

Supporting Information

Nacre-Inspired Hybrid Interface Enabling Controlled Lithium Deposition via Ion Modulation for Lithium–Sulfur Batteries

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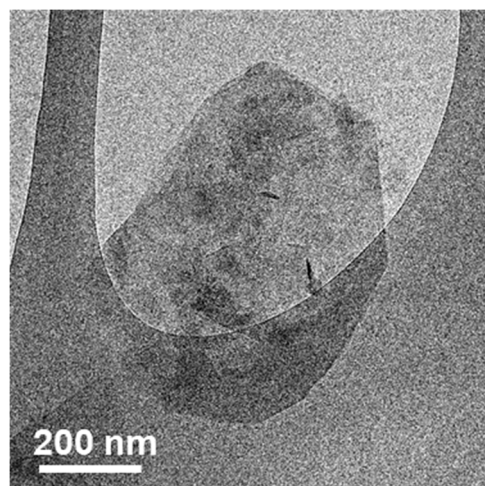


Figure S1. TEM image of BNNS.

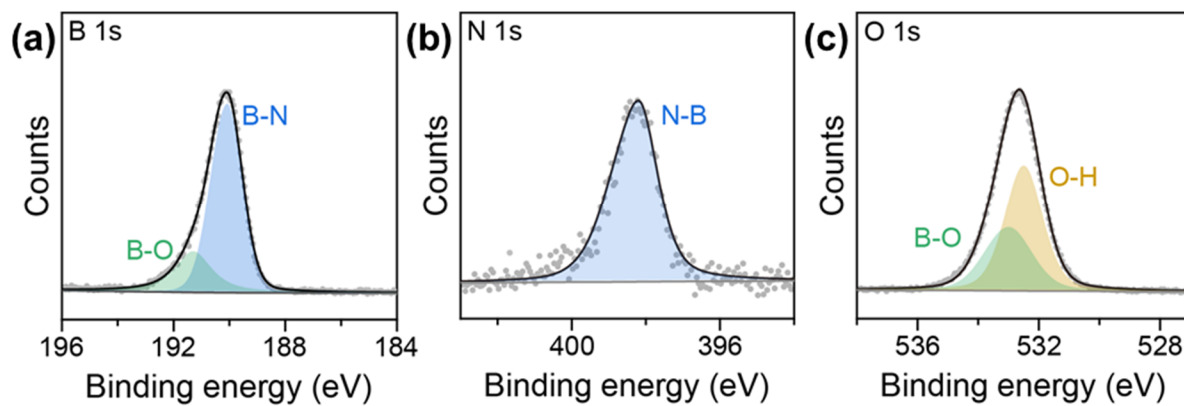


Figure S2. XPS spectra of BNNS; (a) B 1s, (b) N 1s, and (C) O 1s.

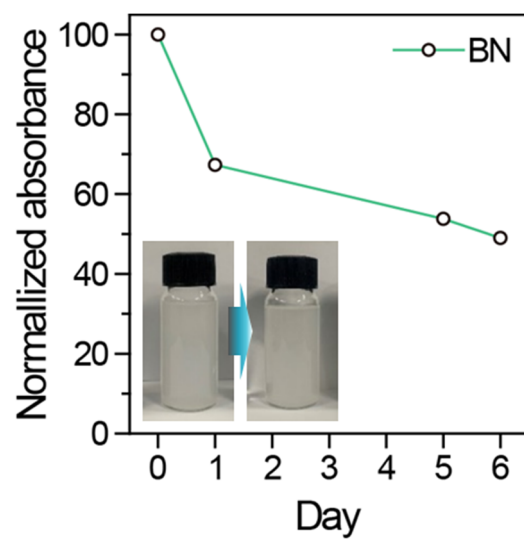


Figure S3. Dispersibility of BNNS in THF solvent.

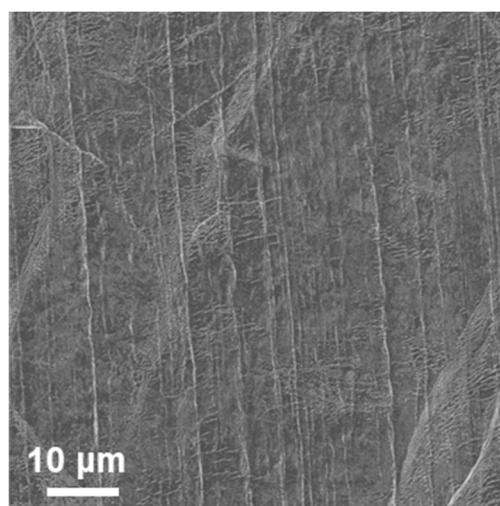


Figure S4. SEM image of bare Li metal.

