Supporting Information

Pretreatment of Lithium Surface by Using Iodic Acid (HIO_3) to Improve its Anode Performance in Lithium Batteries

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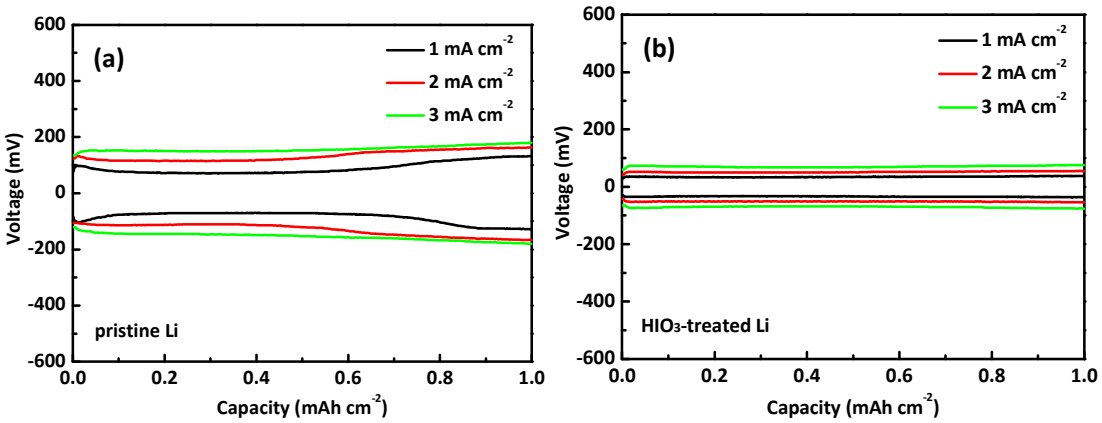


Figure S1. The voltage profiles of symmetric Li-Li cells with (a) the pristine Li anode and (b) the HIO_3-treated Li anode selected at the 10^{th} cycle.

