

Ba_{0.6}Sr_{0.4}TiO₃ Ferroelectric Fillers reinforced Poly(vinylidene fluoride)

Polymer Electrolytes for Dendrite-free Solid-state Li Metal Battery

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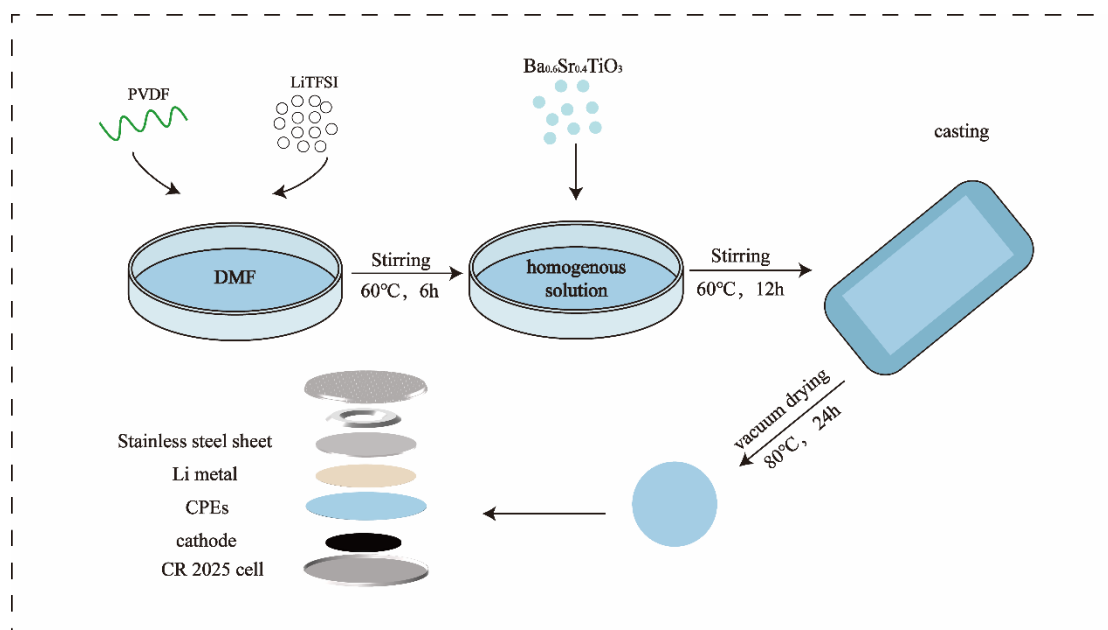


Figure S1. Schematic diagram of the preparation process for PVDF-4BST CPE.

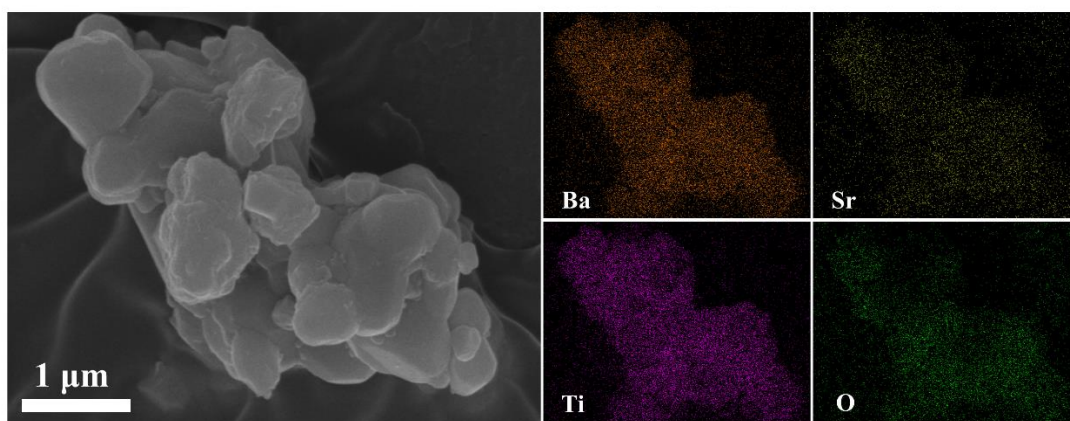


Figure S2. SEM and EDS mapping images of BST ceramic.