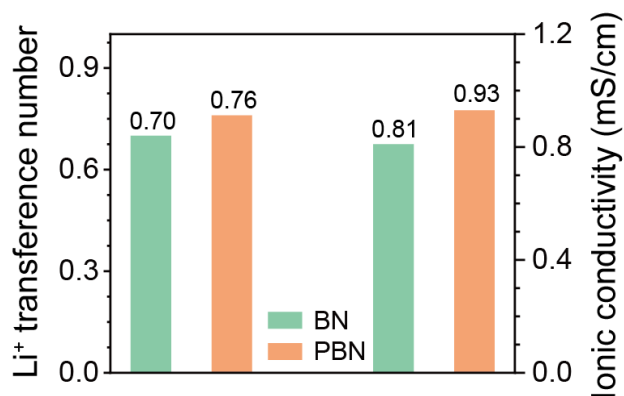


Figure S5. Li^+ transference number and ionic conductivity and plot.

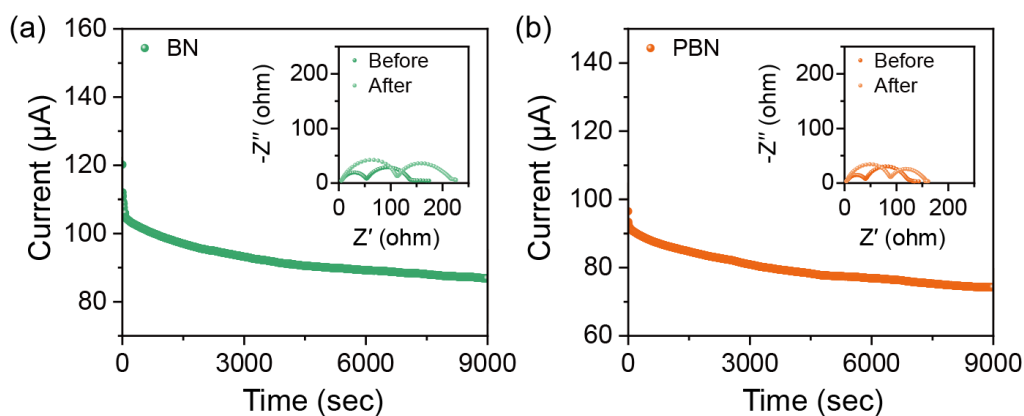


Figure S6. Potentiostatic polarization curves and Nyquist plots of impedance before and after polarization of Li symmetric batteries with (a) BN and (b) PBN layer coated on separators, respectively

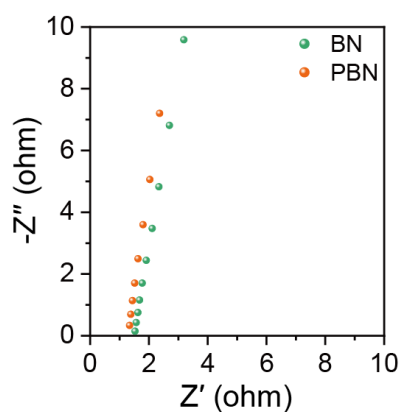


Figure S7. Nyquist plots of the stainless symmetric batteries.

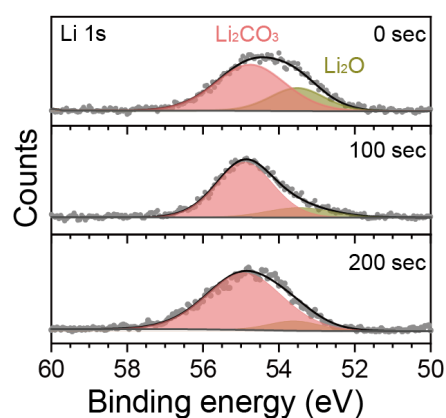


Figure S8. XPS spectra of the lithium surface after cycling: Li 1s spectra of bare Li at different etching times.

