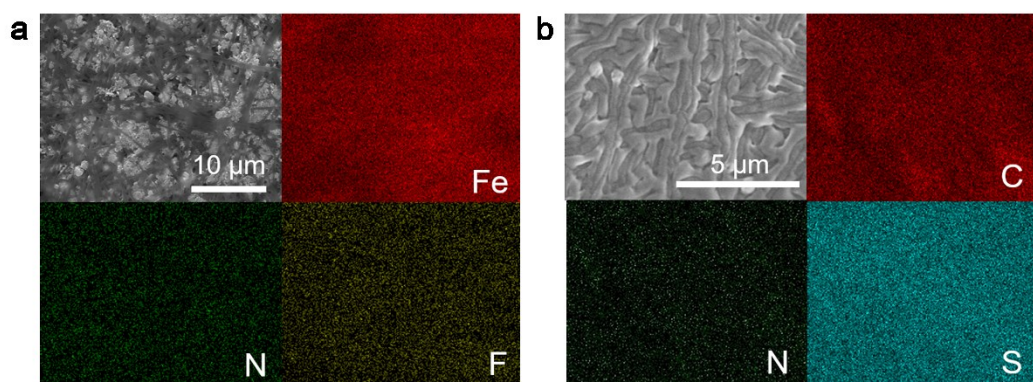


Fig. S1 (a) SEM image and the corresponding EDX elemental mapping of Fe, N and F of the cathode layer after adding SN-LiTFSI. (b) SEM image and the corresponding EDX elemental mapping of C, N and S of the PAN electrolyte layer after adding SN-LiTFSI.

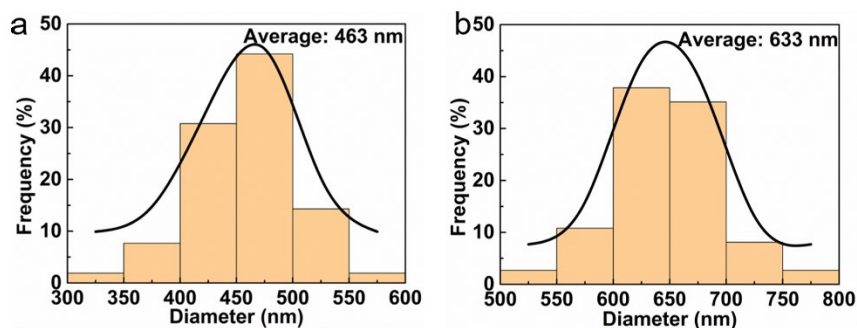


Fig. S2 Diameter distribution of the PAN nanofibers in the cathode (a) and the electrolyte (b) layer.

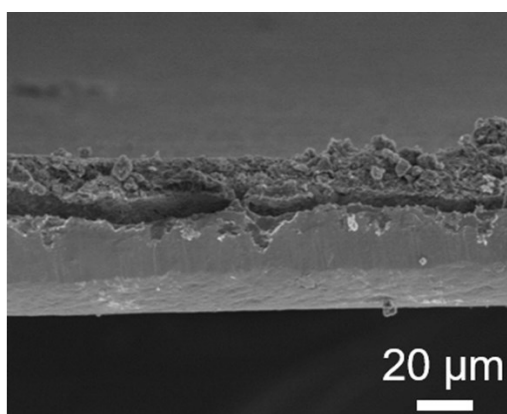


Fig. S3 Cross-sectional SEM image of the interface between the cathode and the electrolyte constructed using slurry coated cathode and SSE.