

Supplemental information for: **Dissolution of the Solid Electrolyte Interphase and its Effects on Lithium Metal Anode Cyclability**

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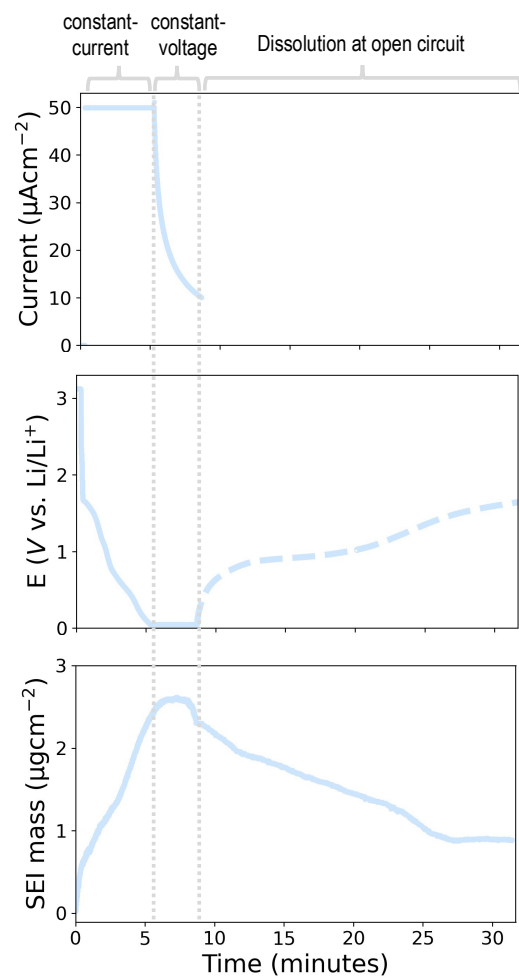


Figure S1 All-inclusive plot that includes all the relevant results for 0.5M from EQCM.

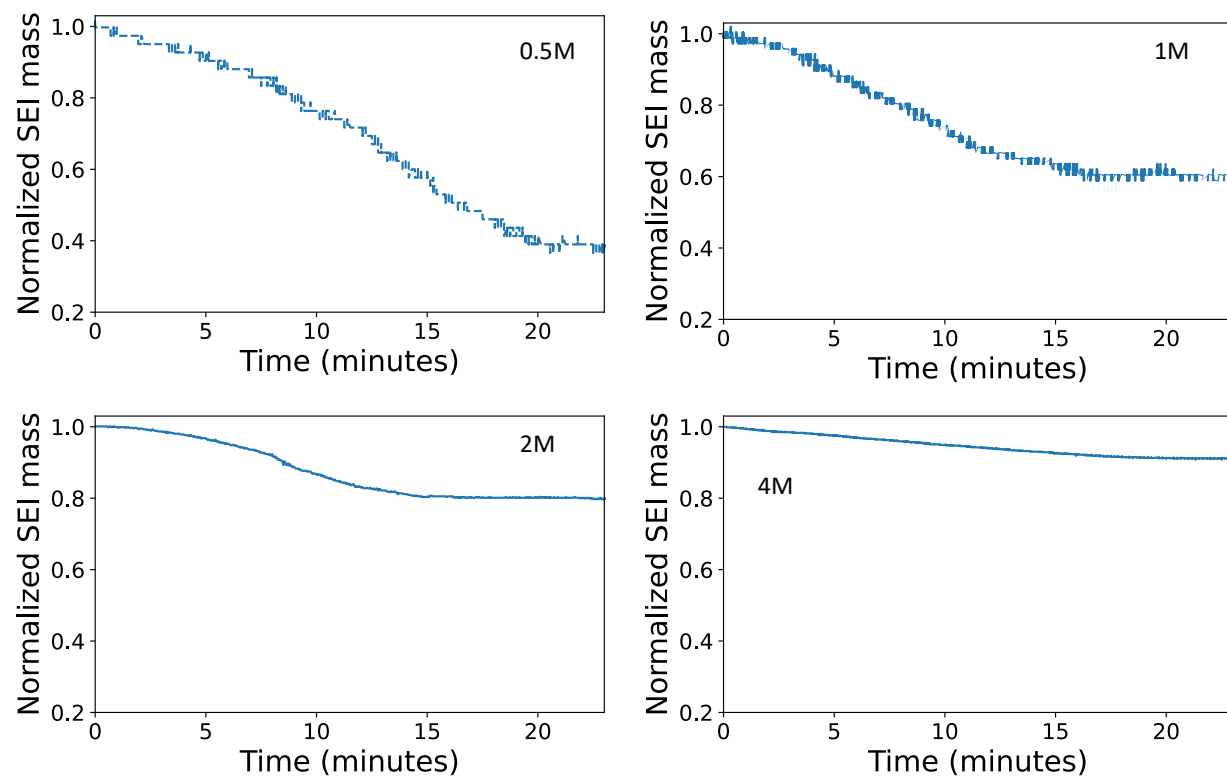


Figure S2 EQCM mass responses for other repeats carried out for the LiFSI-DME electrolyte system.