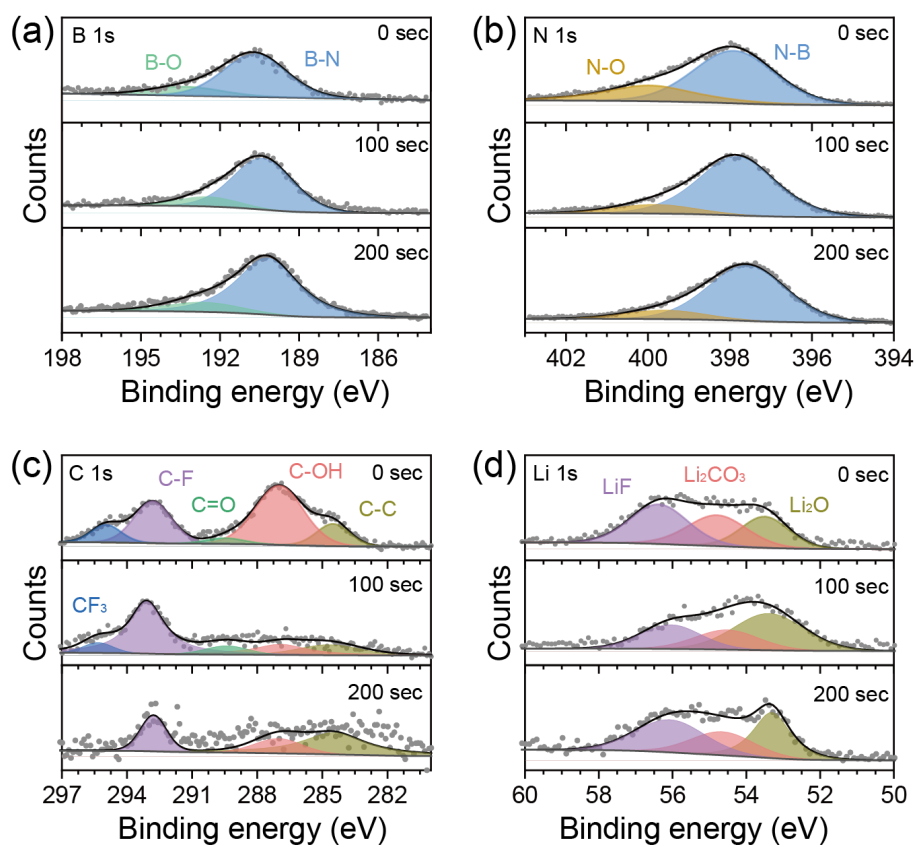


Figure S9. XPS spectra of the lithium surface after cycling: (a) B 1s, (b) N 1s, (c) C 1s, and (d) Li 1s spectra of PBN-Li at different etching times.

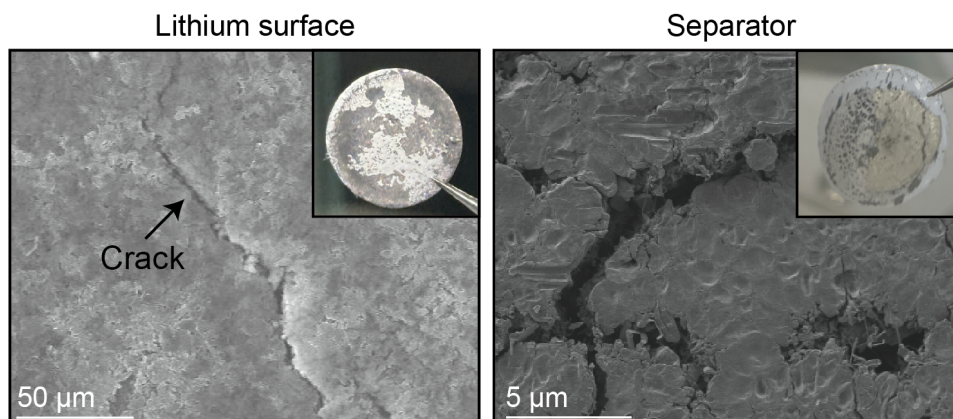


Figure S10. SEM images of Li metal and separator in the BN-Li cell after 200 h at current density of 1 mA/cm^2 .