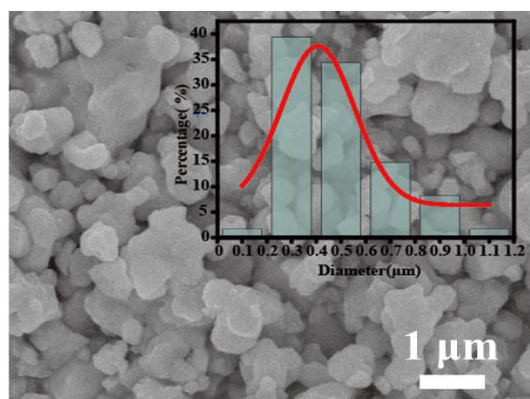


Figure S3. The size distribution of BST ceramic nanoparticles.

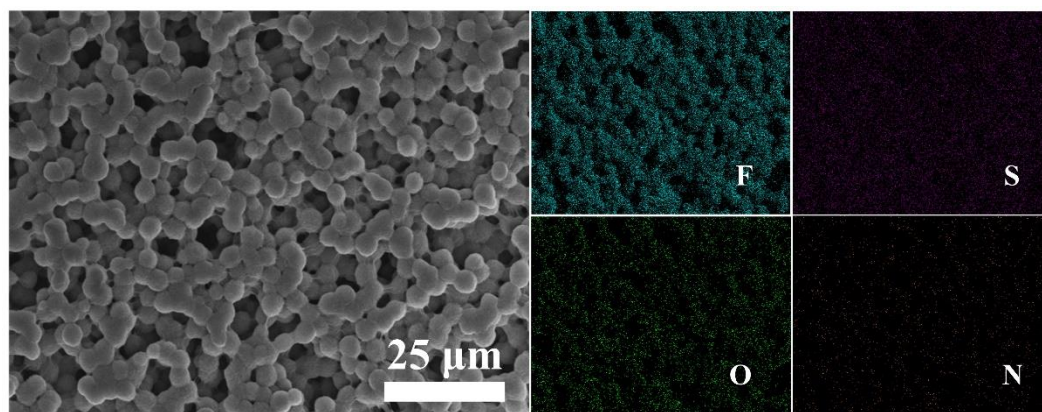


Figure S4. SEM image and EDS mapping of the PVDF SPE top surface .

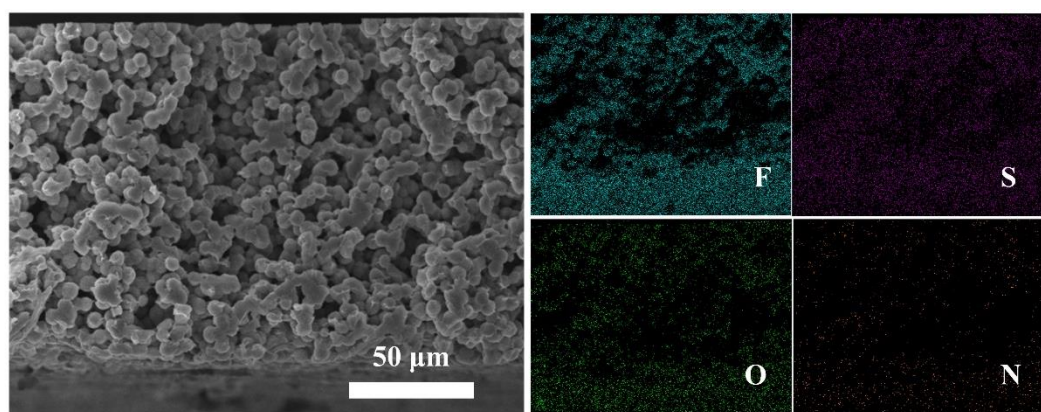


Figure S5. Cross-sectional SEM image and EDS mapping of PVDF SPE.

