

Polymeric Wetting Matrix for a Stable Interface between Solid-state Electrolytes and Li Metal Anode

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Table S1. Variation of Succinonitrile Content with Infiltration Time

Infiltration	PV-PM-LA	PV-LA
1h	20	11
2h	31	13.5
3h	33	13.5
4h	37	13.5
5h	37	13.5
6h	37	13.5

Table S2. Impedance Information R_{ct} before and after Cycling

Cycling	PV-PM-LA-SN	PV-LA-SN
before	38.2	138.7
after	0.9	69.8

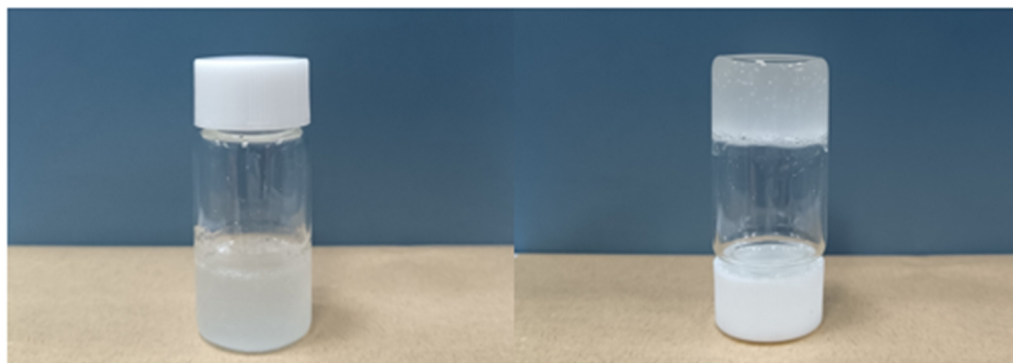


Figure S1. Photographs of SN electrolyte at 25°C.

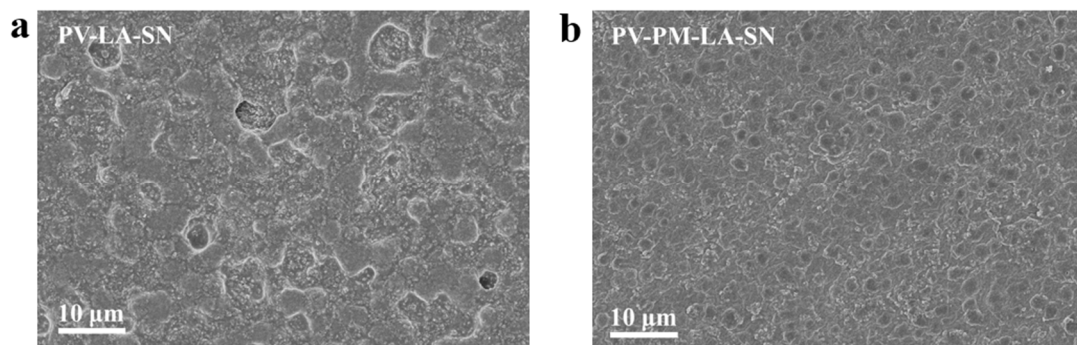


Figure S2. Scanning electron microscopy image of (a) PV-LA-SN and (b) PV-PM-LA-SN.

