Hybrid Thin Film Encapsulation for All-Solid-State Thin Film Batteries

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Figure S1. The WVTR of single $a$-SiN$_x$/PET and SiO$_y$/PET layer.
Figure S2. SEM image of the samples after oxidation (a) ASSTFBs without TFE, (b) ASH/Parylene/ASSTFBs and (c) before oxidation ASH/Parylene/ASSTFBs.
Figure S3. Schematic of thin film batteries structure.
Table S1. Charge transfer impedance of the solid electrolyte: (a) LiPON without TFE, (b) Parylene/LiPON, (c) ASH/LiPON, and (d) ASH/Parylene/LiPON by fitting the graph into a simulation.

<table>
<thead>
<tr>
<th></th>
<th>As-deposited [kΩ]</th>
<th>After TFE [kΩ]</th>
<th>After 7 d [kΩ]</th>
<th>After 30 d [kΩ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) LiPON without TFE,</td>
<td>2.4</td>
<td>-</td>
<td>26.9</td>
<td>655.9</td>
</tr>
<tr>
<td>(b) Parylene/LiPON</td>
<td>2.5</td>
<td>2.5</td>
<td>3.8</td>
<td>278.2</td>
</tr>
<tr>
<td>(c) ASH/LiPON</td>
<td>2.7</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>(d) ASH/Parylene/LiPON</td>
<td>2.5</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
</tr>
</tbody>
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