



Supporting Information

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A High-Rate V₂O₅ Hollow Microclew Cathode for an All-Vanadium-Based Lithium-Ion Full Cell

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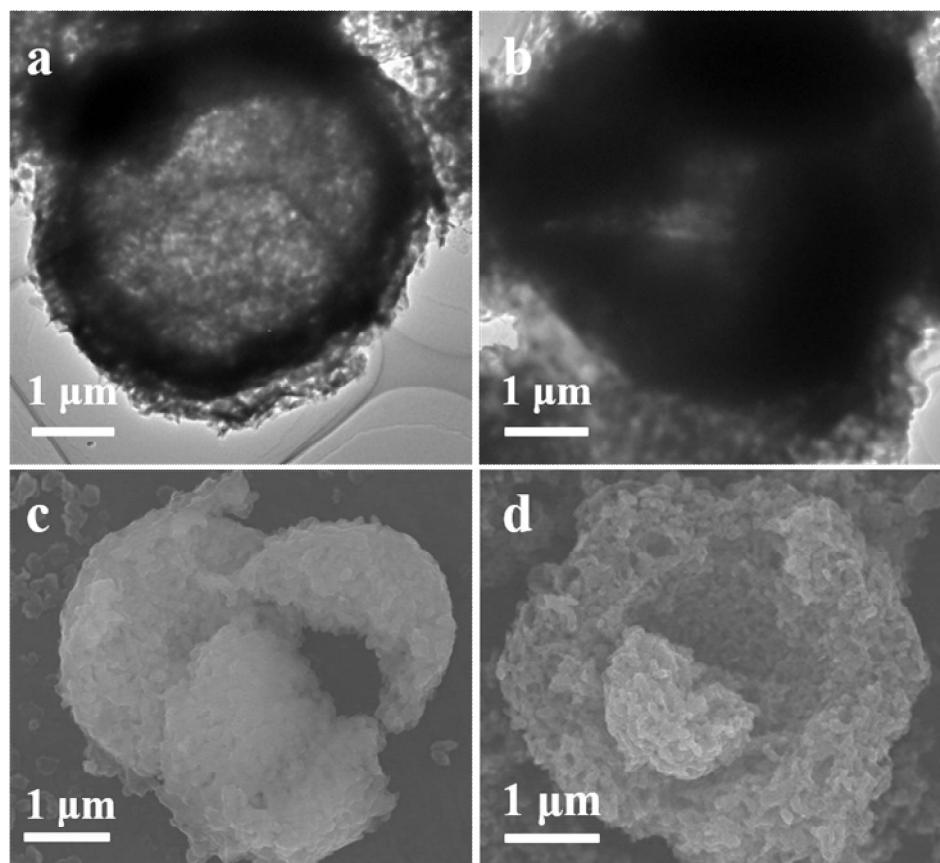


Figure S1. (a, b) The TEM images of V_2O_5 -HMs. (c, d) The SEM images of V_2O_5 -HMs after the rate measurements.

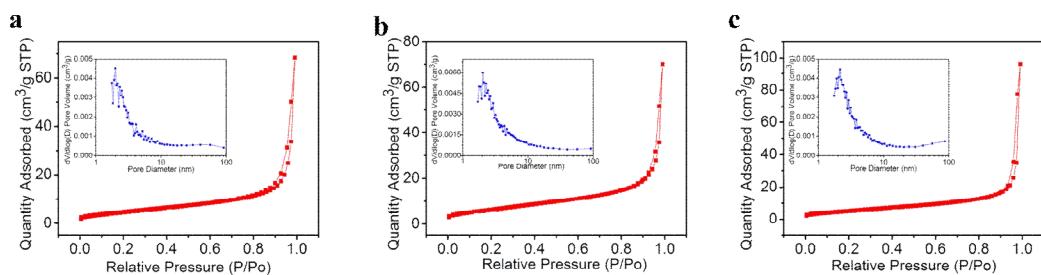


Figure S2. The nitrogen adsorption-desorption isotherms and the corresponding pore size distribution curves of V_2O_5 -HMs (a), V_2O_5 -NWs (b), and V_2O_5 -Ms (c).