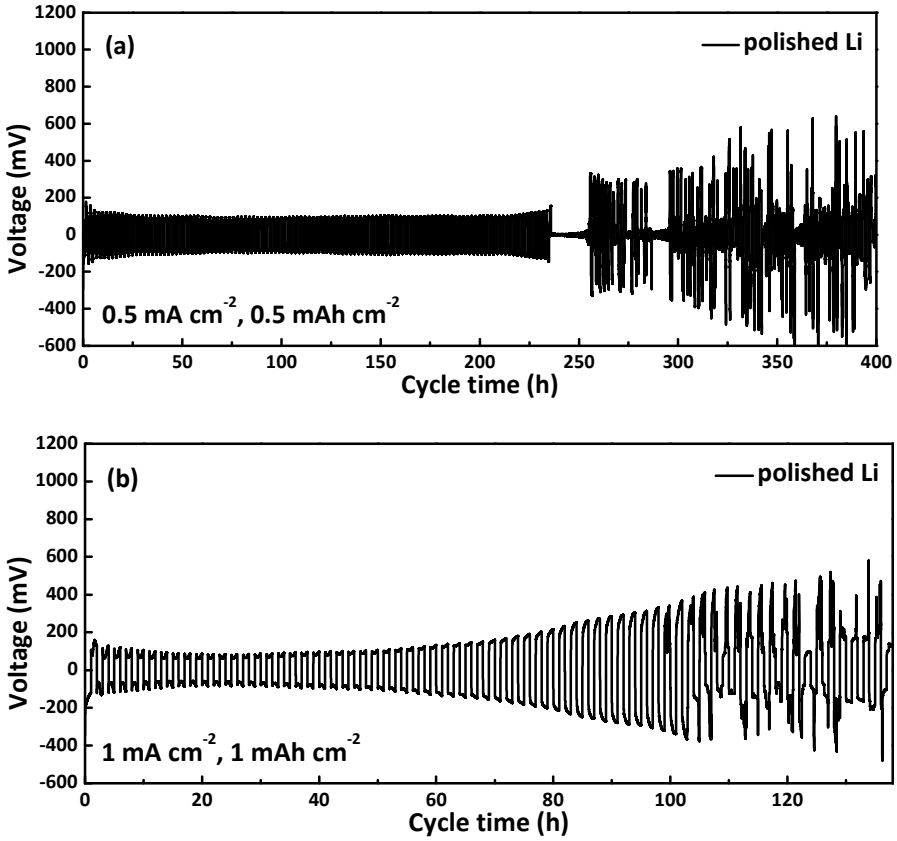


Figure S2. The galvanostatic cycling diagrams of the symmetric Li-Li cells for the polished Li anode. (a) The galvanostatic density was 0.5 mA cm^{-2} for 0.5 mAh cm^{-2}; (b) The galvanostatic density was 1 mA cm^{-2} for 1 mAh cm^{-2}.

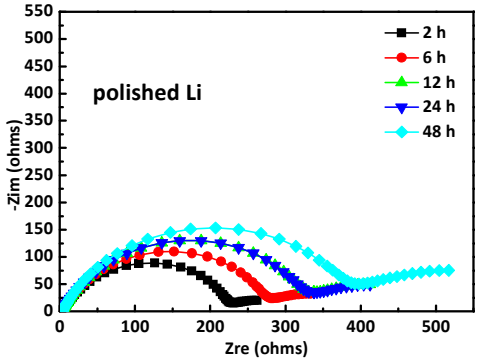


Figure S3. The EIS plots of the symmetric Li-Li cells with the polished Li anode at different standing time.

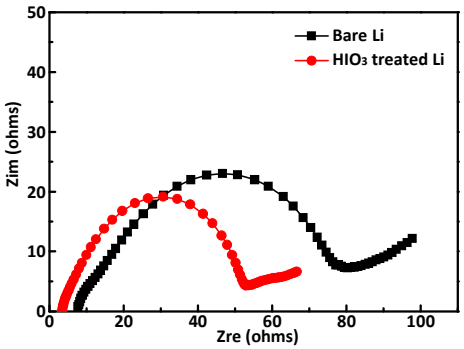


Figure S4. The EIS plots of the symmetric Li-Li cells with the pristine Li anode and the treated Li anode after 10 cycles. The current density was 0.5 mA cm^{-2} for 0.5 mAh cm^{-2}.

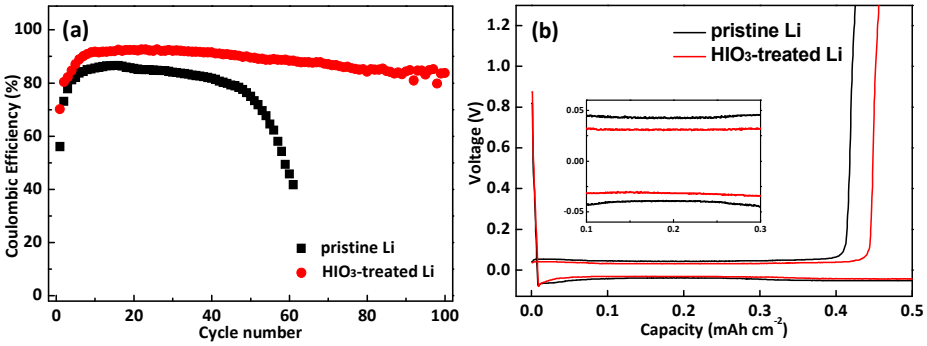


Figure S5. (a) The Coulombic efficiency of the Li-Cu cells with different Li anodes; (b) The voltage curves of the Li-Cu cells with different Li anodes selected at the 10^{th} cycle. The current density was 0.5 mA cm^{-2} for 0.5 mAh cm^{-2}.

