

## Supplementary Information

### General Constructing Robust, Flexible and Freestanding MXene@Metal Anodes for High-Performance Potassium-Ion Batteries

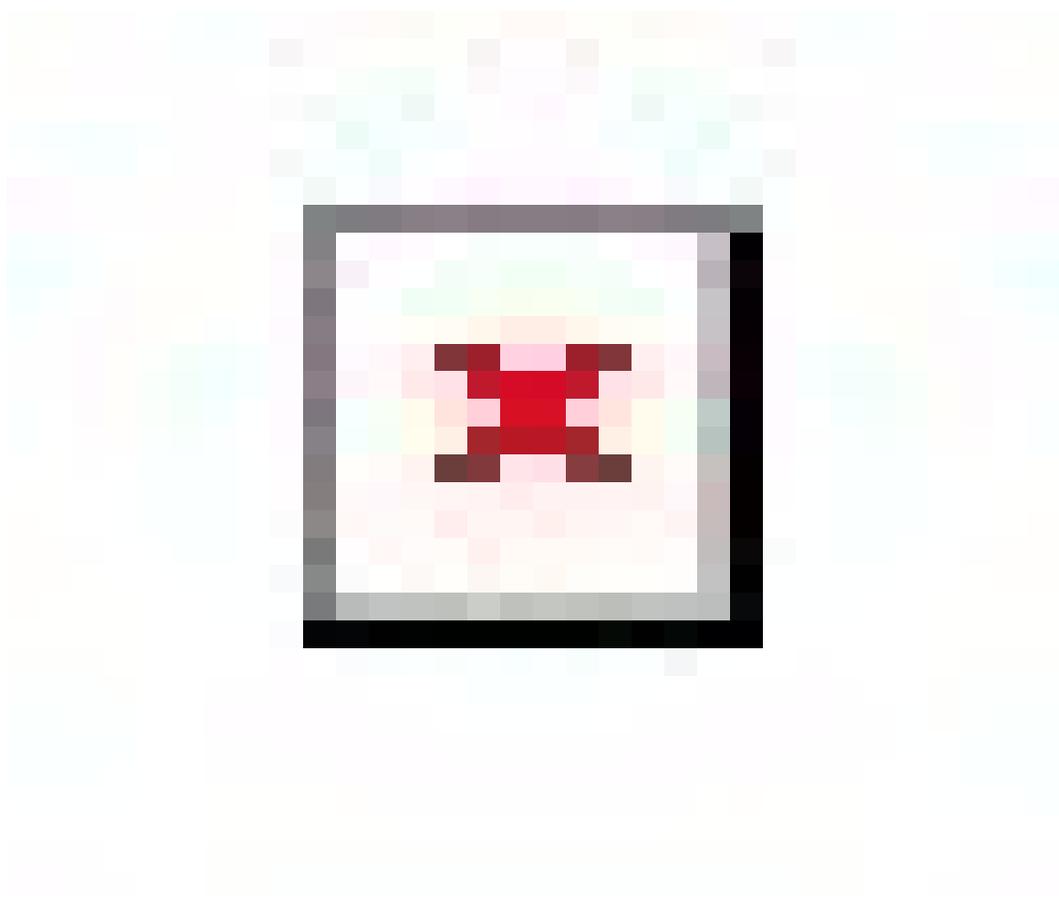
