

## Supporting Information

### Effects of Lithium Salt Concentration in Ionic Liquid Electrolytes on Battery Performance of $\text{LiNi}_{0.5}\text{Mn}_{0.3}\text{Co}_{0.2}\text{O}_2$ /Graphite Cells

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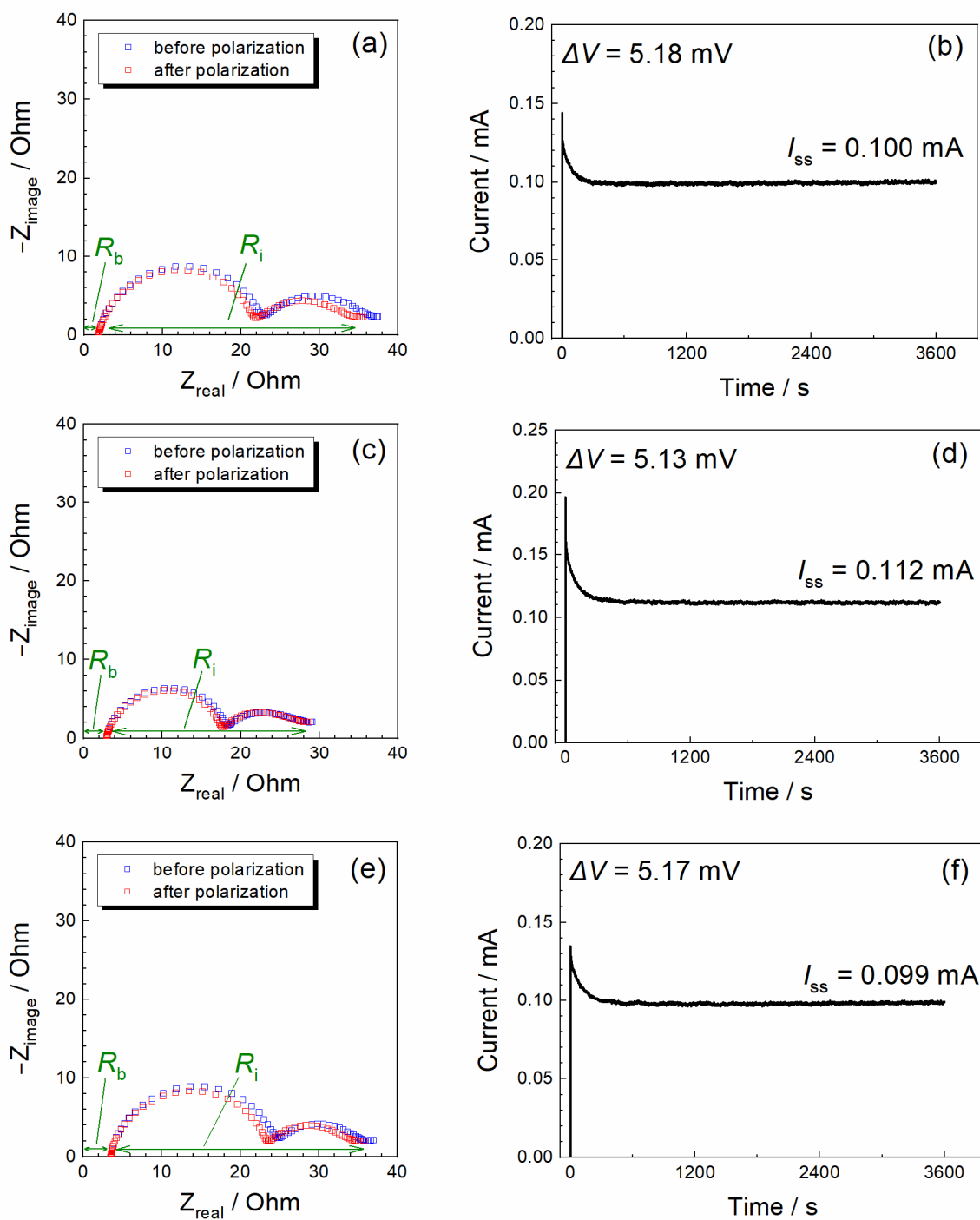
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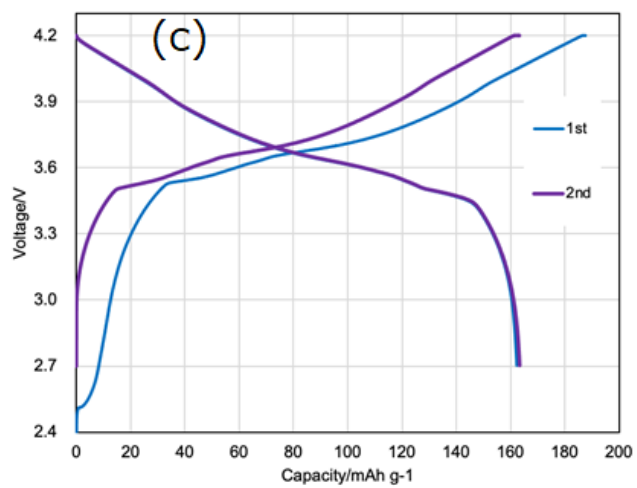
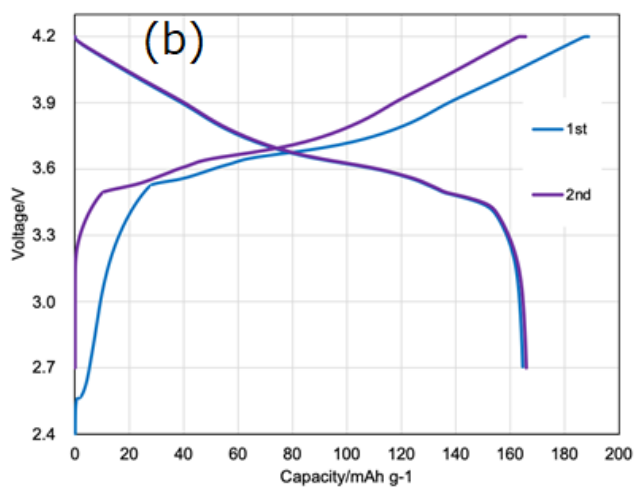
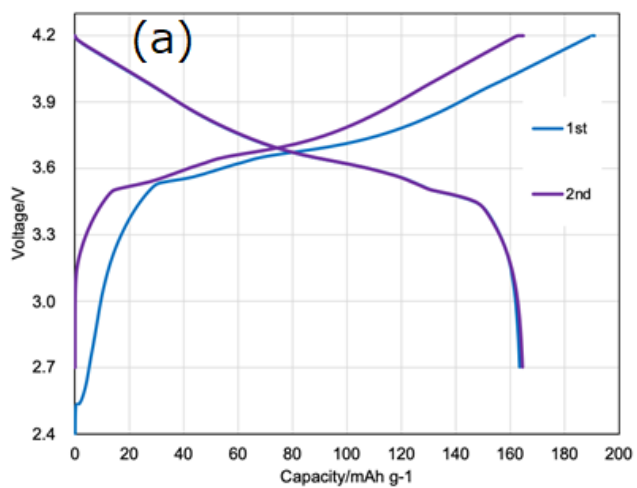
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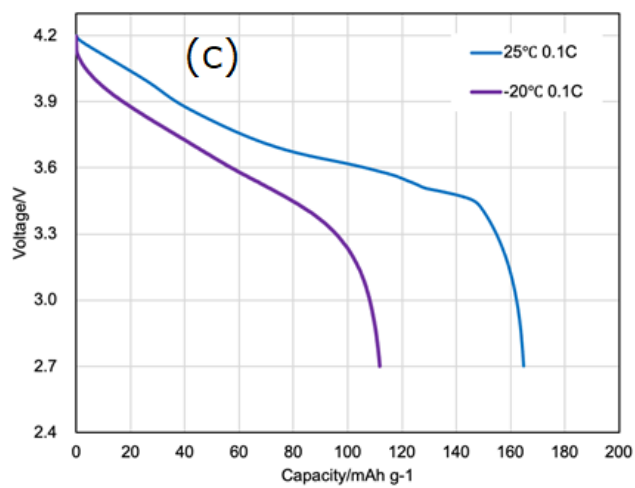
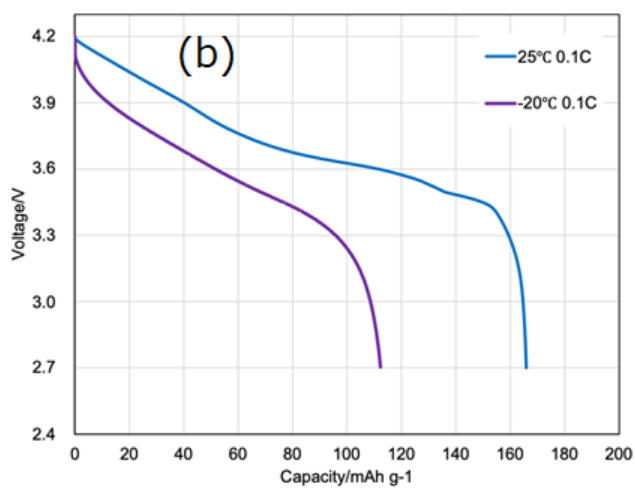
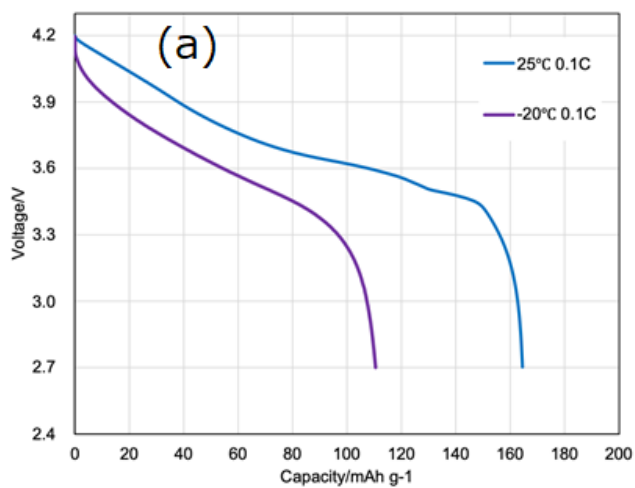
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**Figure S1.** Nyquist plots before and after polarization and chronoamperograms for [Li | electrolyte with glass separator | Li] cells acquired at 25 °C. Electrolytes were (a,b) 1.2 mol kg<sup>-1</sup>, (c,d) 2.0 mol kg<sup>-1</sup>, (e,f) 2.4 mol kg<sup>-1</sup> LiFSI/EMImFSI. Each Li metal electrode had an area of 2 cm<sup>2</sup>.



**Figure S2.** The initial two charge-discharge curves of NMC532/graphite pouch cells with (a) 1.2 mol kg<sup>-1</sup>, (b) 2.0 mol kg<sup>-1</sup>, and (c) 2.4 mol kg<sup>-1</sup> LiFSI/EMImFSI measured at 0.1 C-rate at 25 °C.



**Figure S3.** Discharge curves of NMC532/graphite pouch cells with (a) 1.2 mol kg<sup>-1</sup>, (b) 2.0 mol kg<sup>-1</sup>, and (c) 2.4 mol kg<sup>-1</sup> LiFSI/EMImFSI at -20 °C at 0.1 C-rate.