

## Supplementary Information

### **Simultaneous construction of robust solid-electrolyte interphases by trifluoromethyl- and isocyanate-functionalized additives for sodium-ion batteries**

Yewon Son<sup>a</sup>, Jooeun Byun<sup>b, c</sup>, Juhwi Park<sup>b</sup>, Ji-Sang Yu<sup>b\*</sup>, Hyun-seung Kim<sup>b, d\*</sup>,

and Taeun Yim<sup>a, e, f\*</sup>

<sup>a</sup>Advanced Batteries Laboratory, Department of Chemistry, Incheon National University, 119 Academy-ro, Yeonsu-gu, Incheon 22012, Republic of Korea

<sup>b</sup>Advanced Batteries Research Center, Korea Electronics Technology Institute, 25, Saenari-ro, Seongnam 13509, the Republic of Korea

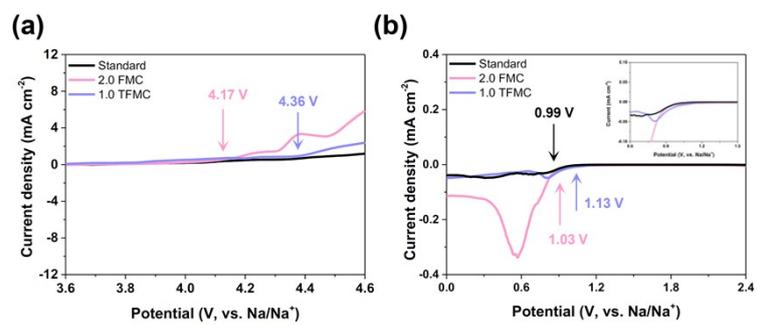
<sup>c</sup>Department of Advanced Materials Science & Engineering, Sungkyunkwan University, 2066, Seobu-ro, Suwon-si, 16419, Republic of Korea

<sup>d</sup>Department of Energy, Sungkyunkwan University, Suwon, 16419 Republic of Korea

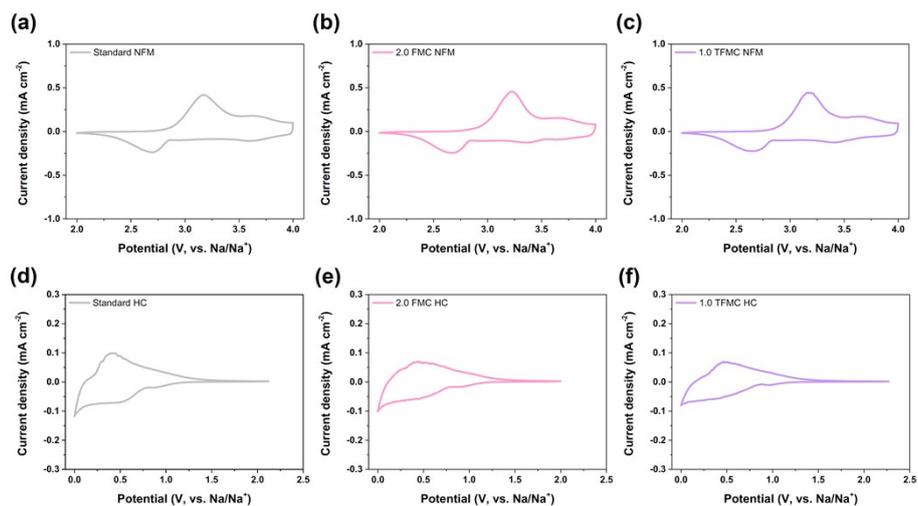
<sup>e</sup>Research Institute of Basic Sciences, College of Natural Science, Incheon National University, 119 Academy-ro, Yeonsu-gu, Incheon 22012, Republic of Korea

<sup>f</sup>Innovation Center for Chemical Engineering, Incheon National University, 119 Academy-ro, Yeonsu-gu, Incheon 22012, Republic of Korea