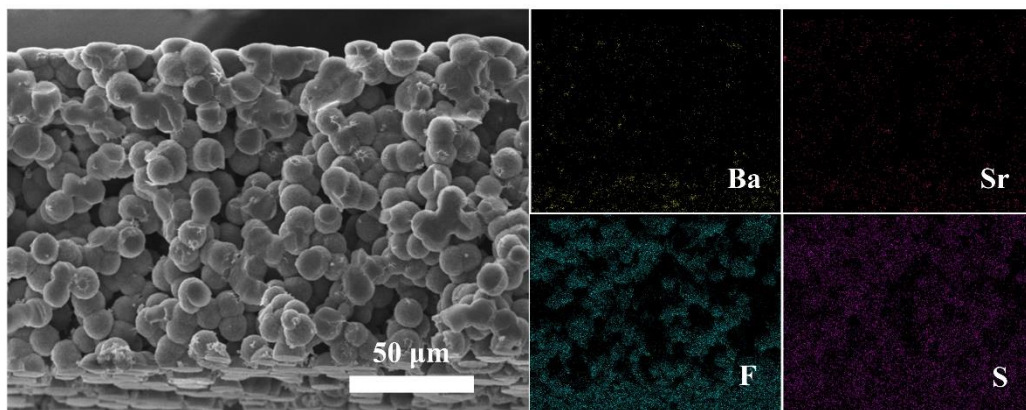


Figure S6. Cross-sectional SEM image and EDS mapping of PVDF-4BST SPE.

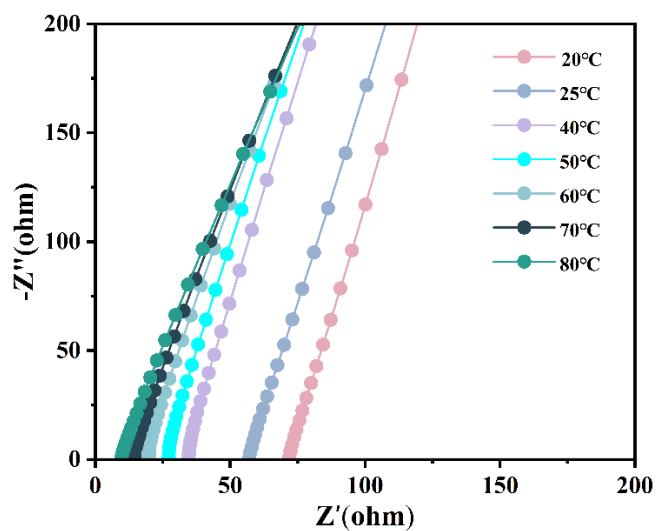


Figure S7. Electrochemical impedance spectra of PVDF CSEs with various temperatures.