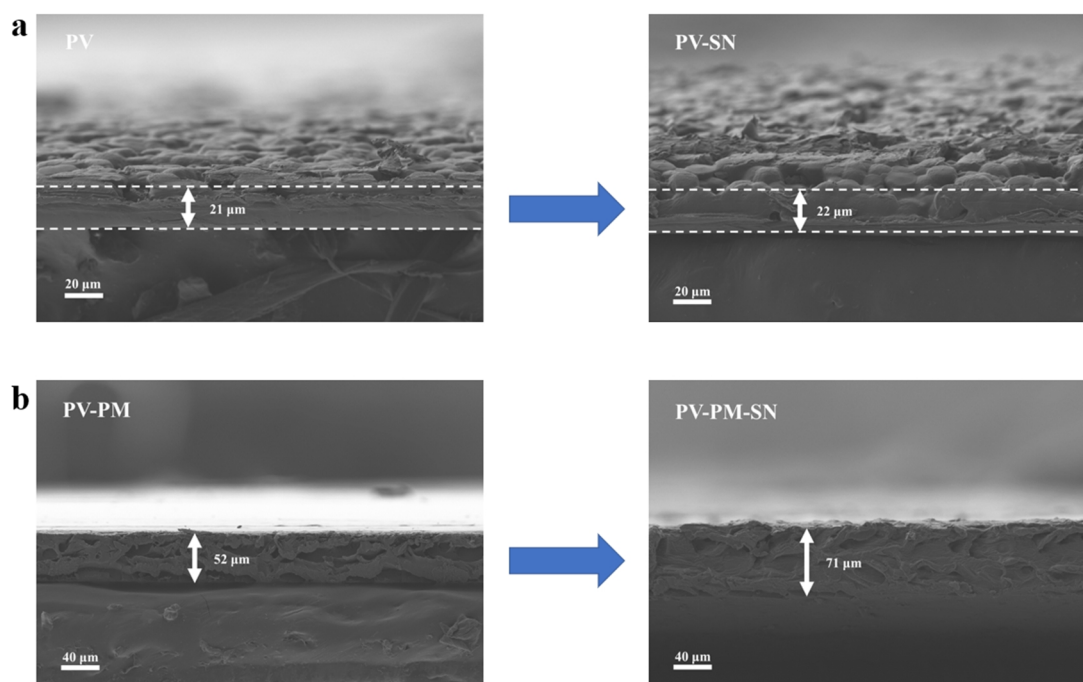


Figure S3. Cross-section view of the membranes before and after absorbing SN. (a) PV and (b) PV-PM.

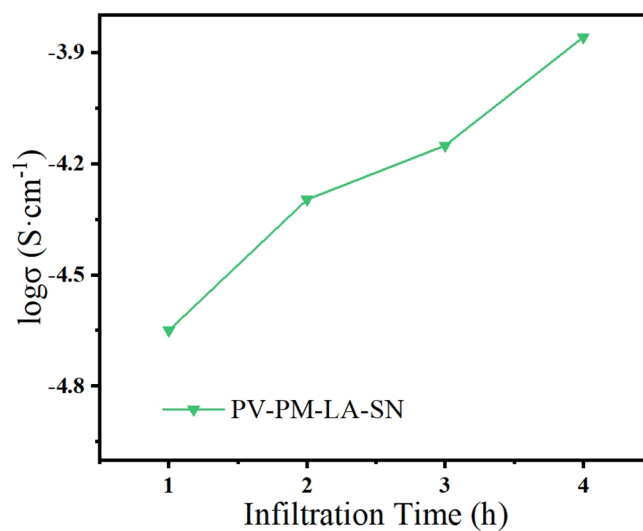


Figure S4. The relationship between the infiltration time and room-temperature ionic conductivity of PV-PM-LA-SN.

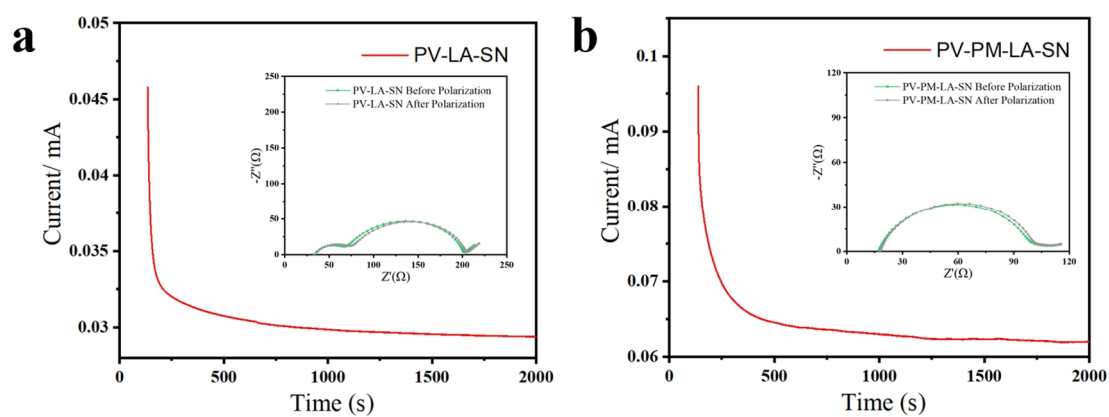


Figure S5. Polarization curve and initial and steady-state impedance diagram (the inset) for (a) PV-LA-SN and (b) PV-PM-LA-SN.

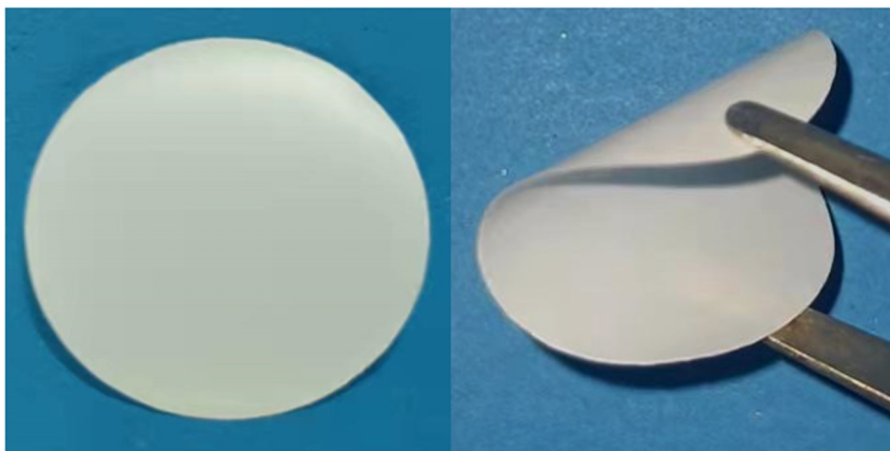


Figure S6. Photographs of PV-PM-LA membrane.

