

Supplemental files

New insights on the good compatibility of ether-based localized high-concentration electrolyte with Li metal

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Table S1. Interfacial resistance of Li | NCM523 batteries with DMC-based LHCE and DME-based LHCE at 1st cycle and 74th cycle.

| | 3 rd cycle resistance (Ω) | | 74 th cycle resistance (Ω) | |
|----------------|---|--------------------|--|--------------------|
| | R_e | $R_{SEI} + R_{ct}$ | R_e | $R_{SEI} + R_{ct}$ |
| DMC-based LHCE | 7.3 | 27.6 | 9.9 | 47.9 |
| DME-based LHCE | 3.5 | 20.7 | 3.4 | 24.6 |

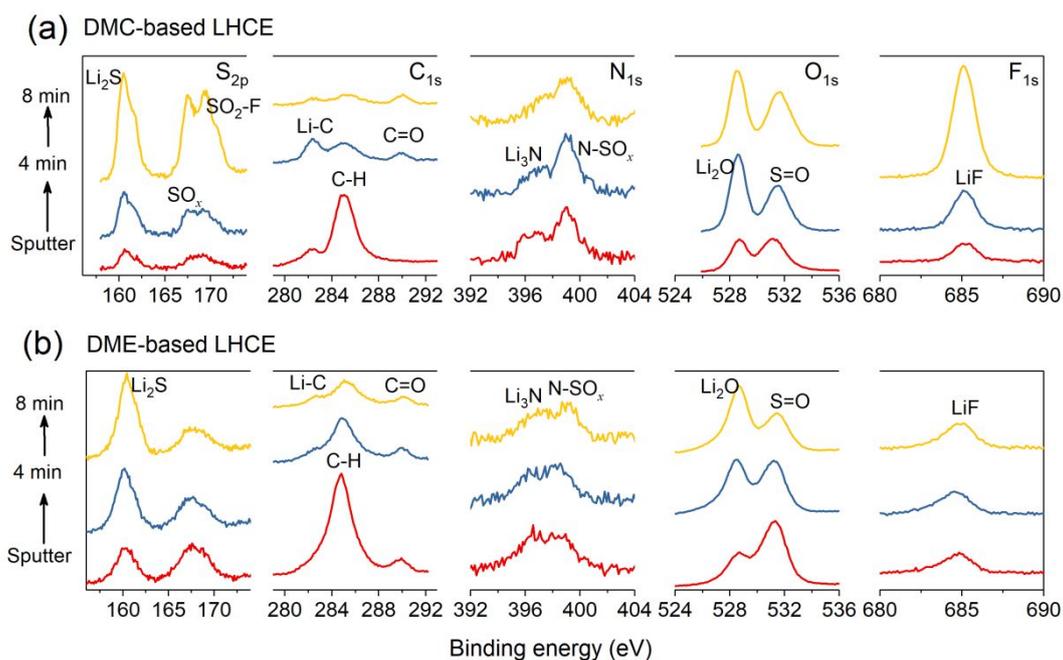


Figure S1. XPS spectra depth profiles of SEI formed in (a) DMC-based LHCE and (b) DME-based LHCE. The Li metal anodes were obtained from Li | NCM523 batteries after the 1st charge process at 0.1 C.

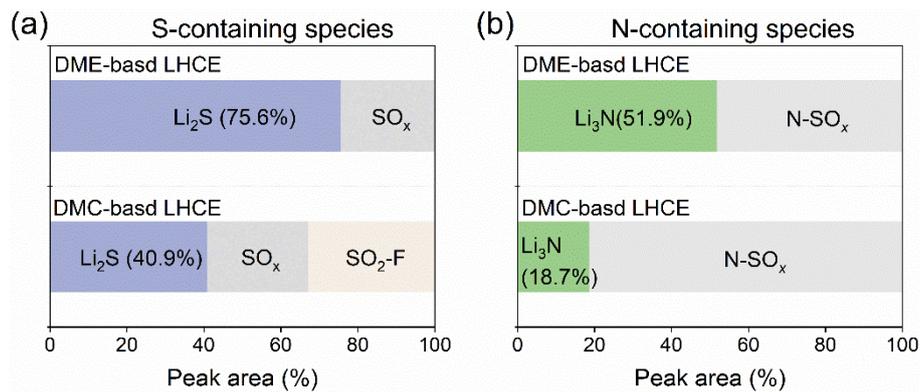


Figure S2. The peak area ratio of (c) S-containing and (d) N-containing species in SEI formed in the DMC-based LHCE and DME-based LHCE after etching 8min.

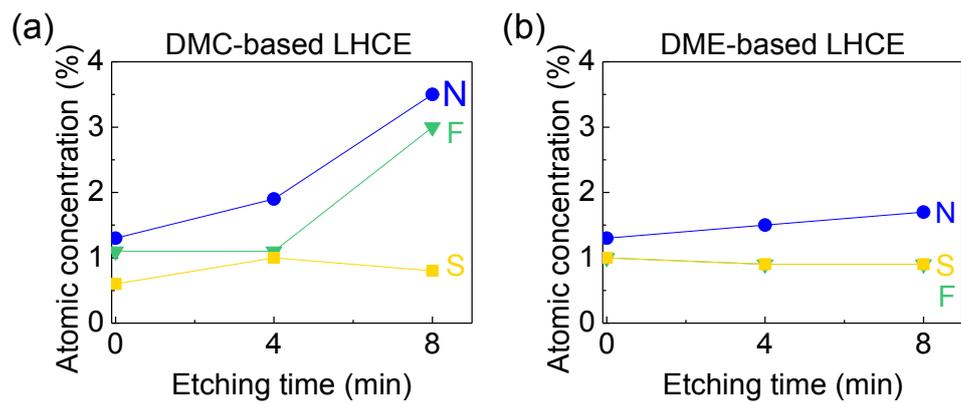


Figure S3. The atomic concentration of F, N, S in SEI formed in (a) DMC-based LHCE and (b) DME-based LHCE after etching different time.