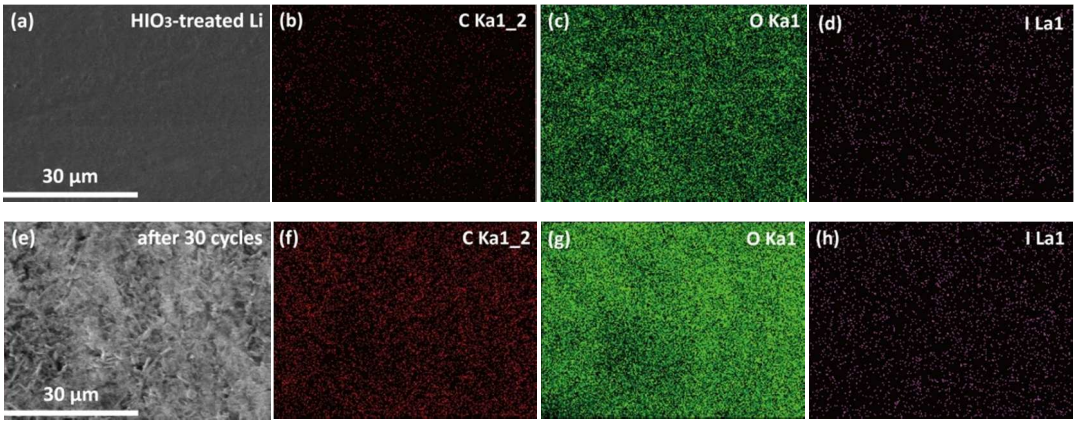
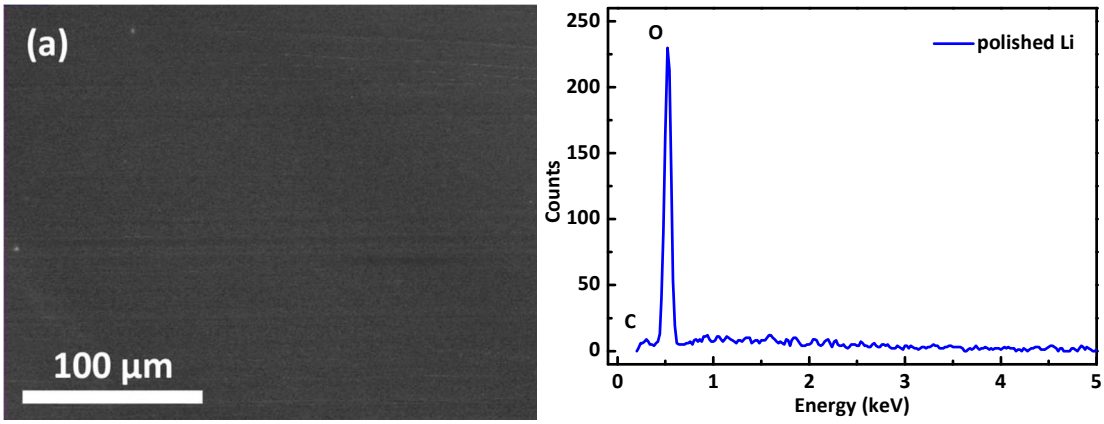
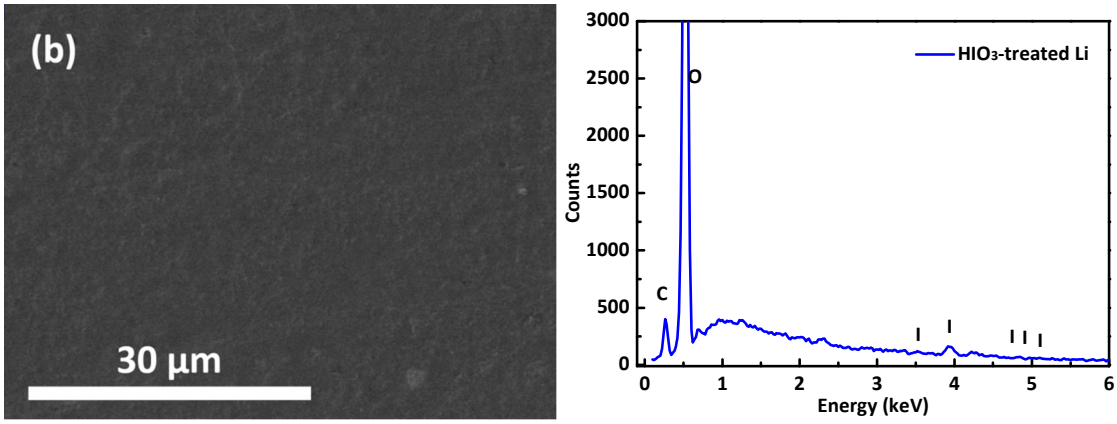