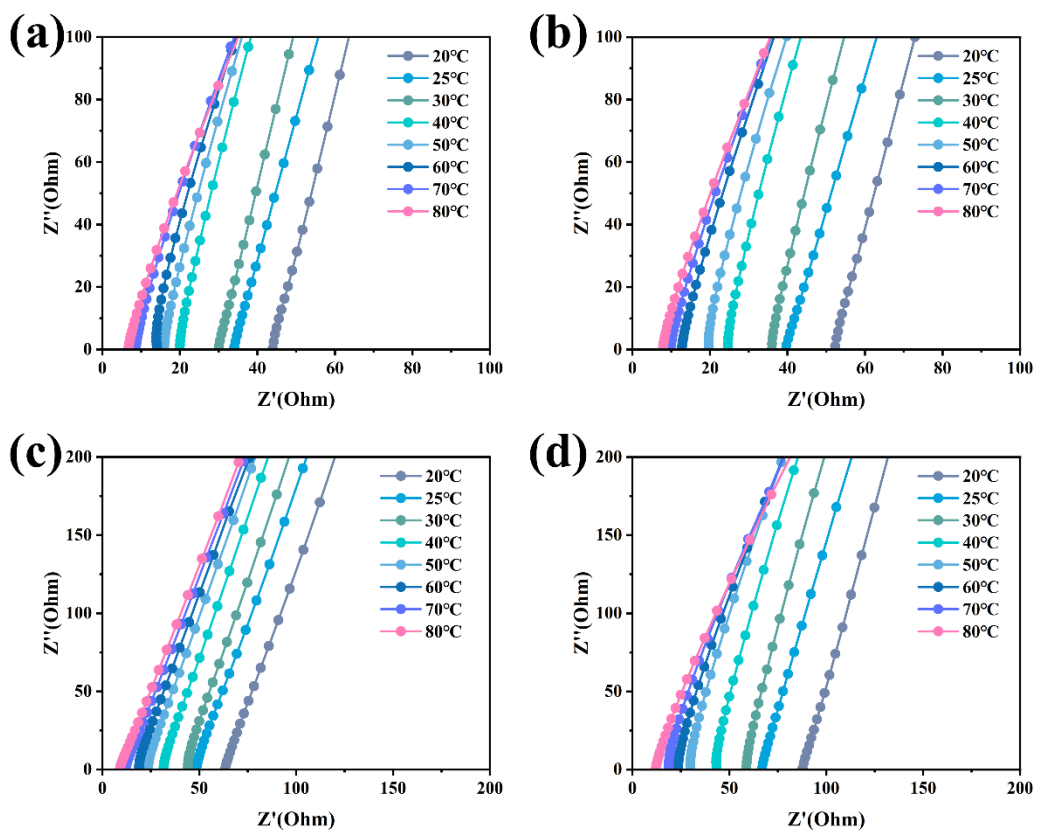


Figure S8. EIS plots of PVDF-xBST CPE from 20 °C to 80 °C ((a) x=2, (b) x=6, (c) x=8, (d) x=10).

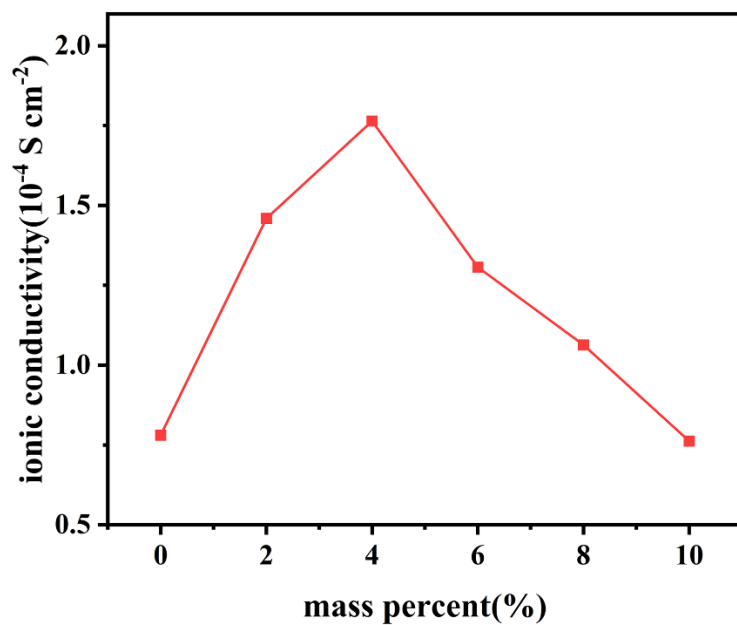


Figure S9. The ionic conductivity of PVDF-xBST CPEs at 25°C. (x=0, 2, 4, 6, 8, 10)