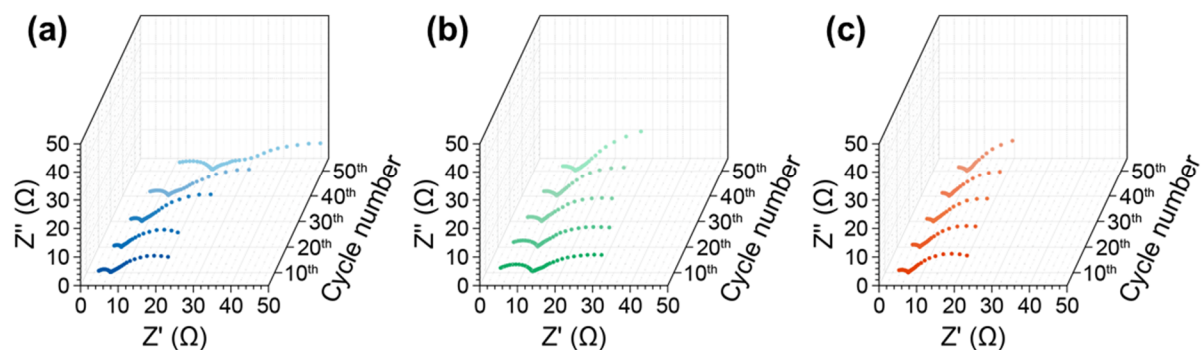


Figure S11. EIS of cell cycled at current density of 1 mA/cm^2 and areal capacity of 1 mAh/cm^2 . (a) Bare Li, (b) BN-Li, and (c) PBN-Li.

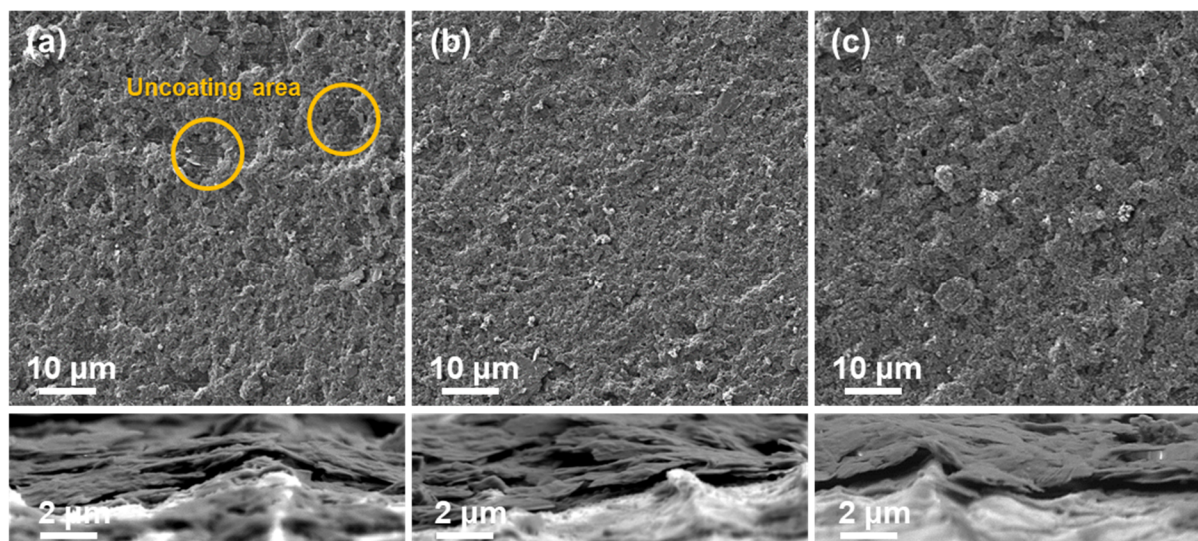


Figure S12. SEM images of BN-Li as a function of mass loading of (a) 0.03 mg/cm², (b) 0.04 mg/cm², and (c) 0.05 mg/cm².

