

## Supporting Information

### Core-shelled Sb@C nanorods cathode with graphene aerogel interlayer for high-capacity aluminum ion batteries

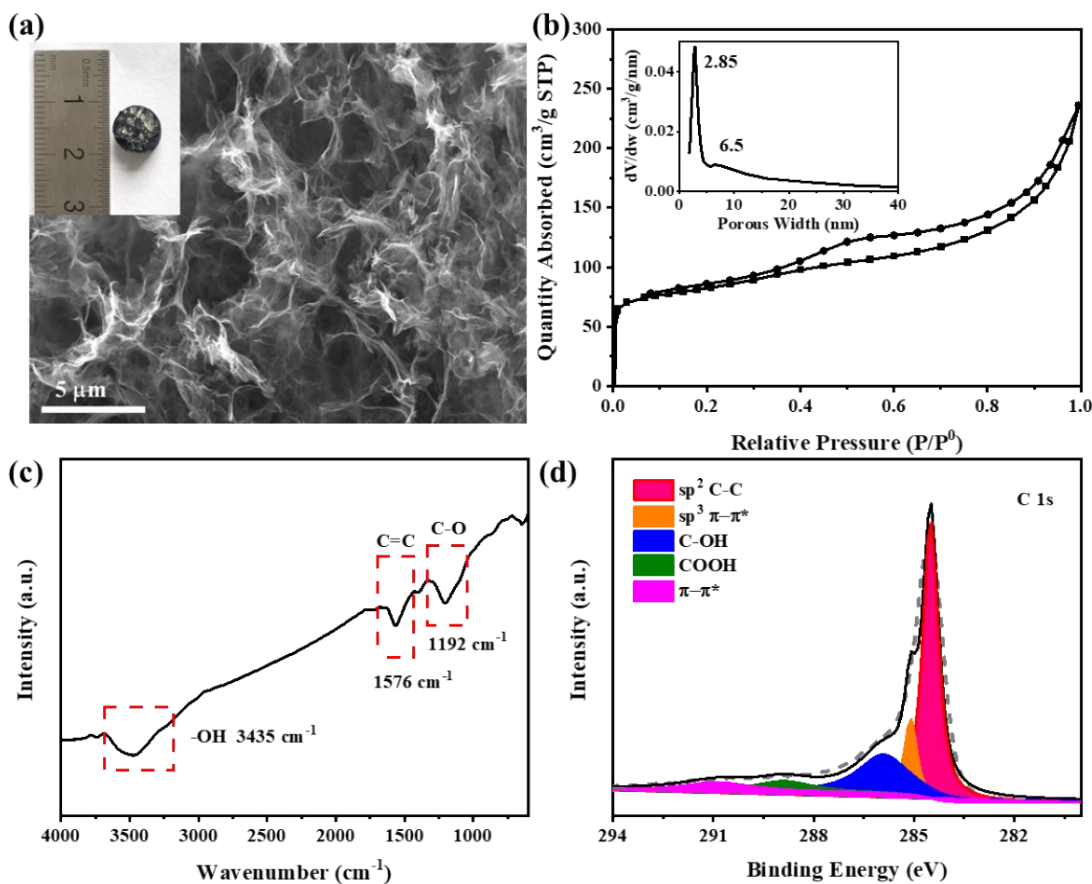
