

## Supported Information

# **A fast and high-efficiency electrochemical exfoliation strategy towards antimonene/carbon composite for selective lubrication and sodium-ion storage applications**

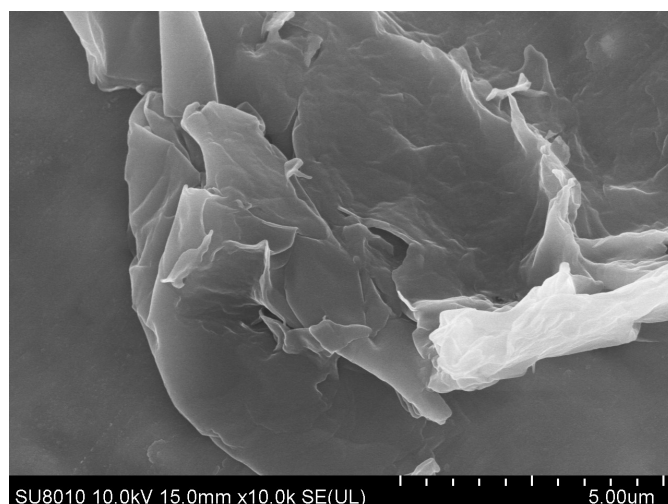
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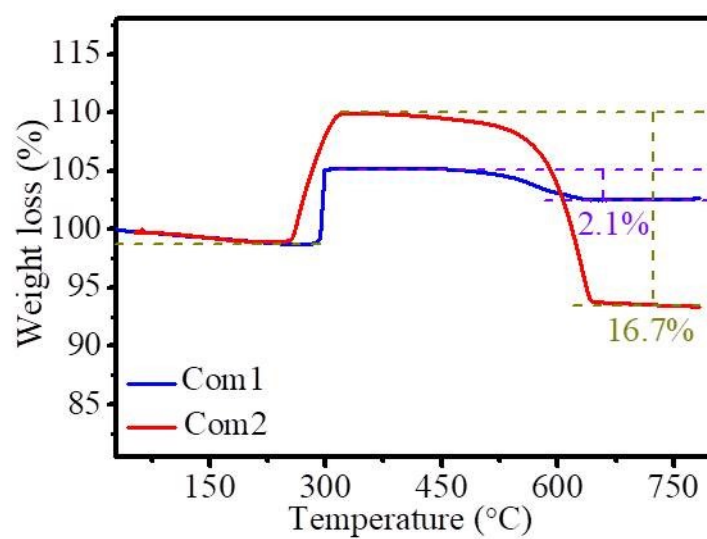
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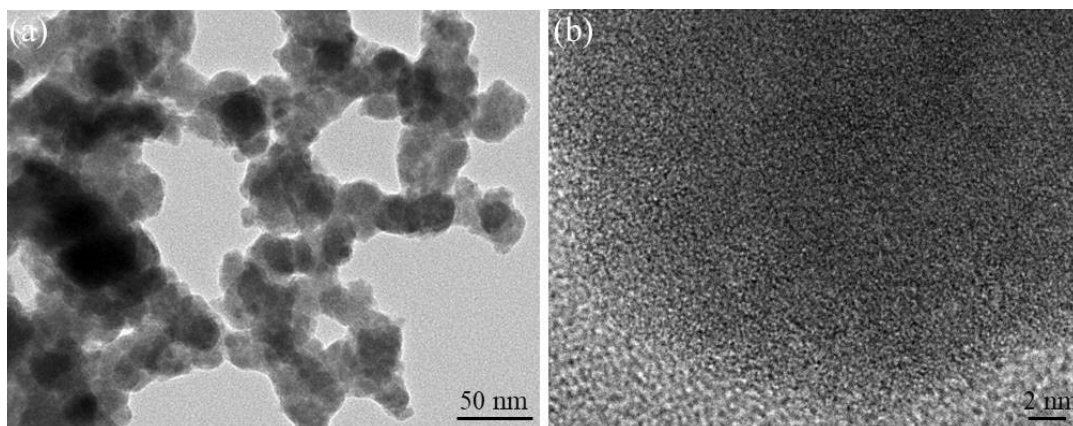


**Figure S1** SEM image of the exfoliation Sb-based materials in 0.5 M Na<sub>2</sub>SO<sub>4</sub> electrolyte.

The exfoliated product in 0.5 M Na<sub>2</sub>SO<sub>4</sub> electrolyte is plotted in Figure S1, the layered and folded layers can be observed. In combination of Figure 2a, it can confirm that the white product exfoliated in pure Na<sub>2</sub>SO<sub>4</sub> is Sb<sub>2</sub>O<sub>3</sub>. The peaks at 28.1°, 28.4° and 28.6° can be assigned to the (130), (121) and (040) facets of the orthorhombic Sb<sub>2</sub>O<sub>3</sub> (JCPDS No. 11-0689).



**Figure S2** The TGA curves of the exfoliated products in the electrolytes of 0.5 M  $\text{Na}_2\text{SO}_4$  mixed with 10 (termed as Comp1) and 25 mL (Comp2) EG.



**Figure S3** TEM (a) and HRTEM (b) images of antimonene/C material after cycling for 100 cycles.