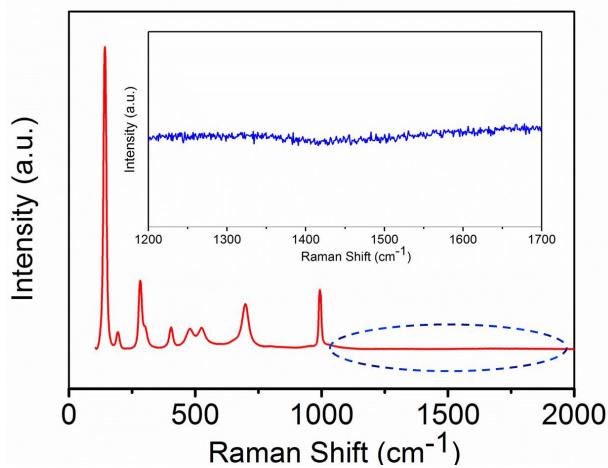


Figure S3. The Raman spectra of the V_2O_5 -HMs.

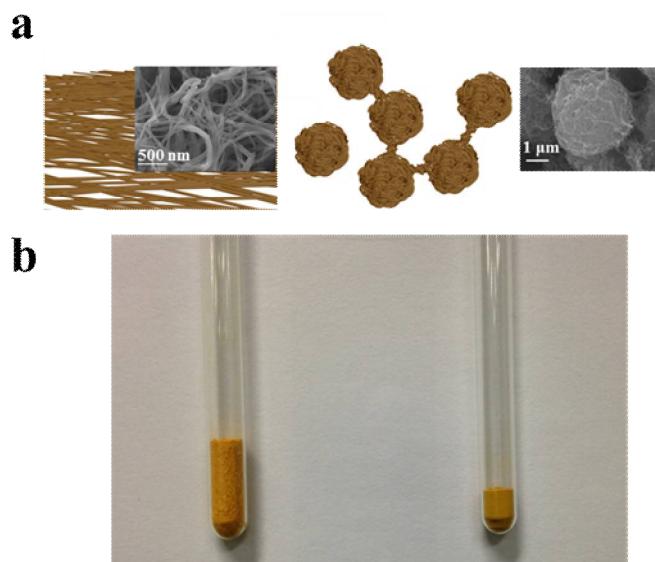


Figure S4. Volume occupied comparison of (a) V_2O_5 -NWs (0.41 g cm^{-3}) and (b) V_2O_5 -HMs (0.93 g cm^{-3}) with the same mass (0.1 g).

