Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.


**Supporting Information**

# Fabricating $SiO_2$-coated $V_2O_5$ nanoflake arrays for high-performance lithium-ion batteries with enhanced cycling capability

*Haitao Xu, Jida Chen, Huijuan Zhang, Yan Zhang, Wenxiang Li, Yu Wang**

The State Key Laboratory of Mechanical Transmissions and the School of Chemistry and Chemical Engineering, Chongqing University, 174 Shazheng Street, Shapingba District, Chongqing City, P.R. China, 400044

E-mail: wangy@cqu.edu.cn; prospectwy@gmail.com

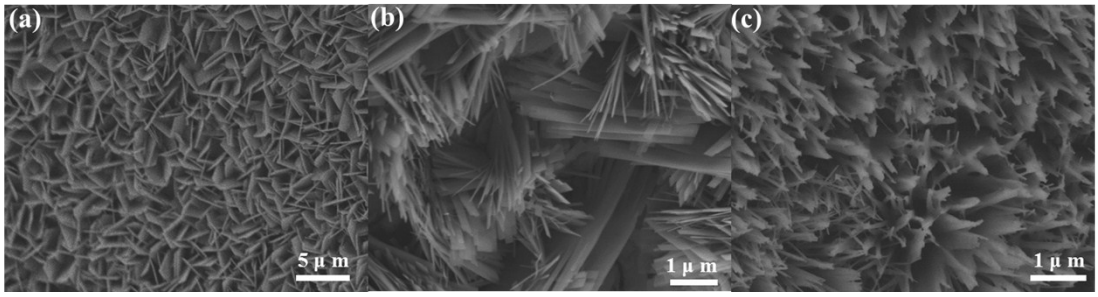


**Figure S1** SEM images of $NH_4VO_3$ nanoflake arrays prepared at pH=2 (a), 3 (b), and 4 (c) with other conditions unchanged.

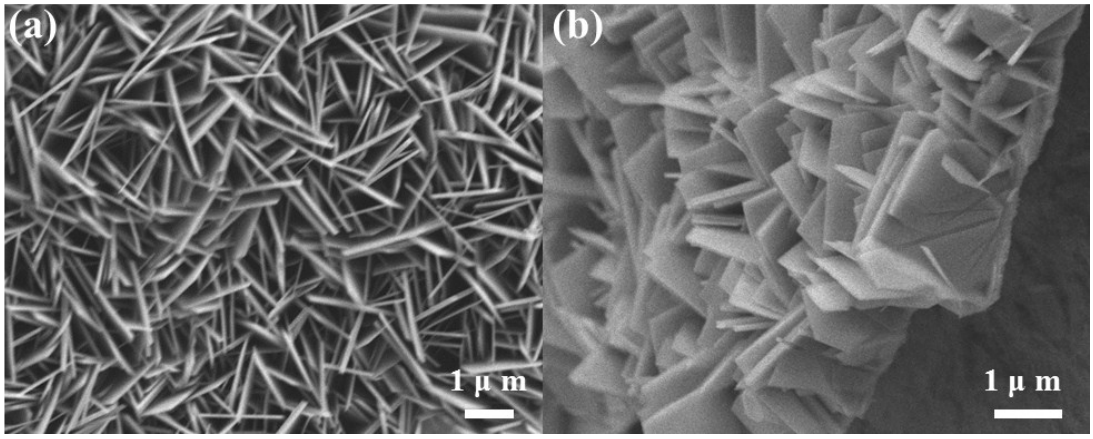


**Figure S2** Top-view (a), and cross-sectional (b) SEM images of the obtained $V_2O_5$ arrays.

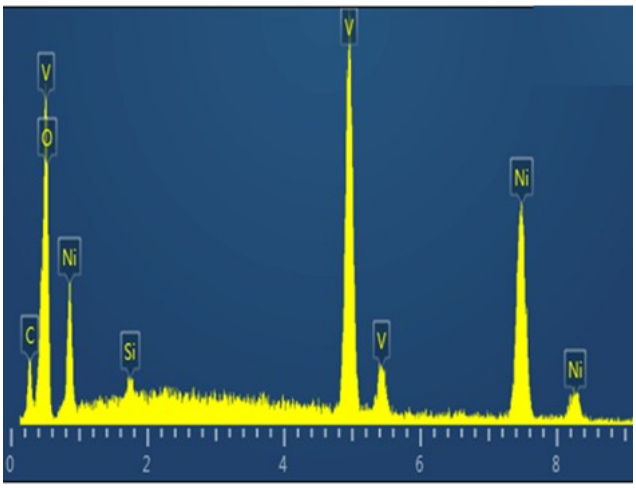


**Figure S3** X-ray energy dispersive spectrum (EDS) is to show the presence of elements in $V_2O_5$@ $SiO_2$ nanoflake arrays.