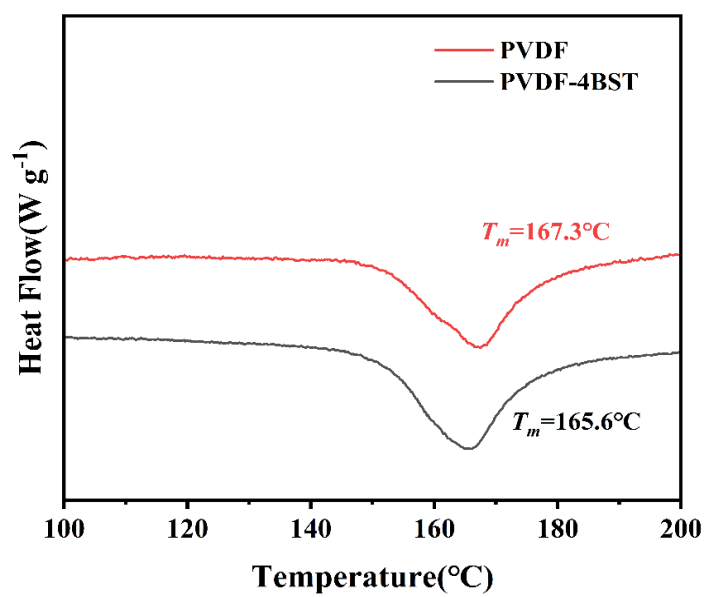


Figure S10. The Melting Temperature (T_m) of PVDF SPE and PVDF-4BST CPE.

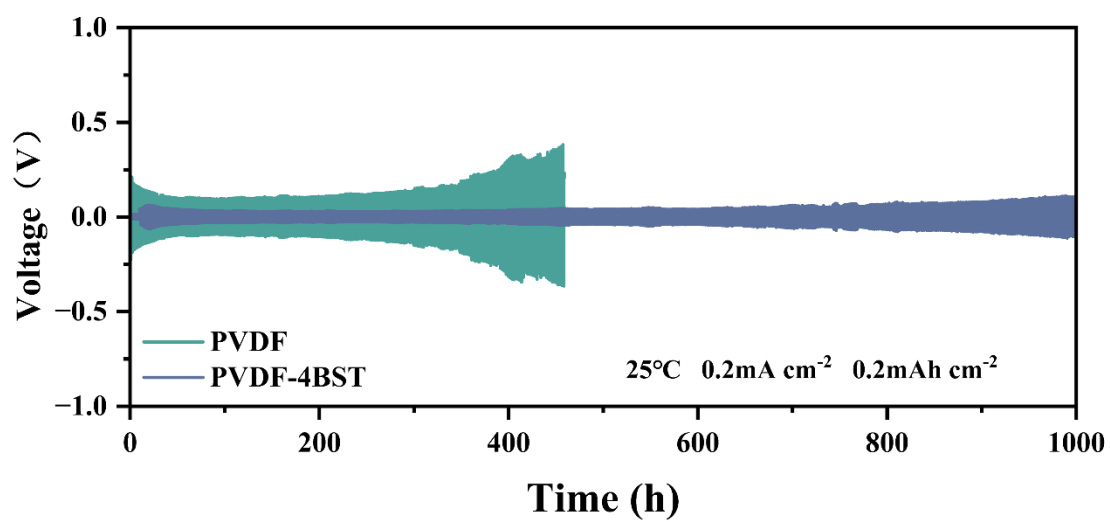


Figure S11. Galvanostatic cycles of Li|PVDF-4BST|Li and Li|PVDF|Li cells at 0.2 mA cm^{-1} .