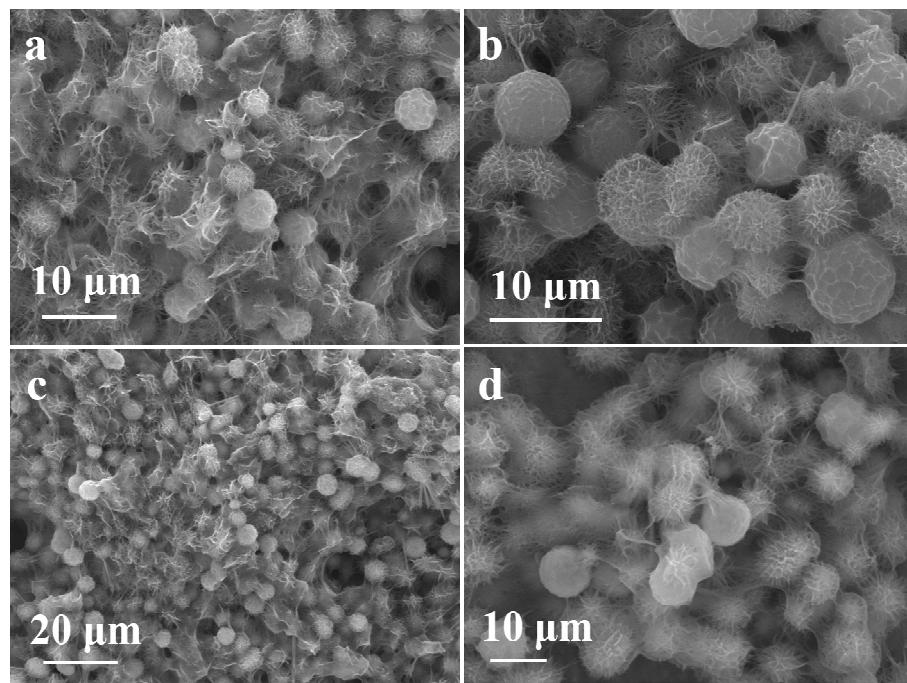


Figure S5. SEM images of V_2O_5 -HMs precursor obtained after the solvothermal reaction for 60 min.

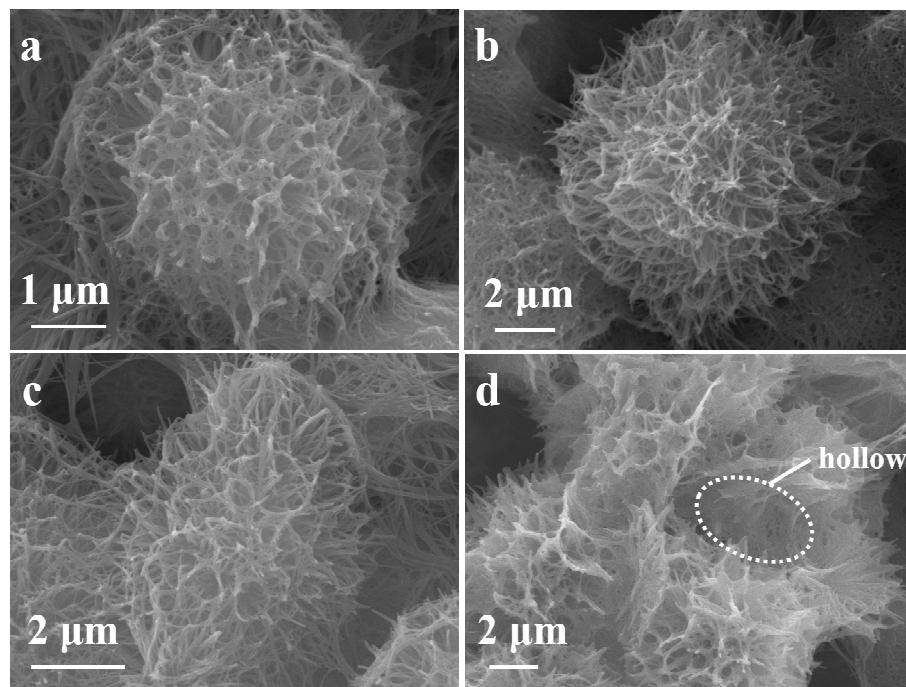


Figure S6. SEM images of V_2O_5 -HMs precursor obtained after the solvothermal reaction for 60 min in high magnification.

