Supplementary Information

Thermal stability of Sn anode material with non-aqueous electrolytes in sodium-ion batteries

Yongho Lee,\textsuperscript{a,\textdaggerdbl} Hyojun Lim,\textsuperscript{a,\textdaggerdbl} Sang-Ok Kim,\textsuperscript{a} Hyung-Seok Kim,\textsuperscript{a} Ki Jae Kim,\textsuperscript{c} Kwan-Young Lee,\textsuperscript{d} and Wonchang Choi\textsuperscript{*a,\textdaggerdbl}

\textsuperscript{a}Center for Energy Storage, Korea Institute of Science and Technology, 5, Hwarang-ro 14-gil, Seongbuk-gu, Seoul 02792, Republic of Korea

E-mail address: wonchangchoi@kist.re.kr

\textsuperscript{b}Division of Energy & Environment Technology, KIST School, Korea University of Science and Technology, Seoul 02792, Republic of Korea

\textsuperscript{c}Department of Energy Engineering, Konkuk University, 120, Neungdong-ro, Gwangjin-gu, Seoul 05029, Republic of Korea

\textsuperscript{d}Department of Chemical and Biological Engineering, Korea University, 145, Anam-ro, Sungbuk-gu, Seoul 02841, Republic of Korea
Fig. S1 Comparison of the cycle performance of the Sn electrodes cycled in various electrolyte.
Fig. S2 DSC profiles of (a) the sodiated Sn electrode and (b) NaClO$_4$-based electrolyte alone.
Fig. S3 TEM images of the Sn electrodes cycled in various electrolyte; (a) LiPF$_6$-, (b) NaPF$_6$- and (c) NaClO$_4$-based electrolyte.
Fig. S4 (a) Nyquist plots of the Sn electrode cycled in NaPF$_6$- and NaClO$_4$-based electrolytes. (b) Equivalent circuit diagram used for fitting the impedance spectra shown in Fig. S4a.

Table S1 Fitting results of the Nyquist plots using the equivalent circuit for the Sn electrodes cycled in NaPF$_6$- and NaClO$_4$-based electrolytes.

<table>
<thead>
<tr>
<th></th>
<th>$R_{\text{electrolyte}}$ (Ω)</th>
<th>$R_{\text{SEI}}$ (Ω)</th>
<th>$R_{\text{CT}}$ (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaClO$_4$-based electrolyte</td>
<td>2.0</td>
<td>25.1</td>
<td>94.4</td>
</tr>
<tr>
<td>NaPF$_6$-based electrolyte</td>
<td>3.5</td>
<td>70.0</td>
<td>231.4</td>
</tr>
</tbody>
</table>