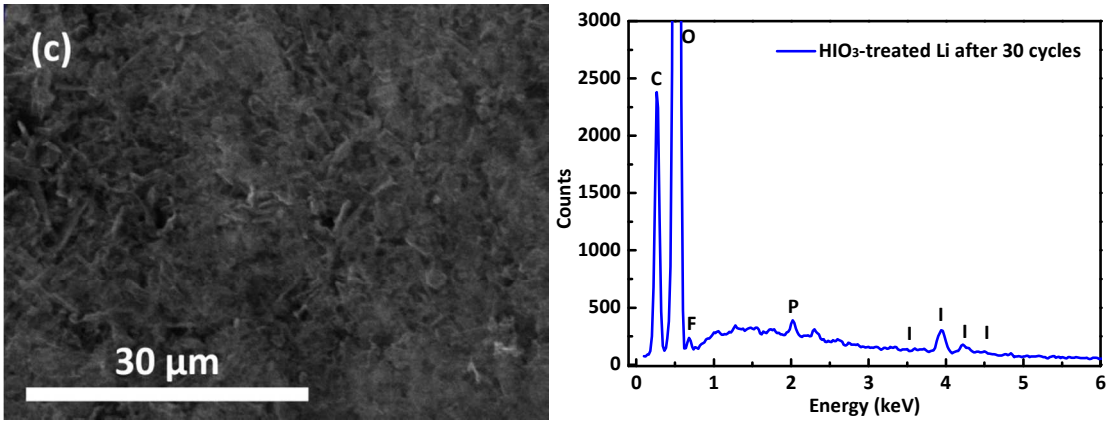
Figure S6. The EDX mapping for the HIO_3-treated Li surface. (a-d) Before cycling; (e-h) After 30 cycles. The current density was 0.5 mA cm^{-2} for 0.5 mAh cm^{-2}.



Element	Weight (%)	Atom (%)
C K	52.54	59.59
O K	47.46	40.41
total	100.00	



Element	Weight (%)	Atom (%)
C K	11.43	14.95
O K	86.31	84.77
I L	2.26	0.28
total	100.00	



Element	Weight (%)	Atom (%)
C K	19.33	24.58
O K	76.80	73.33
F K	2.24	1.80
P K	0.25	0.12
I L	1.38	0.17
total	100.00	

Figure S7. The EDX for (a) the polished Li surface; (b) The HIO_3-treated Li surface; and (c) the HIO_3-treated Li surface after 30 cycles.