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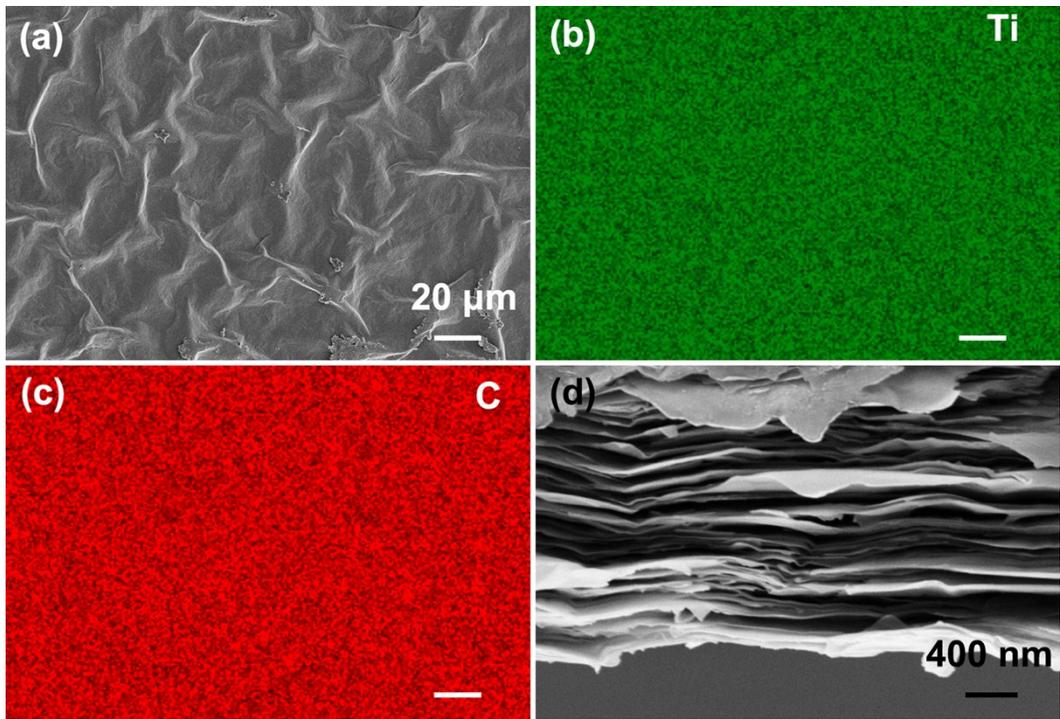
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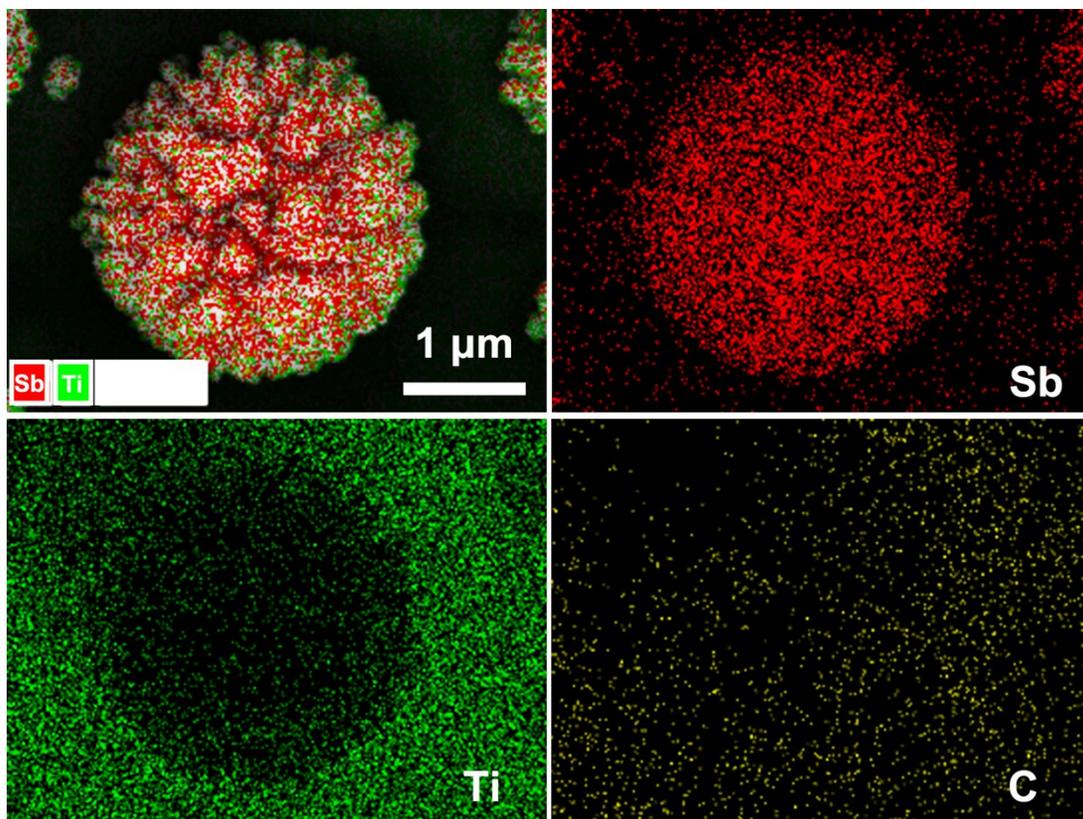
\*Corresponding author: [jinkui@sdu.edu.cn](mailto:jinkui@sdu.edu.cn)