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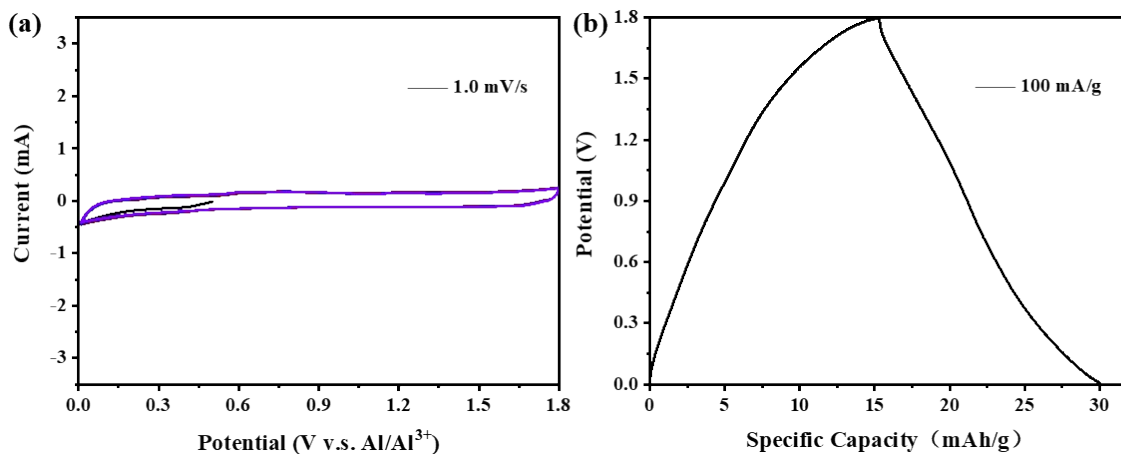
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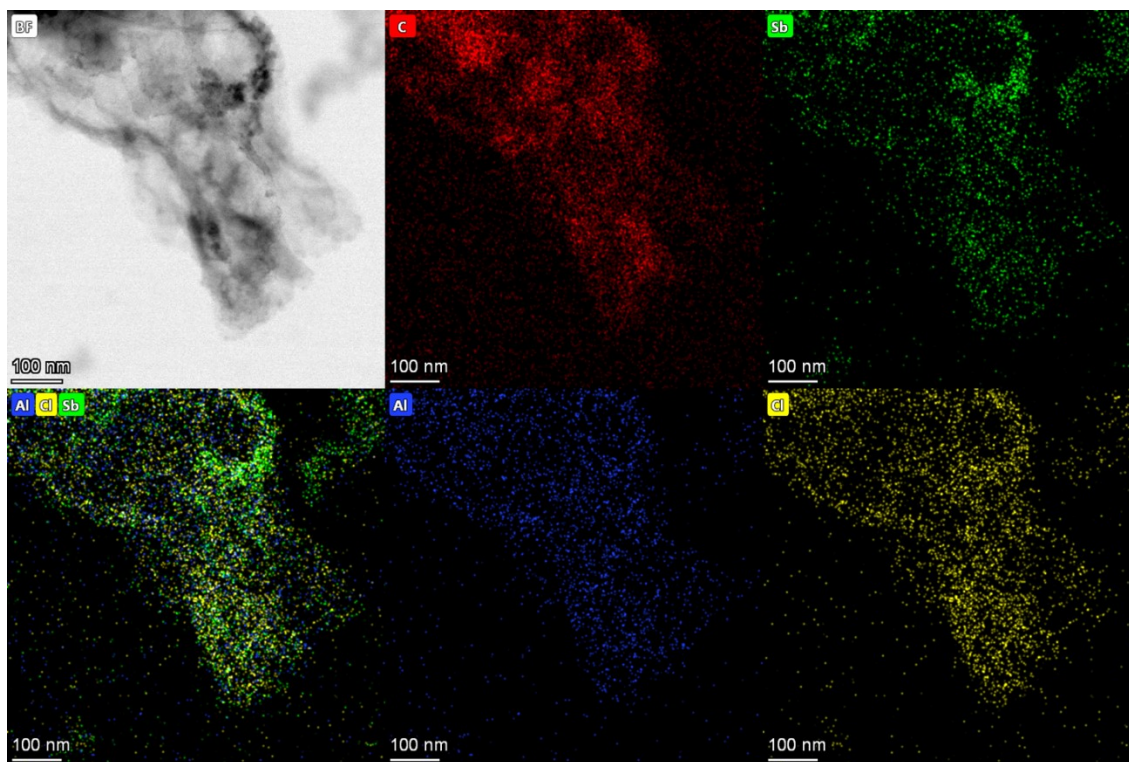
E-mail address: zfyancat@upc.edu.cn (Z.F. Yan.)