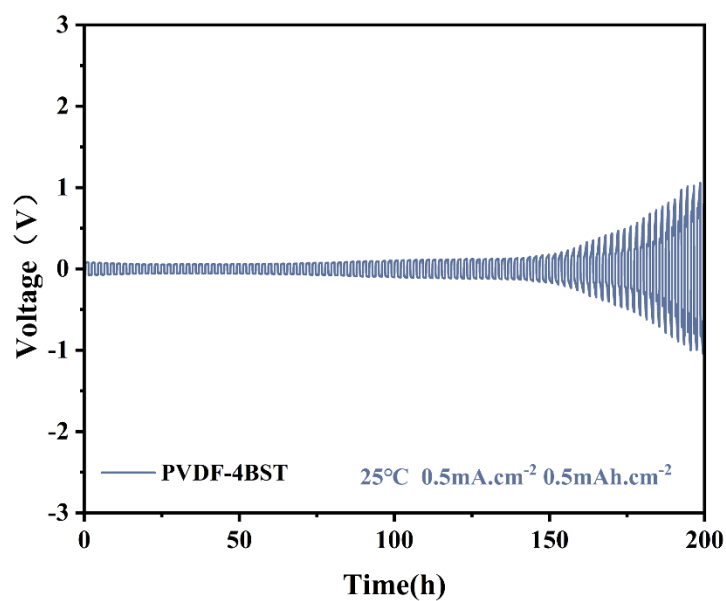


Figure S12. Galvanostatic cycles of Li|PVDF-4BST|Li cell at 0.5 mA cm^{-1} .

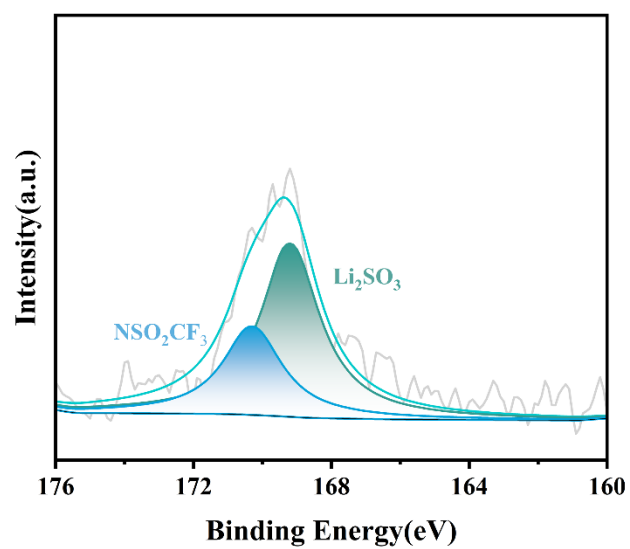


Figure S13. S 2p XPS spectra of cycled Li anodes from Li|PVDF|Li cell.

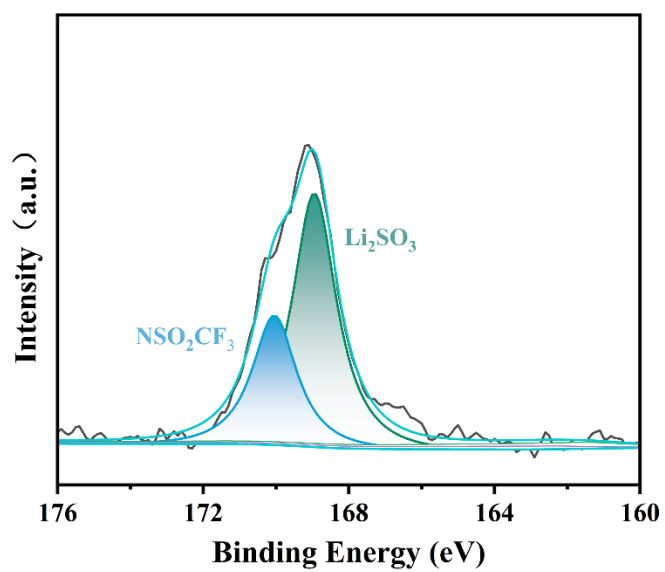


Figure S14. S 2p XPS spectra of cycled Li anodes from Li|PVDF-4BST|Li cell.