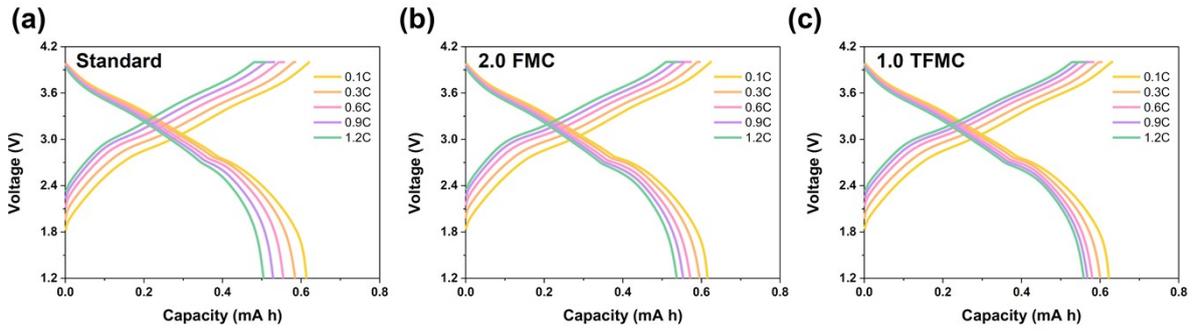
Corresponding Author: jisang@keti.re.kr (J.-S. Yu), hskim0113@skku.edu (H.-s. Kim), yte0102@inu.ac.kr (T. Yim)



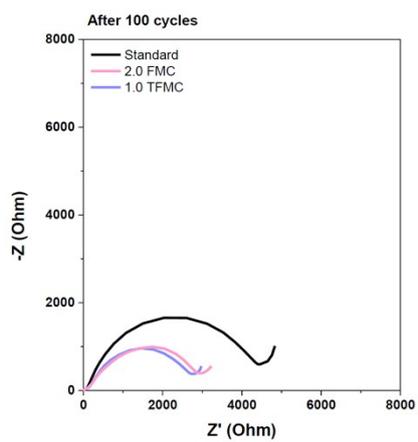
**Figure S1.** LSV curves for (a) anodic polarization and (b) cathodic polarization.



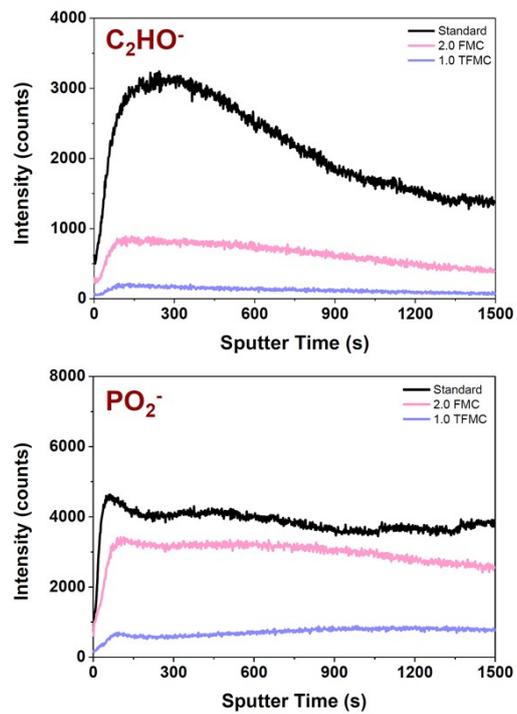
**Figure S2.** CV curves of NFM cathode measured with (a) standard, (b) 2.0 FMC, and (c) 1.0 TFMC, and CV curves of HC anode with (d) standard, (e) 2.0 FMC, and (f) 1.0 TFMC.



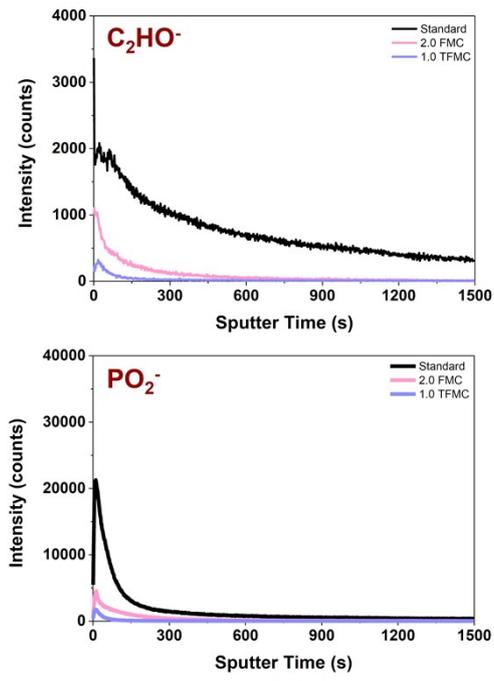
**Figure S3.** Voltage profiles of HC/NFM full cells with (a) standard, (b) 2.0 FMC, and (c) 1.0 FMC at various rates (0.1, 0.3, 0.6, 0.9, and 1.2C).



**Figure S4.** EIS results of HC/NFM full cells after 100 cycles.



**Figure S5.** TOF-SIMS intensity profile of the NFM cathode after 100 cycles.



**Figure S6.** TOF-SIMS intensity profile of the HC anode after 100 cycles.