In-depth exploration of the effect mechanisms of various lithium salt anions in solid-state and liquid lithium metal batteries

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Supplementary Figures



Figure S1. Cross-sectional SEM image of PI.



Figure S2. Cross-sectional SEM image of PB.



Figure S3. FT-IR spectra of LiTFSI, LiDFOB, LI and LB.



Figure S4. Contact angle between LI and PE films.



Figure S5. Contact angle between LB and PE films.



Figure S6. Contact angle between LI and LFP.



Figure S7. Contact angle between LB and LFP.



Figure S8. Stacked Nyquist plots of LFP/PI/Li battery during the first charge and discharge process.



Figure S9. Stacked Nyquist plots of LFP/PB/Li battery during the first charge and discharge process.



Figure S10. LFP/LI/Li Nyquist plots of the battery during the first charge and discharge process at 0.1 C, the test interval voltage is 0.1 V.



Figure S11. LFP/LB/Li Nyquist plots of the battery during the first charge and discharge process at 0.1 C, the test interval voltage is 0.1 V.



Figure S12. Charge/discharge profiles of LFP/PI/Li battery at 0.1 C.



Figure S13. Charge/discharge profiles of LFP/PB/Li battery at 0.1 C.



Figure S14. Charge/discharge profiles of LFP/PI/Li battery at 1 C.



Figure S15. Charge/discharge profiles of LFP/PB/Li battery at 1 C.



Figure S16. Charge/discharge profiles of LFP/PI/Li battery at different current densities and 60 $^{\circ}\mathrm{C}$



Figure S17. Charge/discharge profiles of LFP/PB/Li battery at different current densities and 60 $^{\circ}$ C



Figure S18. Charge/discharge profiles of LFP/LB/Li battery at different current densities and 25 $^{\circ}\mathrm{C}$



Figure S19. Charge/discharge profiles of LFP/LI/Li battery at different current densities and 25 $^{\circ}\mathrm{C}$

battery.		
Voltage	Warburg constant	Diffusion coefficient
3.0	154.68	1.25×10^{-14}
3.2	200	7.51×10^{-15}
3.4	107.36	2.6×10^{-14}
3.5	43.34	1.6×10^{-13}
3.8	113.41	2.33×10^{-14}
3.5	48.17	1.29×10^{-13}
3.2	96.9	3.2×10^{-14}
2.7	68.17	6.42×10^{-14}

Table S1. Calculation parameters for the average diffusion coefficient of LFP/PI/Li

 battery.

Table S2. Calculation parameters for the average diffusion coefficient of LFP/PB/Li battery.

Voltage	Warburg constant	Diffusion coefficient
3.1	188.93	8.41 × 10 ⁻¹⁵
3.2	197.36	7.71×10^{-15}
3.4	58.68	8.72×10^{-14}
3.5	48.99	1.25×10^{-13}
3.8	147.68	1.38×10^{-14}
3.5	62.65	7.65×10^{-14}
3.2	155.58	1.24×10^{-14}
2.7	181.89	9.08 × 10 ⁻¹⁵
3.4 3.5 3.8 3.5 3.2 2.7	58.68 48.99 147.68 62.65 155.58 181.89	8.72×10^{-14} 1.25×10^{-13} 1.38×10^{-14} 7.65×10^{-14} 1.24×10^{-14} 9.08×10^{-15}