Supporting Information

Lithium Phosphide/Lithium Chloride Coating on Lithium for Advanced Lithium Metal Anode

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Figure S1. EDS spectrum of as prepared LiPCl.



Figure S2. High-resolution XPS spectrum of as prepared LiPCl.



Figure S3. Optical photograph of the LiPCl a) before and b) after ambient exposure for 10 s.



Figure S4. SEM images of a pristine Li foil.



Figure S5. EIS spectra of Li-Li symmetric cells with Li foil and LiPCl after a) 10 and b) 50 cycles.



Figure S6. Galvanostatic linear polarization in 2-electrode configuration of symmetric cells.



Figure S7. SEM images of a,b) pristine Li foil and c,d) LiPCl anode after 20 cycles in Li-Li symmetric cells at 3 mA cm⁻² with their areal capacity fixed at 1 mAh cm⁻².



Figure S8. a) XRD pattern, b) TEM image and c,d) SEM images of the LiCoO₂ cathode.



Figure S9. EIS spectra of Li-LCO batteries with Li foil and LiPCl anode a) before, after b) 10 and c) 50 cycles.



Figure S10. Voltage profiles of Li-LCO batteries with a) Li foil and b) LiPCl as anode at different current densities.



Figure S11. Voltage profiles of Li-LCO batteries with a) Li foil and b) LiPCl as anode at 300 mA g⁻¹ at different cycles.



Figure S12. a) XRD pattern, b) TGA curve, c,d) SEM images and e) TEM image of the S cathode.



Figure S13. Voltage profiles of Li-S batteries with a) Li foil and b) LiPCl as anode at different current densities.



Figure S14. EIS spectra of Li-S batteries with Li foil and LiPCl anode a) before, after b) 10 and c) 50 cycles.



Figure S15. Voltage profiles of Li-S batteries with a) Li foil and b) LiPCl as anode at 1 C at different cycles.