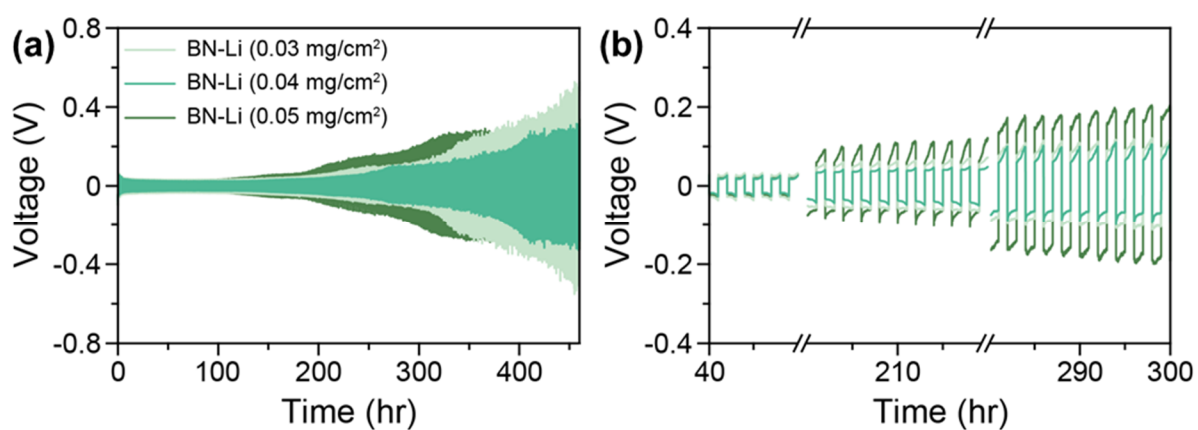


Figure S13. (a) Long-term cycling performances of symmetric cells at a current density of 1 mA/cm² and an areal capacity of 1 mAh/cm² and (b) enlarged voltage profiles.

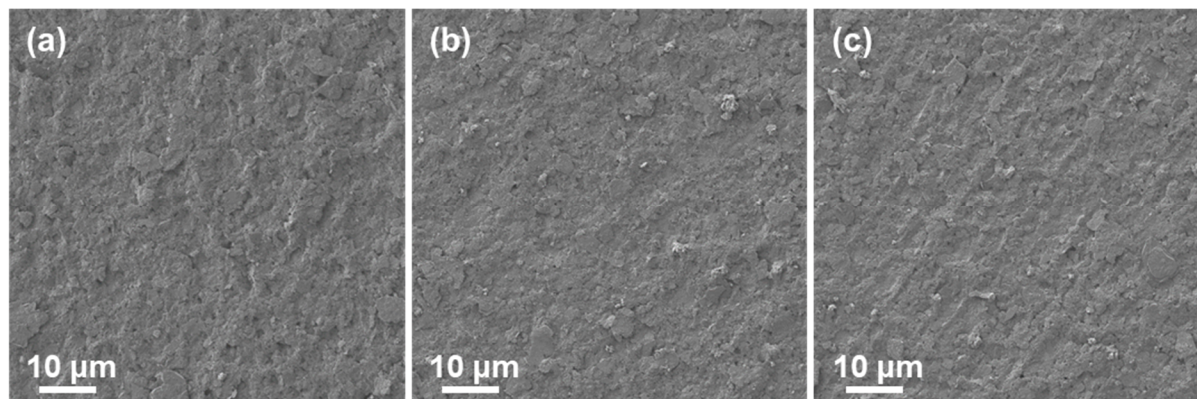


Figure S14. SEM images of PBN-Li as a function of PEO contents of (a) 0.25 wt.%, (b) 0.5 wt.%, and (c) 1 wt.%.

