Supporting Information

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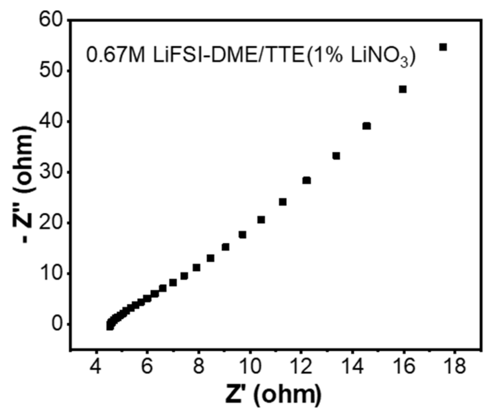

Figure S1 EIS spectra of symmetrical cells (stainless steel/separator/stainless steel) using 0.67 M LiFSI–DME/TTE ($LiNO_3$).

The ionic conductivity of electrolyte corresponds to the migration ability of lithium ions in the electrolyte and plays a key role in the battery performance, especially the multiplicity performance. We assembled stainless steel symmetric cells to test the electrochemical impedance spectra of both electrolytes. The ionic conductivity σ can be calculated by the equation $\sigma = d/RS$, where d is the diaphragm thickness of 25 μm, S is the contact area of 2 cm^2 and R is the impedance. The impedance of the electrolyte was 4.5 Ω, and the conductivity was calculated to be 2.78×10^{-4} S cm^{-1}.

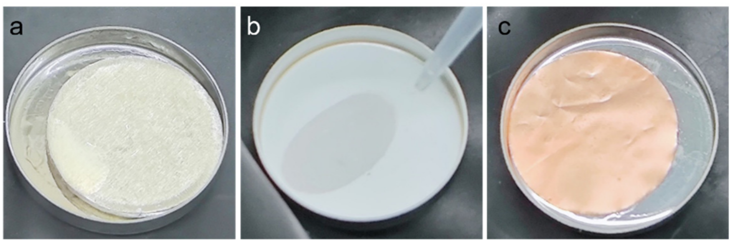

Figure S2 Optical images showing wettability of 0.67 M LiFSI-DME/TTE ($LiNO_3$) on lithium foil (a), separator (b), and copper foil (c).

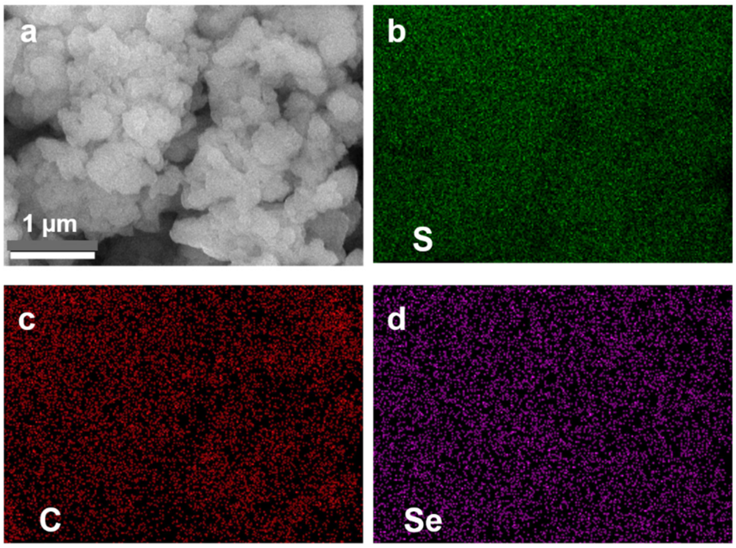

Figure S3 EDS elemental mapping images of the pPAN/SeS_2 composite for (b) sulfur, (c) carbon and (d) selenium.

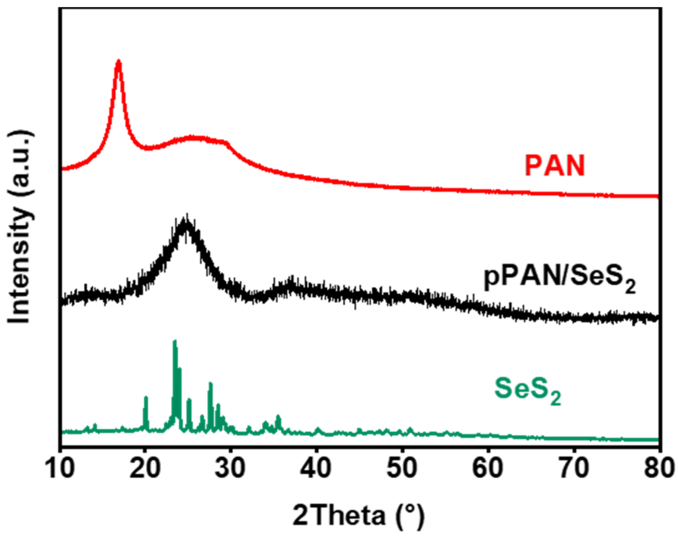

Figure S4 XRD of pPAN/SeS_2 (black), PAN (red), SeS_2 (green).