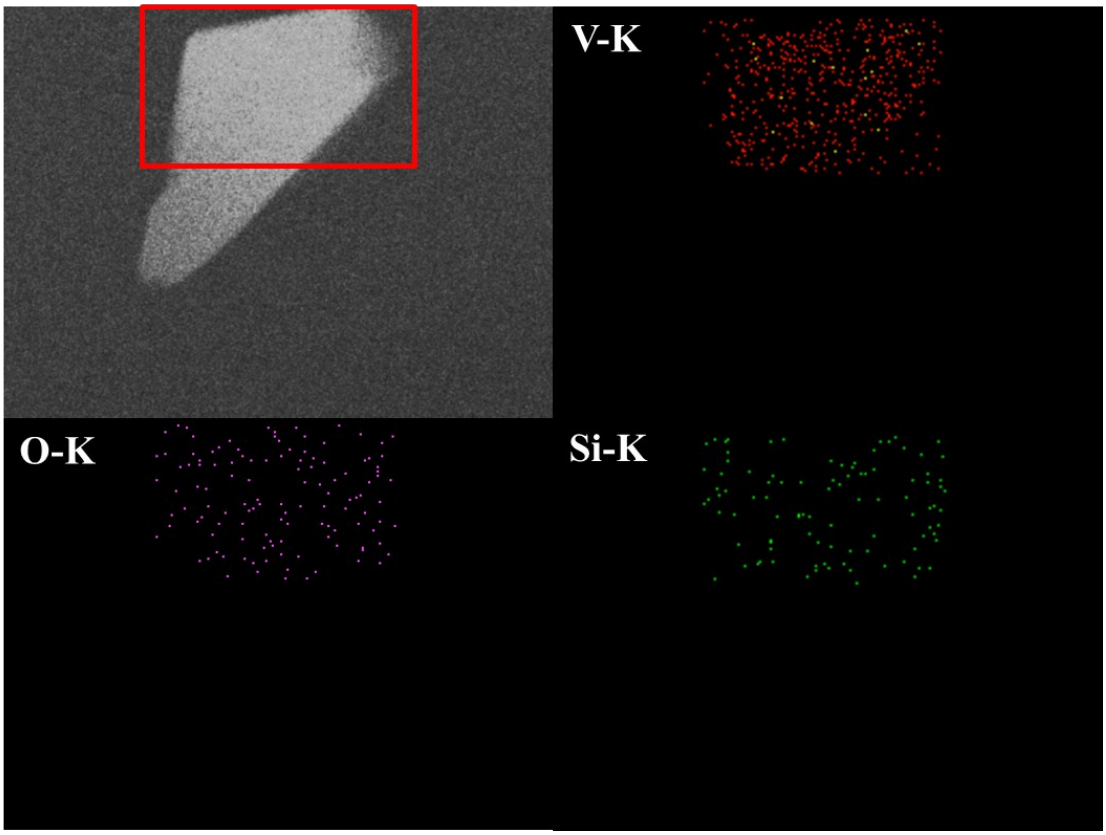


**Figure S4** TEM image of $V_2O_5$@ $SiO_2$ nanoflakes and corresponding X-ray energy dispersive spectrum (EDS) mapping of V, O, and Si.

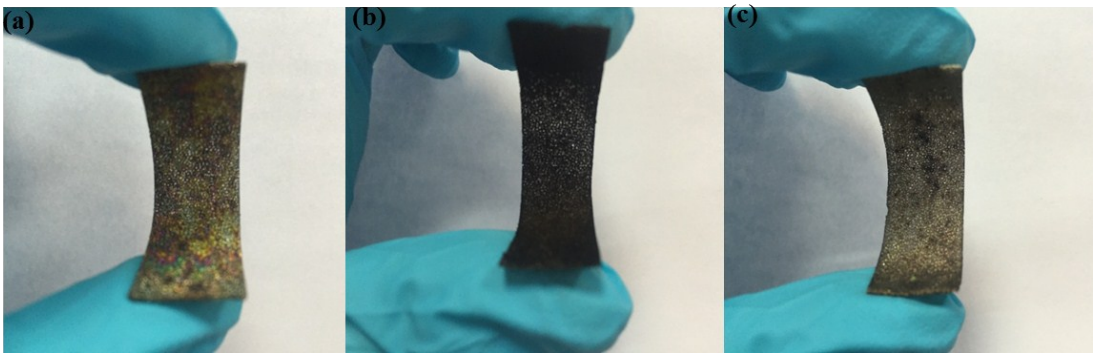


**Figure S5** Photos of (a) $NH_4VO_3$ nanoflake array, (b) $V_2O_5$ array, and (c) $V_2O_5$@$SiO_2$ nanoflake arrays electrodes. This shows the look (color) of real coated electrodes.