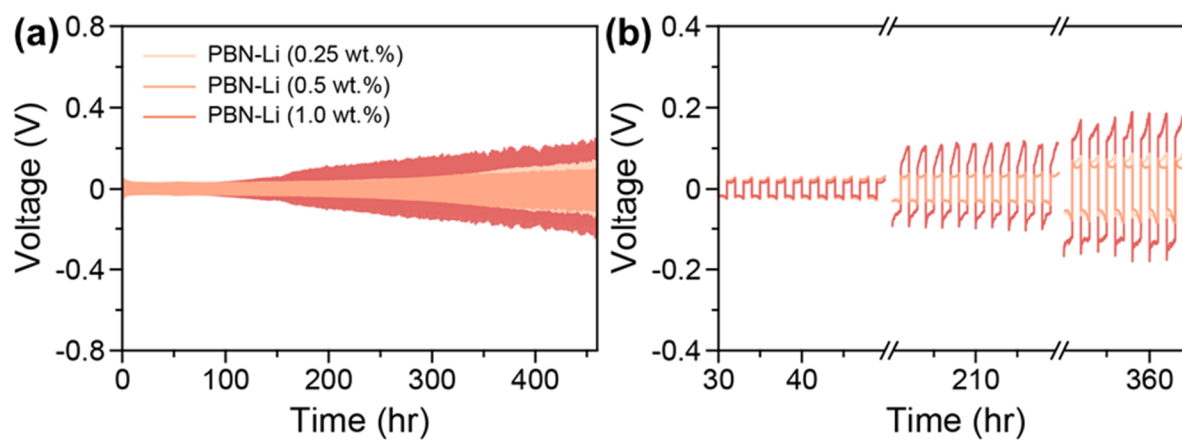


Figure S15. (a) Long-term cycling performances of symmetric cells at a current density of 1 mA/cm^2 and an areal capacity of 1 mAh/cm^2 and (b) enlarged voltage profiles.

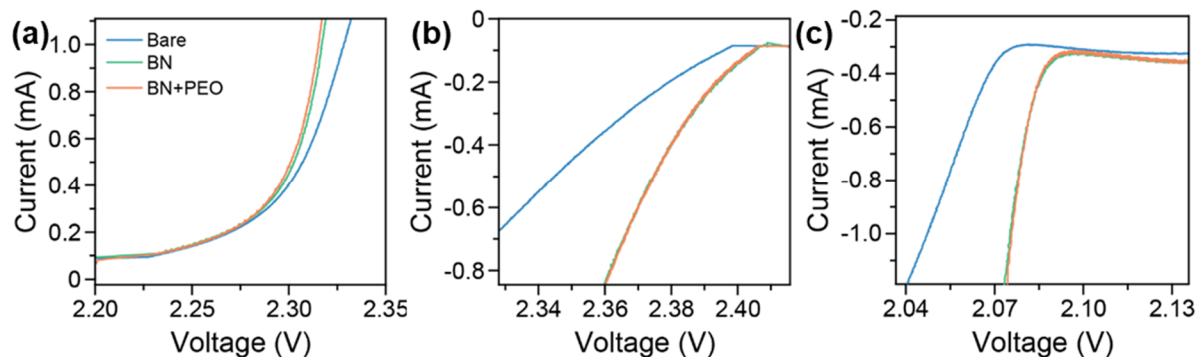


Figure S16. Onset potentials for Li-S redox reactions obtained from CV measurements at a scan rate of 0.1 mV/s. (a) anodic peak, (b,c) cathodic peak.

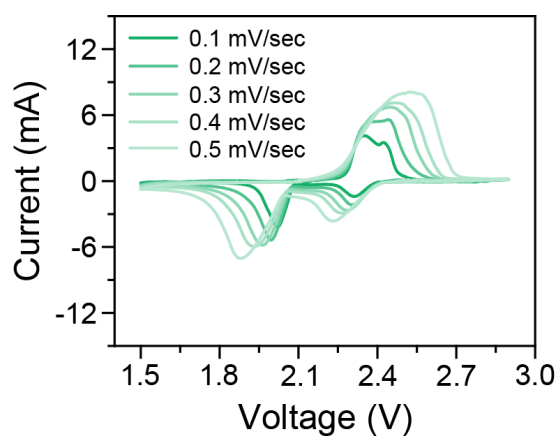


Figure S17. CV curves of the BN-Li electrodes at various scan rates.

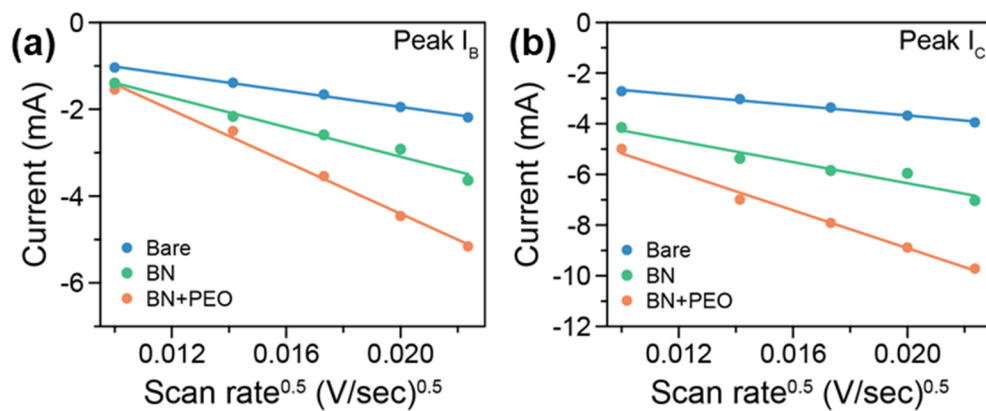


Figure S18. Plots of CV peak current versus the square root of the scan rates.

