Supporting Information

ZIF-8 composite SiO_2 enhanced high-performance PEO-based solid-state electrolyte for Li-metal batteries

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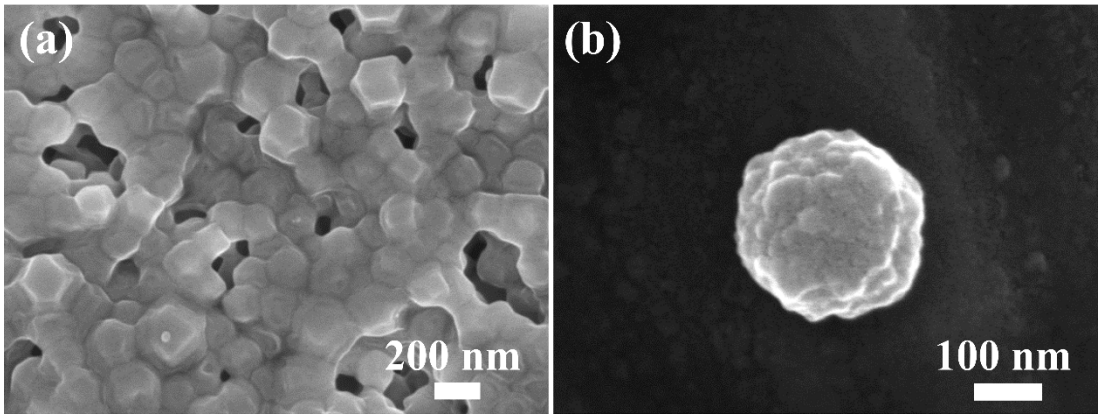


Figure S1. SEM images of (a) ZIF-8/IL and (b) ZIF-8/SiO2/IL.

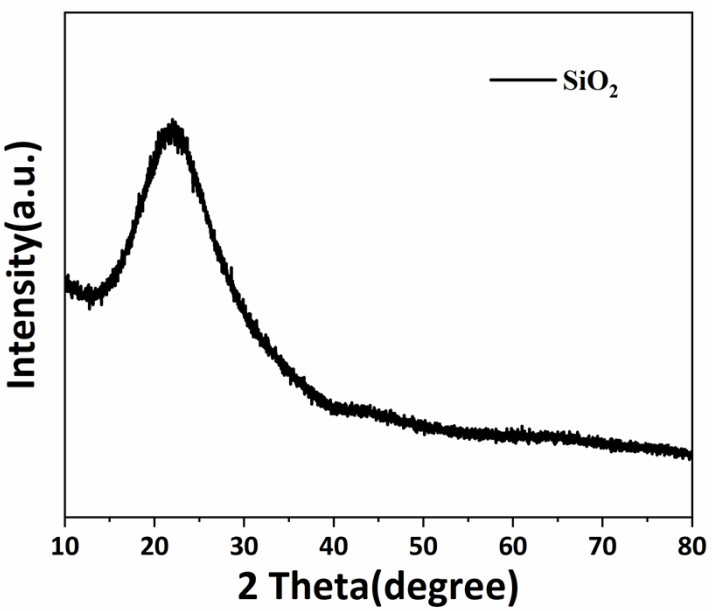


Figure S2. XRD pattern of SiO_2.

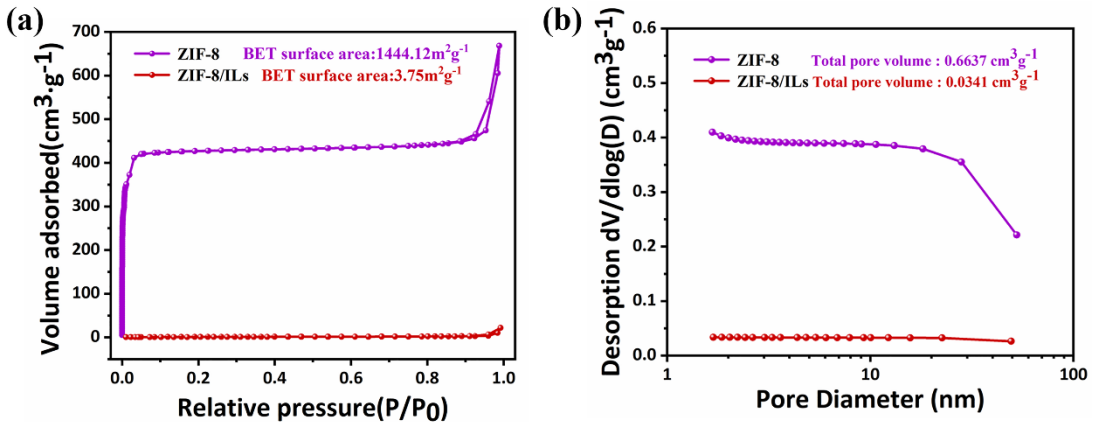


Figure S3. BET curves of (a) ZIF-8 and ZIF-8/IL. Pore size distribution of (b) ZIF-8 and ZIF-8/IL.