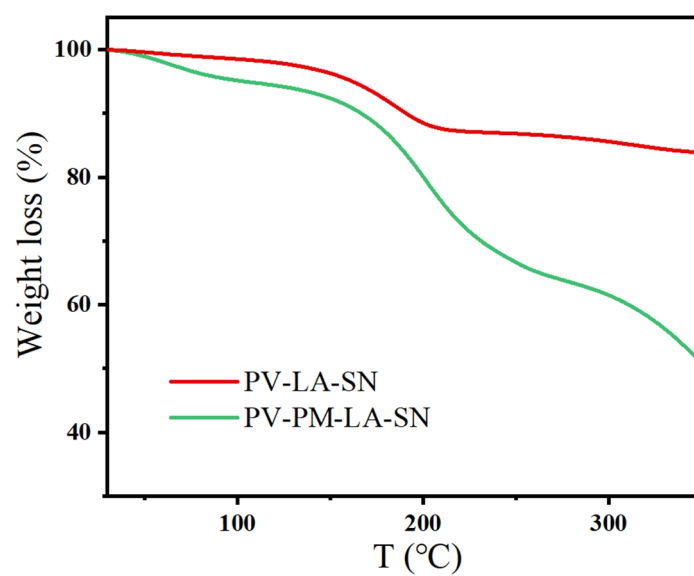


Figure S7. Thermogravimetric analysis curves of PV-LA-SN and PV-PM-LA-SN.

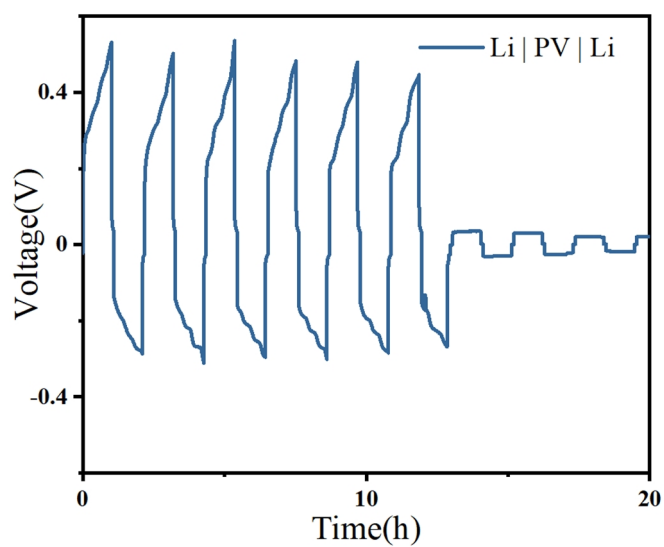


Figure S8. The voltage-time profiles of Li symmetrical cells at a current density of $0.1 \text{ mA} \cdot \text{cm}^{-2}$ with a capacity of $0.1 \text{ mAh} \cdot \text{cm}^{-2}$.

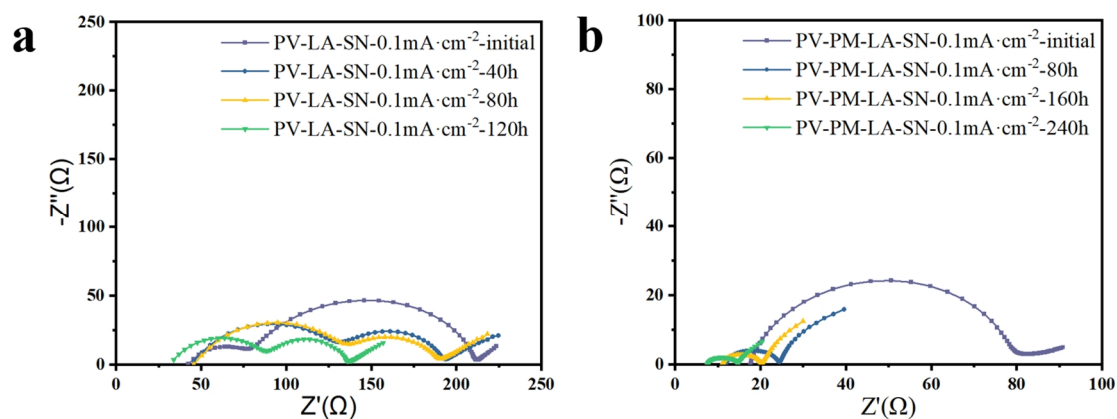


Figure S9. Nyquist plots of the symmetric Li cells measured at different cycling time for (a) PV-LA-SN and (b) PV-PM-LA-SN.