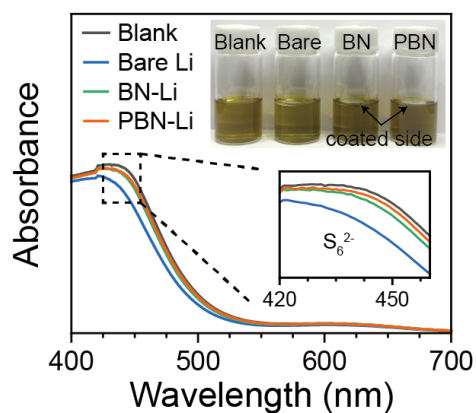


Figure S19. UV-vis spectra of Li_2S_6 solution with different samples (inset: the corresponding visualized adsorption photographs).

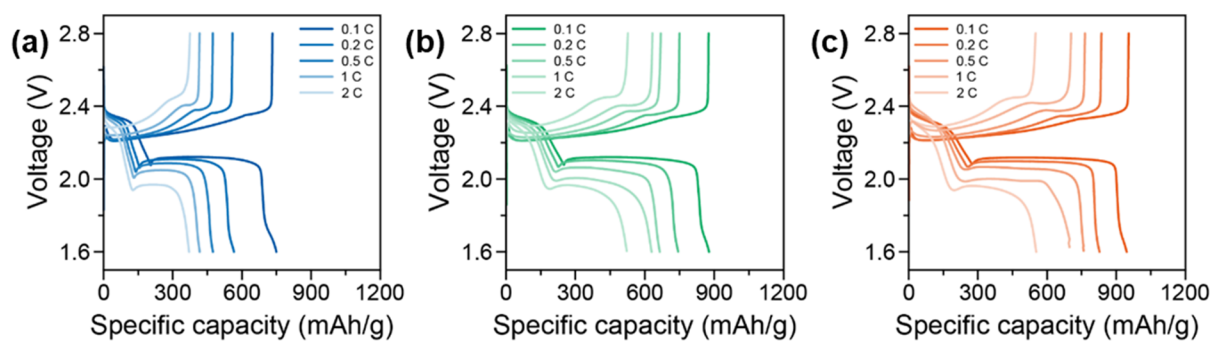


Figure S20. Galvanostatic charge-discharge graphs of (a) bare Li, (b) BN-Li, and (c) PBN-Li.

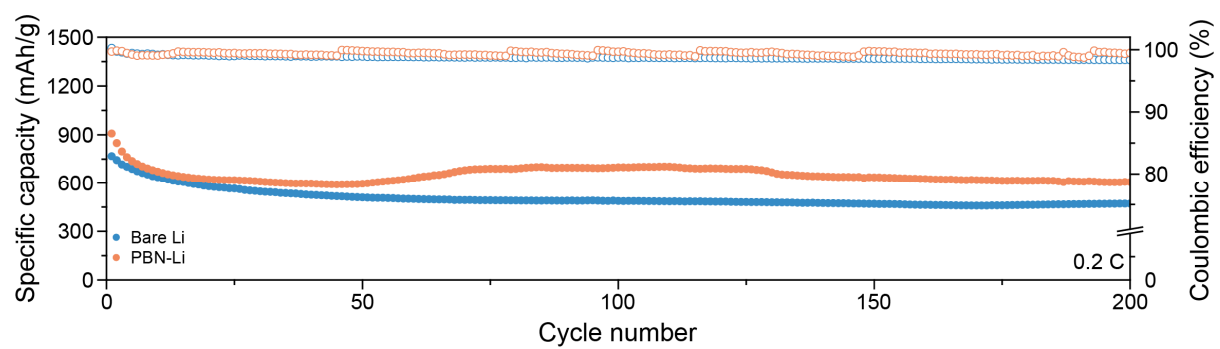


Figure S21. Long-term cycling performance of bare Li and PBN-Li at 0.2C.