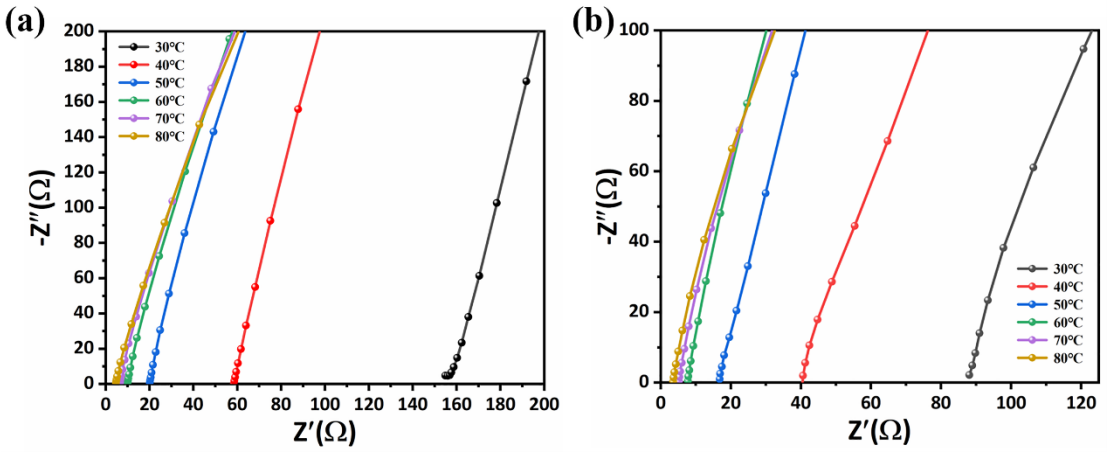


Figure S4. AC impedance spectra of (a) PZS-1 and (b) PZS-2, in the steel symmetrical cells at 30-80°C.

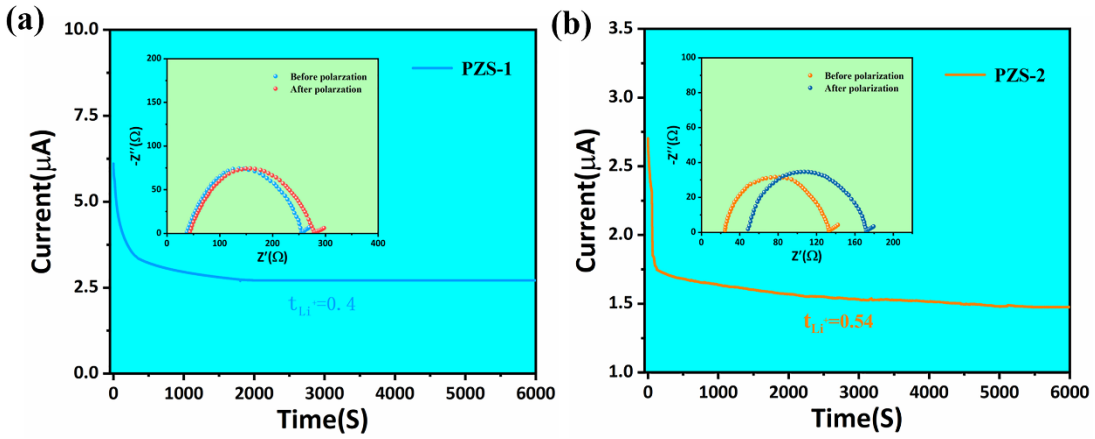
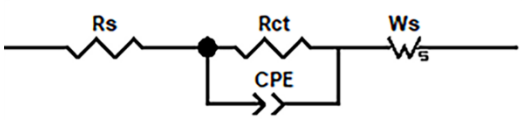


Figure S5. DC polarization curves of (a) PZS-1 and (b) PZS-2, in the Li symmetrical cell under 60°C at a potential step of 10 mV. Inset: the AC impedance spectra of the cell before polarization and after steady-state current conditions.



Rs: ohmic resistance
Rct: charge-transfer resistance

Batteries	Rs/Ω	Rct/Ω
LFP/PZS-1/Li	34.65	138.3
LFP/PZS-2/Li	17.71	83.36
LFP/PZS-3/Li	8.88	50.88

Figure S6. The equivalent circuit is used to fit the experimental data, the obtained data is shown in the table.

Table S1 Summary of novel materials based on Li-ion composite solid-state electrolytes.

No.	Composition	σ (S cm^{-1})	Voltage window（V）	t_{Li}^{+}	Ref
1	PVA/BMIMOTf /LLZTO	2×10^{-3} (60 ℃)	4	0.76	S1
2	PEO/PVDF /LLZTO	3.37×10^{-4} (60 ℃)	4.8	-	S2
3	PEO/LLZTO	1.12×10^{-5} (25 ℃)	5.5	0.58	S3
4	PEO-n-UIO/IL	1.3×10^{-4} (30 ℃）	4.5	0.26	S4
5	PEO-UIO-66-NH2	3.1×10^{-5} (25 ℃)	4.97	0.72	S5
6	PTFE-ZIF-8/IE	1.05×10^{-4}	4.7	0.52	S6
7	**PEO-ZIF-8@SiO_2/IL**	**2.35×10^{-4} (30 ℃）**	**5.5**	**0.6**	**This work**

References

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