Supporting Information

**Dendrite-free Li metal plating/stripping onto three-dimensional vertical-graphene@carbon-cloth host**

Congcong Yan1, Tingting Xu1, Caiyun Ma1, Jinhao Zang1, Junmin Xu1, Yumeng Shi2, Dezhi Kong1, Chang Ke3, Xinjian Li1, Ye Wang1,\*

* + - 1. Key Laboratory of Material Physics of Ministry of Education, School of Physics and Engineering, Zhengzhou University, Zhengzhou 450052, China
      2. International Collaborative Laboratory of 2D Materials for Optoelectronics Science and Technology of Ministry of Education, Engineering Technology Research Center for 2D Material Information Function Devices and Systems of Guangdong Province, Institute of Microscale Optoelectronics, Shenzhen University, Shenzhen, 518060, China
      3. School of Electrical and Electronic Engineering, Nanyang Technological University, Nanyang Avenue, 639798, Singapore

\*Corresponding author. Tel.: +86-18236756639. E-mail address: [wangye@zzu.edu.cn](mailto:wangye@zzu.edu.cn)



**FIGURE S1∣**SEM images of CC at **(a)** low and **(b)** high magnifications.



**FIGURE S2∣**SEM images of planar Cu at **(a)** low and **(b)** high magnifications.



**FIGURE S3∣**Cross-sectionalSEM images of **(a,b)** pristine VG/CC and **(c,d)** afterLi deposition with a capacity of 4 mAh cm-2.

**C:\Users\yaopa\Desktop\44.tif**

**FIGURE S4∣**Morphological evolution of Li metal plating and stripping on planar Cu. SEM images of planar Cu electrode after plated at a capacity of **(a, g)** 0.5 mAh cm-2 **(b, h)** 2 mAh cm-2 and **(c, i)** 4 mAh cm-2, and then stripped **(d, j)** 0.5 mAh cm-2, **(e, k)** 2 mAh cm-2 and **(f, l)** 4 mAh cm-2 at a current density of 1 mA cm-2.

****

**FIGURE S5∣**Coulombic efficiency of the Li@VG/CC, Li@planar Cu electrodes at a current density of 1 mA cm-2 with a constant areal capacity of 2 mAh cm-2.

****

**FIGURE S6∣**Overpotential during Li deposition on **(a)** planar Cu and **(b)** VG/CC electrodes.

11

**FIGURE S7∣**Long-time cycling stability test of the Li@VG/CC and Li@planar Cu electrodes at a current density of 2 mA cm-2 with a constant areal capacity of 1 mAh cm-2.