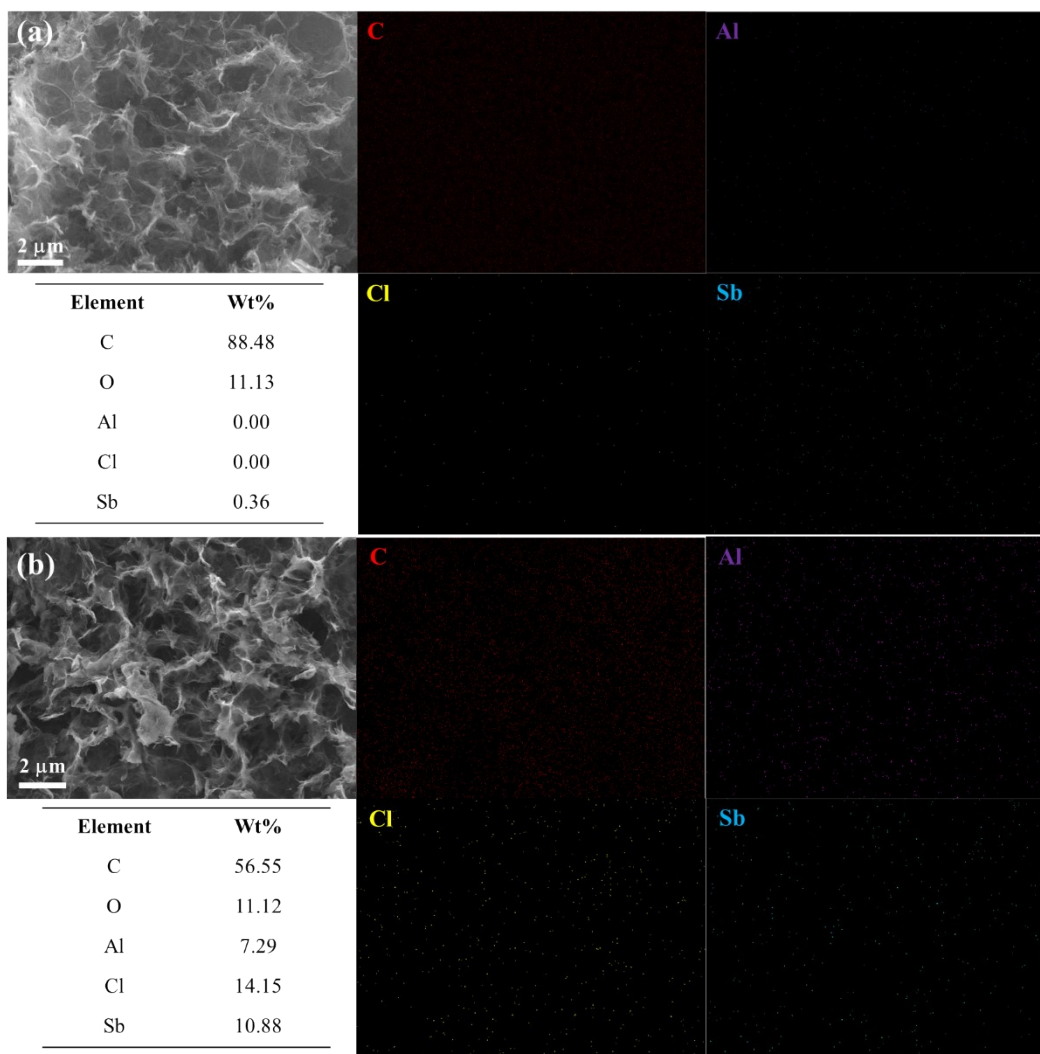
**Figure S1** Material characterization of graphene aerogel (GA) interlayer. **(a)** SEM image; **(b)** N<sub>2</sub> isotherm adsorption and desorption curve and pore size distribution; **(c)** FT-IR spectra; **(d)** C 1s of XPS.



**Figure S2** (a) CV curve of GA at the rate of 1.0 mV/s; (b) Galvanostatic charge/discharge curve of GA at the current density of 100 mA/g.



**Figure S3** Morphologies and corresponding element mapping of Sb@C after 500 cycles at 1 A/g.



**Figure S4** Morphologies and corresponding element mapping of GA interlayer before and after 500 cycles at 1 A/g.