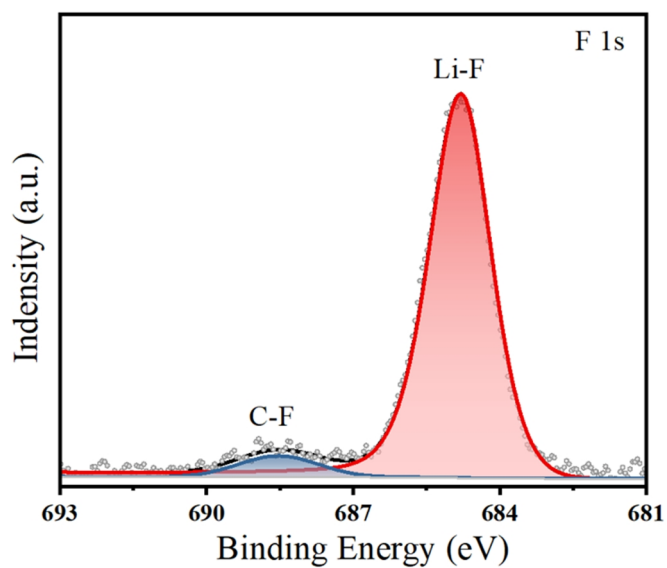


Figure S10. The X-ray photoelectron spectroscopy spectrum of the surface of Li-FEC.

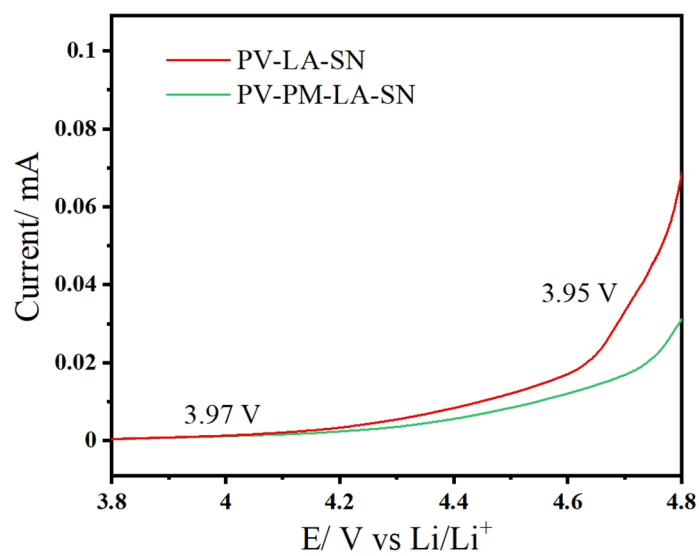


Figure S11. Linear sweep voltammetry for PV-LA-SN and PV-PM-LA-SN.

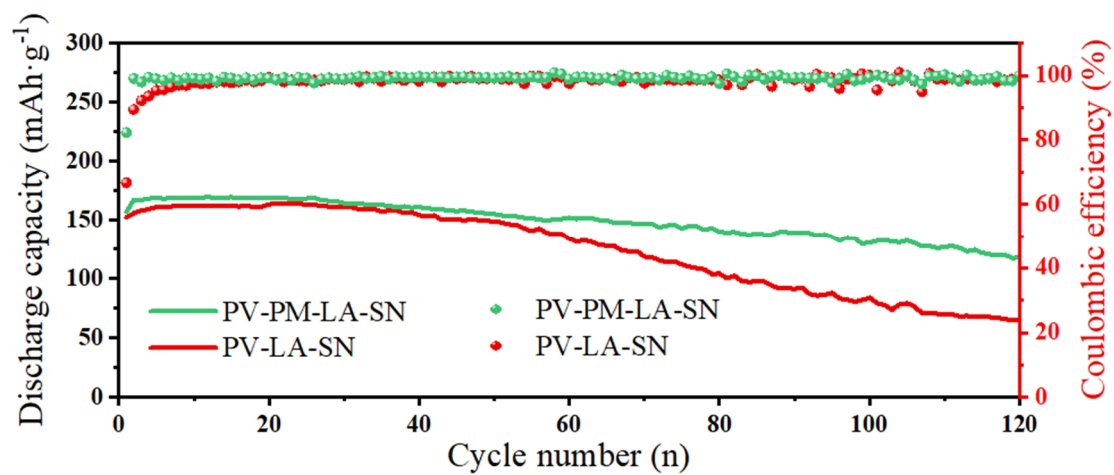


Figure S12. Discharge capacities and coulombic efficiency of Li/NMC532 cells at 0.2 C.