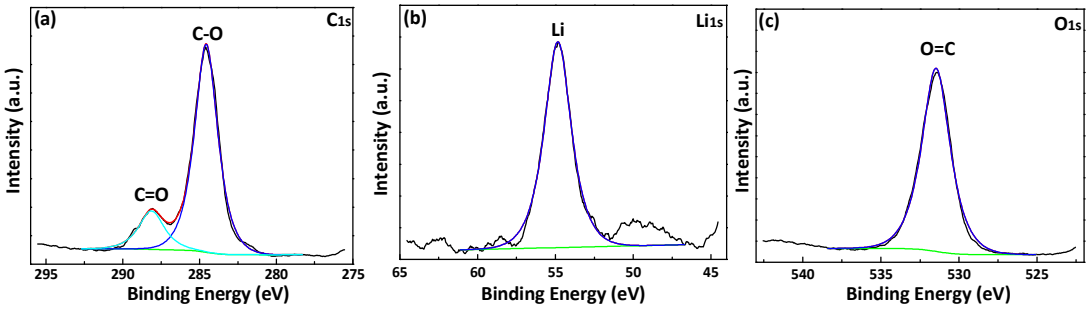


Figure S8. XPS spectra for the HIO_3-treated Li surface. (a) C_{1s} spectra, (b) Li_{1s} spectra and (c) O_{1s} spectra.

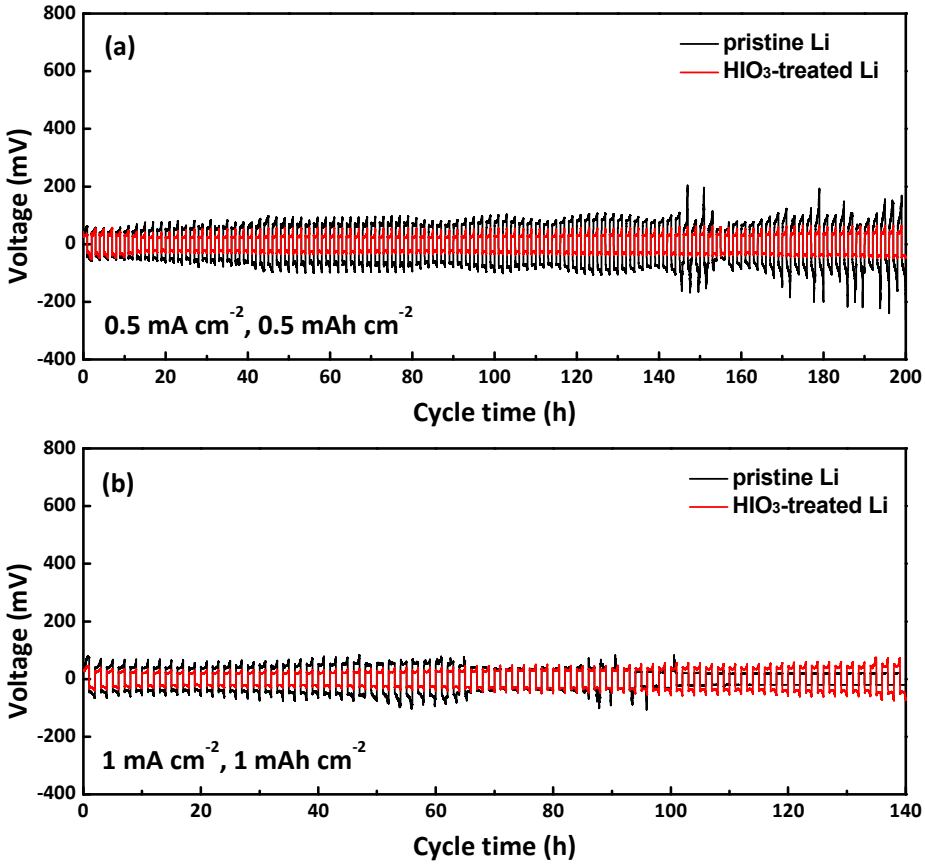


Figure S9. The galvanostatic cycling diagrams for the pristine and treated Li-Li cells by using DOL/DME electrolyte. (a) The galvanostatic density was 0.5 mA cm^{-2} for 0.5 mAh cm^{-2}; (b) The galvanostatic density was 1 mA cm^{-2} for 1 mAh cm^{-2}.