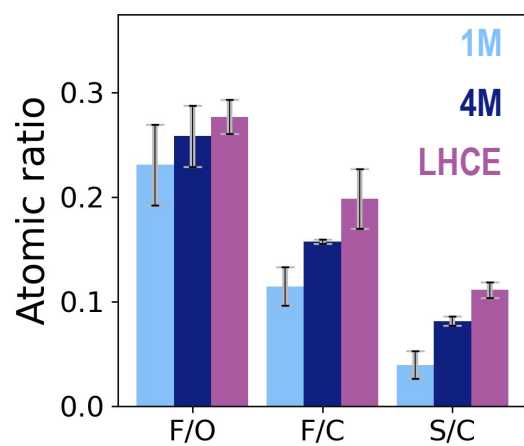


Figure S3 XPS Atomic ratio comparison between 1M, 4M and LHCE.

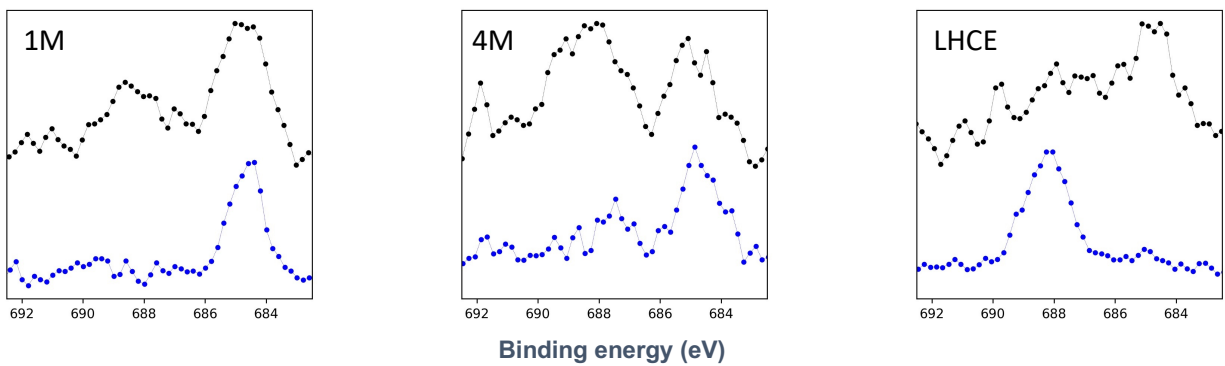
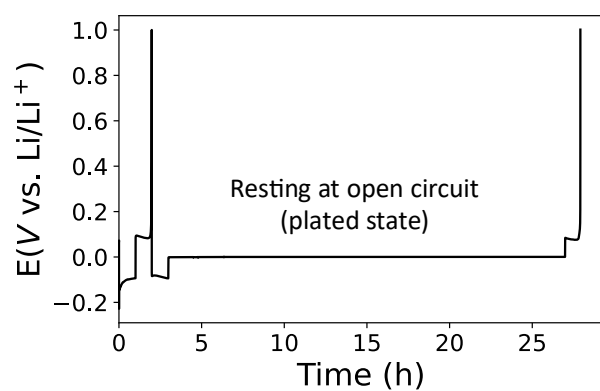


Figure S4 XPS High resolution scans for Fluorine 1s. Black line represent before dissolution and blue line represent after dissolution

24hr aging



**24hr aging +
dissolve SEI on Cu**

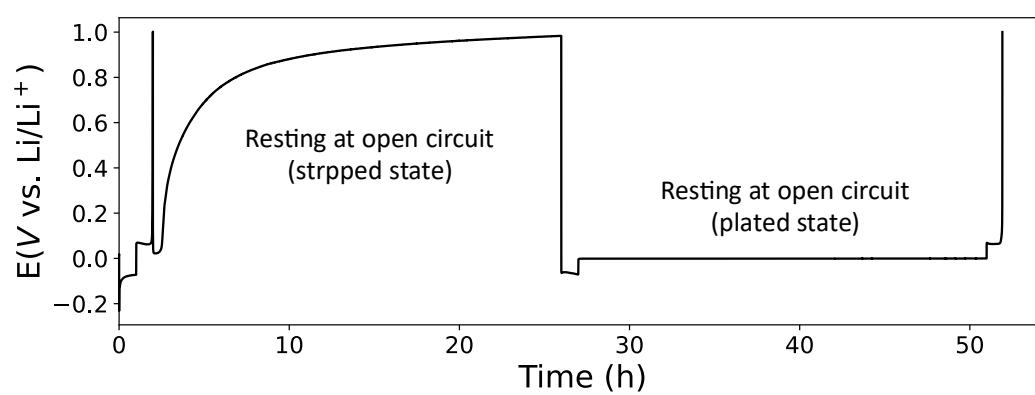


Figure S5 Resting protocols for calendar aging for LHCE, with and without SEI dissolution on Cu step.