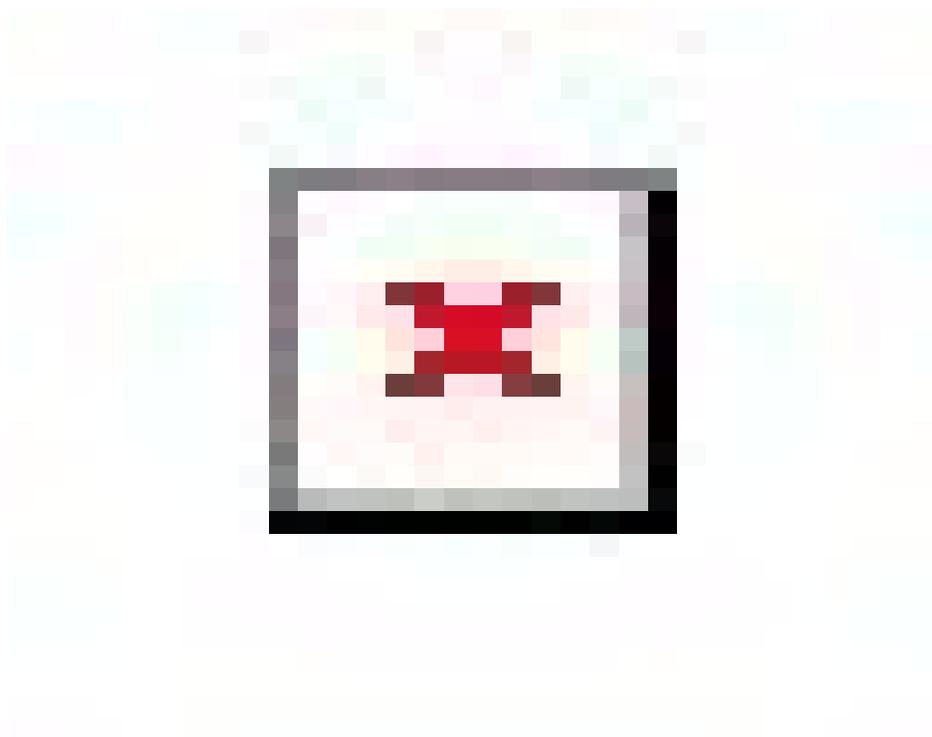
**Figure S1.** XRD pattern of MAX ( $\text{Ti}_3\text{AlC}_2$ ) phase.



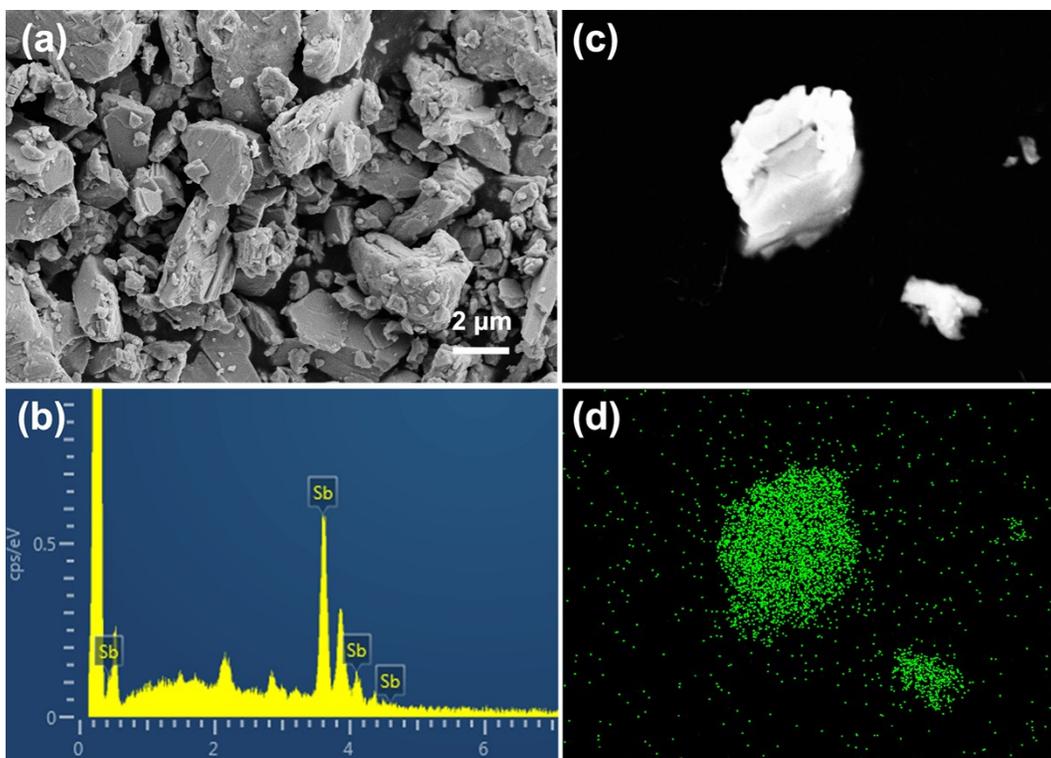
**Figure S2.** (a) SEM image, (b-c) corresponding EDS mapping, and (d) cross-section SEM image of flexible MXene paper.



