Supporting Information

Single-ion conducting artificial solid electrolyte interphase layer for dendrite-free and highly stable lithium metal anode

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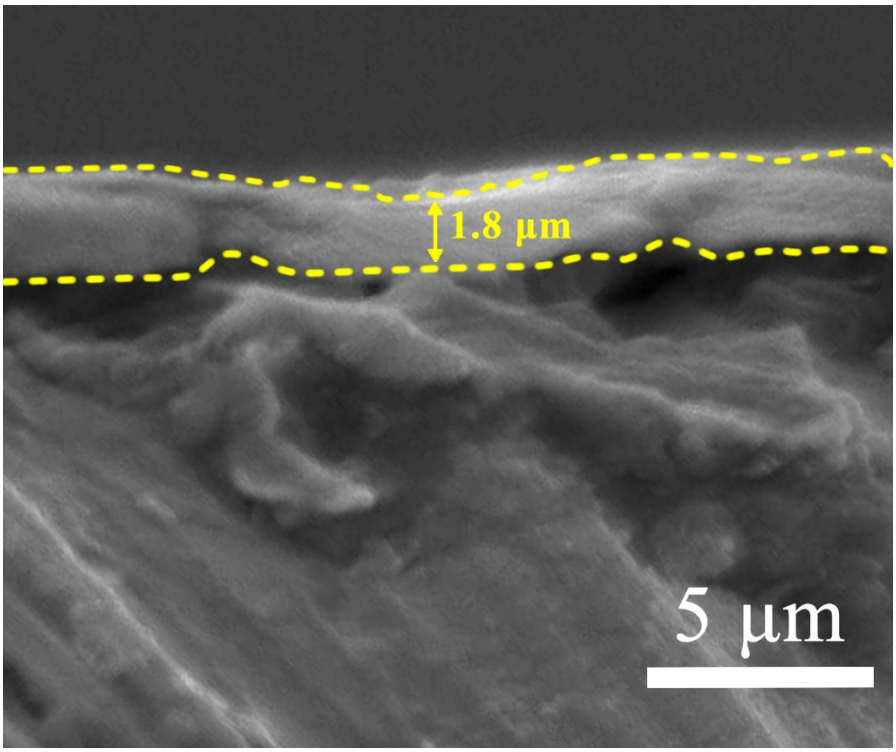

Fig. S1 Cross-sectional SEM image of LP coated Cu foil.

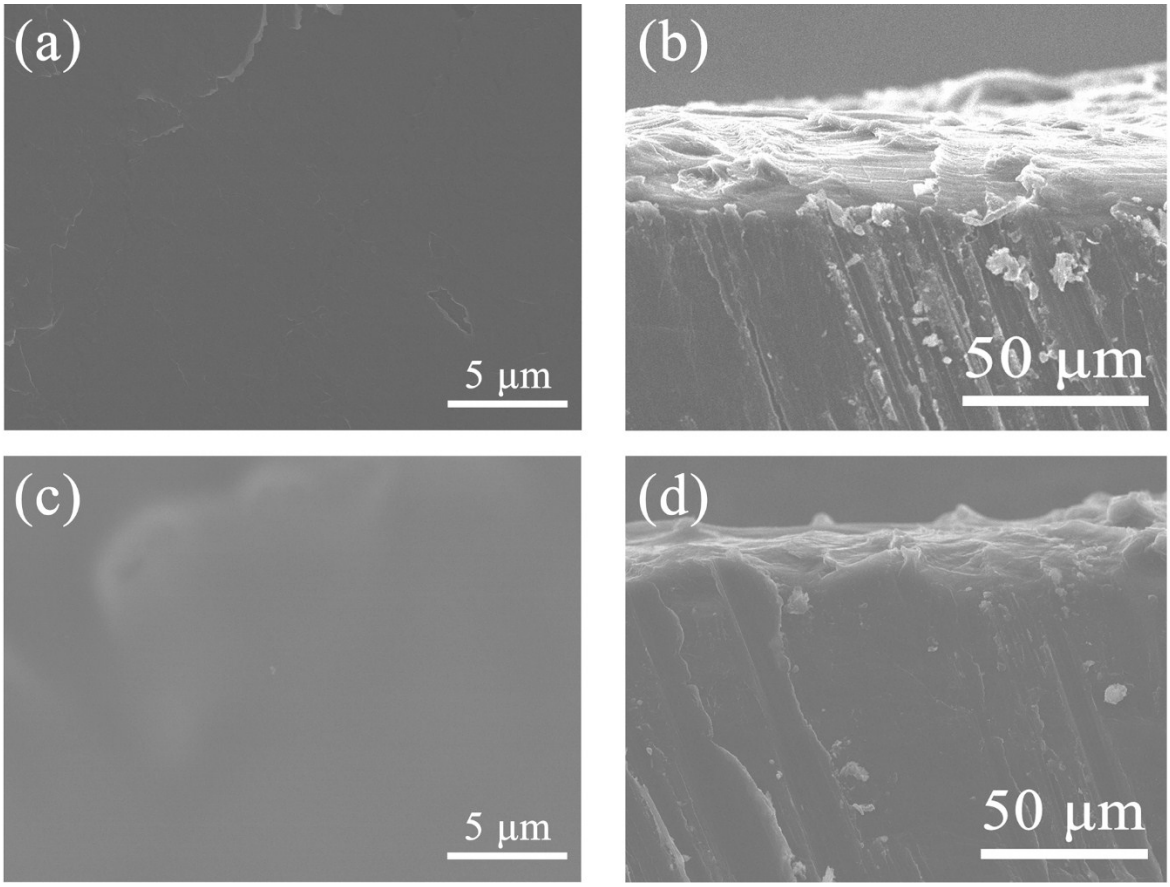

Fig. S2 Morphologies of LP-Li and bare Li before Li plating/stripping test: (a) Top-view and (b) cross-sectional SEM images of bare Li; (c) Top-view and (d) cross-sectional SEM images of LP-Li.

Table S1. Summary of Artificial SEI with lithum plating/stripping cycling test

Artificial SEI	Current density (mA cm^{-2})	Cycle time (h)
LP (this work)	8	992
PVDF-HFP/LiF[1]	5	100
$SiCl_4$[2]	3	350
MPS/TEOS[3]	2	200
PVDF[4]	1	200
Polymer skin[5]	0.5	300
Silly Putty[6]	1	120
PECA[7]	1	200
LiPAA[8]	2	120
ALD LiPON[9]	2	220
Al_2O_3/PVdF-HFP[10]	10	20
LiF[11]	5	120
AlI_3-DOL[12]	3	40
Al_2O_3[13]	0.5	1200
PEO/LLZNO[14]	0.5	1000
Al_2O_3[15]	3	800

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