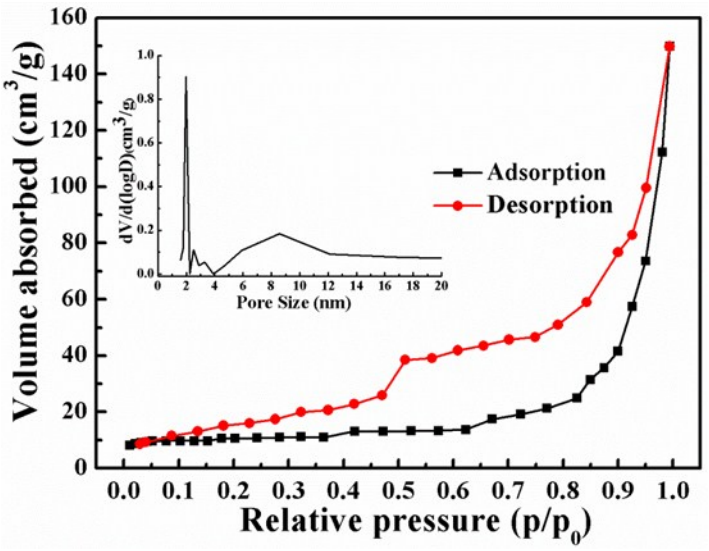


**Figure S6** Nitrogen sorption isotherm (BET) data to show specific surface areas and pore size distribution (indicated in the inset) for the $V_2O_5$@ $SiO_2$ nanoflakes.

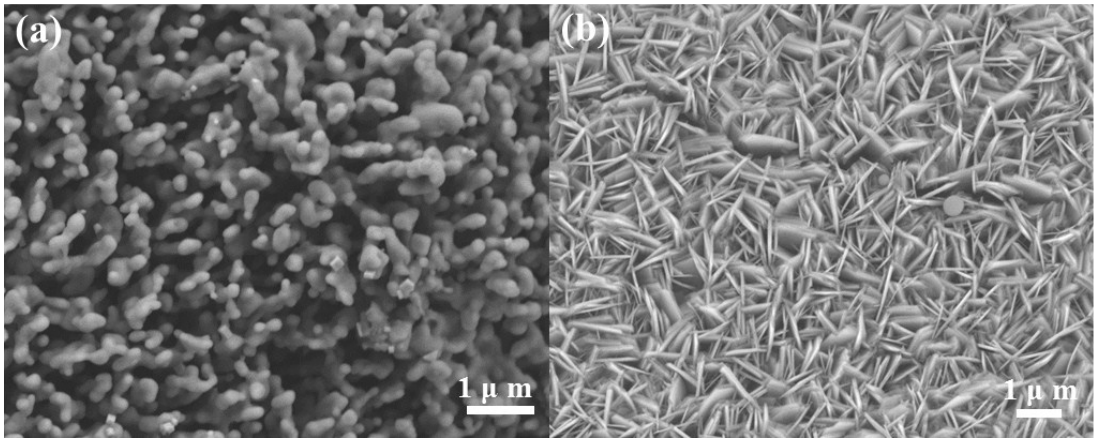


**Figure S7** SEM images of $V_2O_5$ array (a), and $V_2O_5$@$SiO_2$ nanoflake array (b) electrodes after 100 cycles at 0.1 A $g^{-1}$.

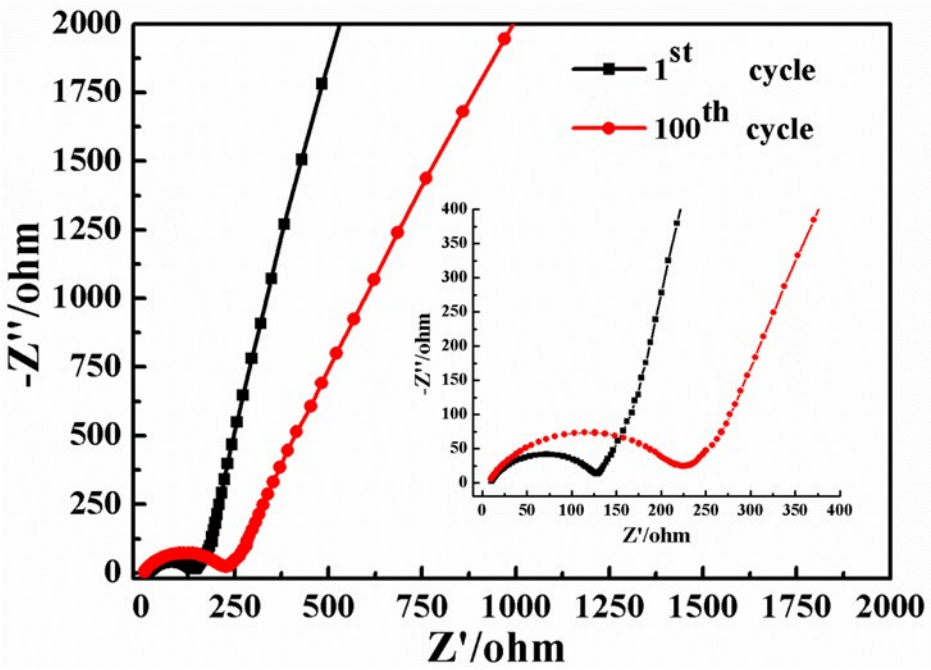


**Figure S8** Nyquist plots of the $V_2O_5$@$SiO_2$ nanoflake array electrode at first cycle and $100^{th}$ cycle, respectively.