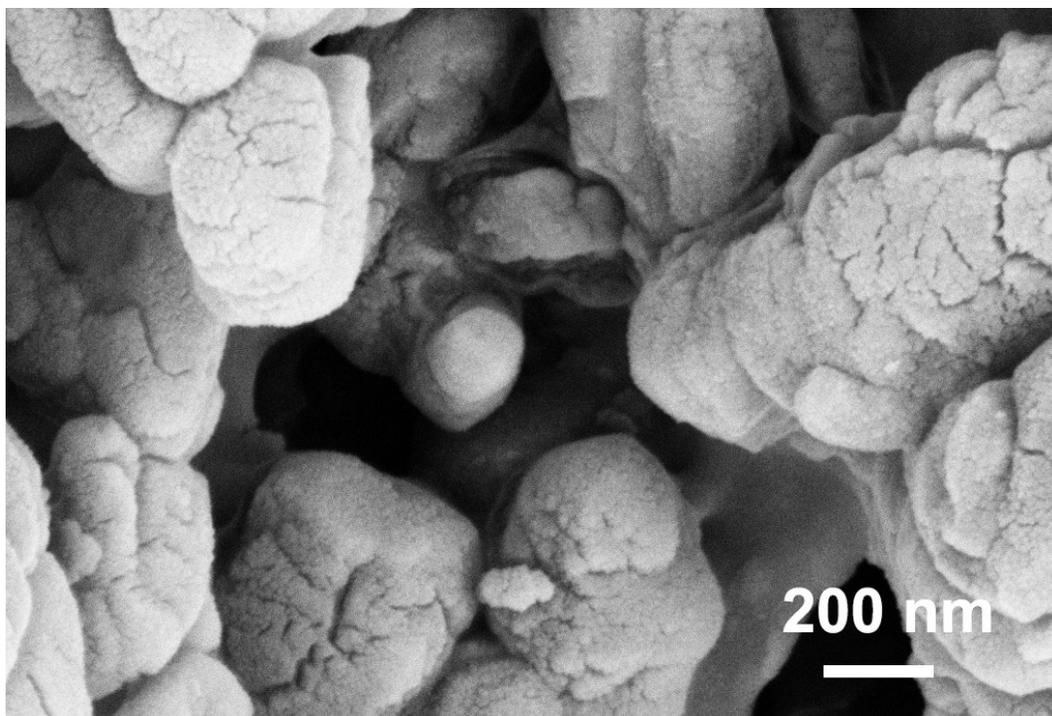
**Figure S3.** SEM image and EDS mapping of MXene@Sb.



**Figure S4.** The charge/discharge curves at different current densities from 50, 100, 200, 300, 400, to 500 mA h g<sup>-1</sup>.



**Figure S5.** Typical SEM image and EDS mapping of bulk Sb particles.



**Figure S6.** Typical SEM image of after cycled bulk Sb anodes for KIBs.