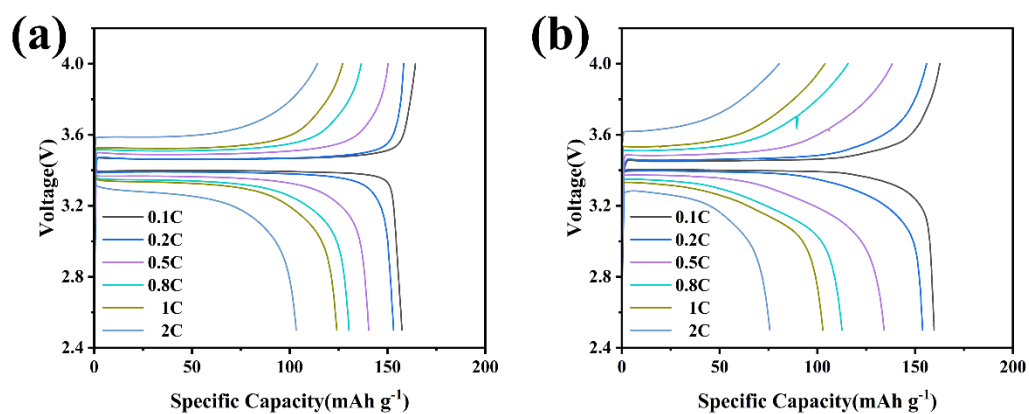


Figure S15. Charge/discharge curves of Li[PVDF-xBST] LiFePO₄ cells under different rates. ((a) x=2, (b) x=6)

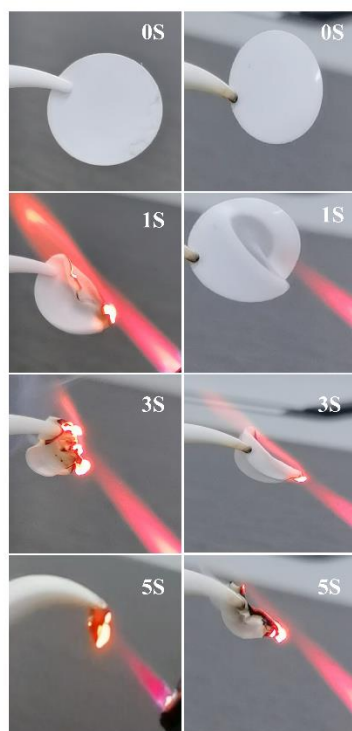


Figure S16. The combustion behavior of PVDF SPE (left) and PVDF-4BST CPE (right).

Table S1. The ion conductivity of PVDF -xBST CPE from 20°C to 80°C. (x=0, 2, 4, 6, 8, 10)

	20 °C	25 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C
0 wt%	5.69×10^{-5}	7.38×10^{-5}	8.16×10^{-5}	1.17×10^{-4}	1.49×10^{-4}	2.08×10^{-4}	2.84×10^{-4}	4.23×10^{-4}
2 wt%	9.29×10^{-5}	1.20×10^{-4}	1.37×10^{-4}	2.04×10^{-4}	2.56×10^{-4}	2.87×10^{-4}	4.75×10^{-4}	6.07×10^{-4}
4 wt%	1.24×10^{-4}	1.79×10^{-4}	2.15×10^{-4}	3.01×10^{-4}	3.57×10^{-4}	4.25×10^{-4}	6.74×10^{-4}	8.11×10^{-4}
6 wt%	8.80×10^{-5}	1.16×10^{-4}	1.28×10^{-4}	1.86×10^{-4}	2.32×10^{-4}	3.61×10^{-4}	4.69×10^{-4}	5.83×10^{-4}
8 wt%	7.26×10^{-5}	9.49×10^{-5}	1.04×10^{-4}	1.46×10^{-4}	1.95×10^{-4}	2.41×10^{-4}	3.84×10^{-4}	5.07×10^{-4}
10 wt%	5.24×10^{-5}	6.89×10^{-5}	7.81×10^{-5}	1.06×10^{-4}	1.53×10^{-4}	1.94×10^{-4}	2.43×10^{-4}	3.81×10^{-4}