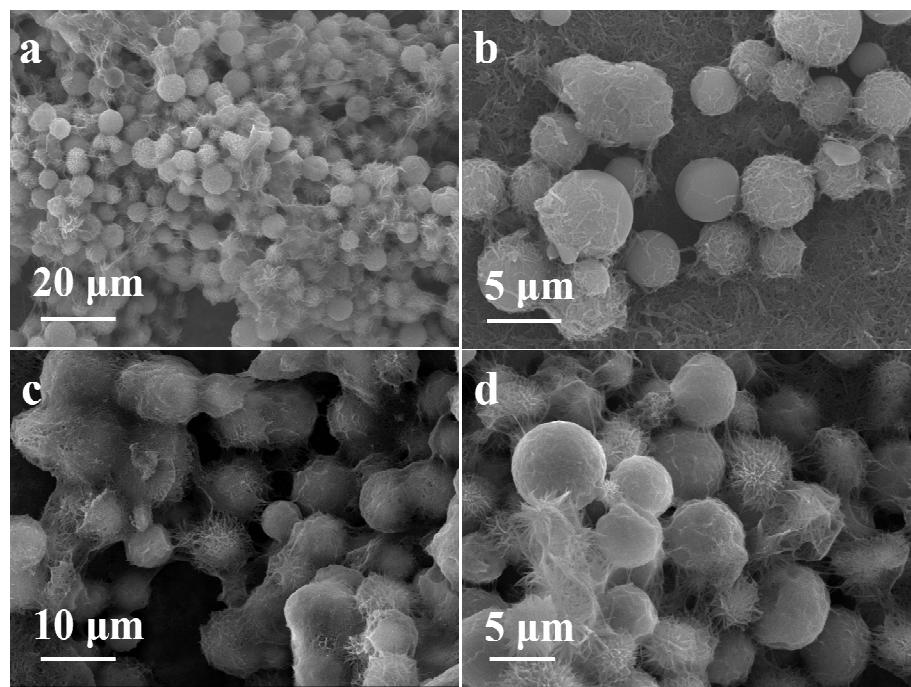


Figure S7. SEM images of V_2O_5 -HMs precursor obtained after the solvothermal reaction for 80 min.

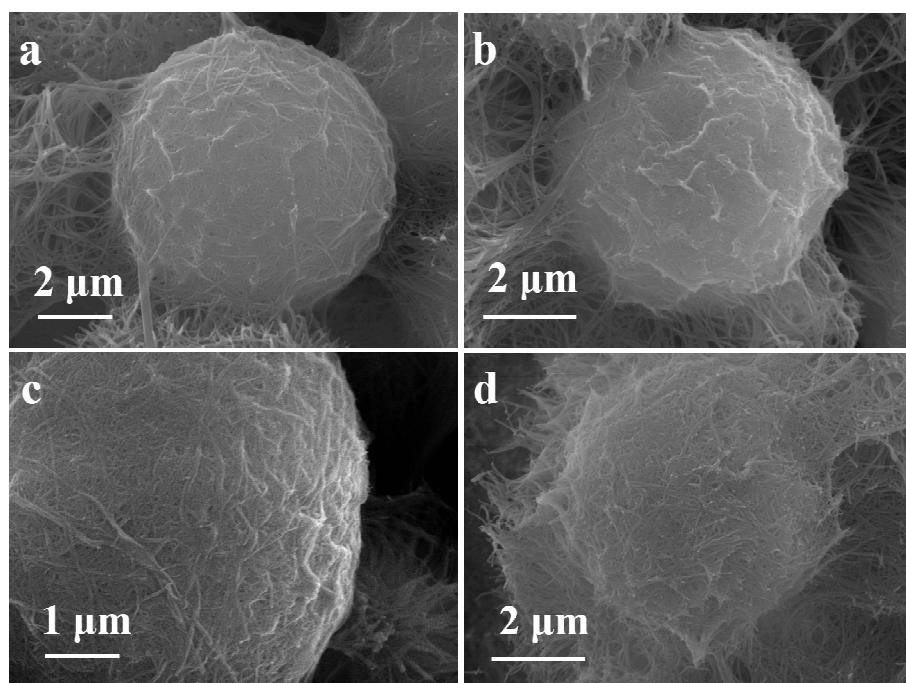


Figure S8. SEM images of V_2O_5 -HMs precursor obtained after the solvothermal reaction for 80 min in high magnification.

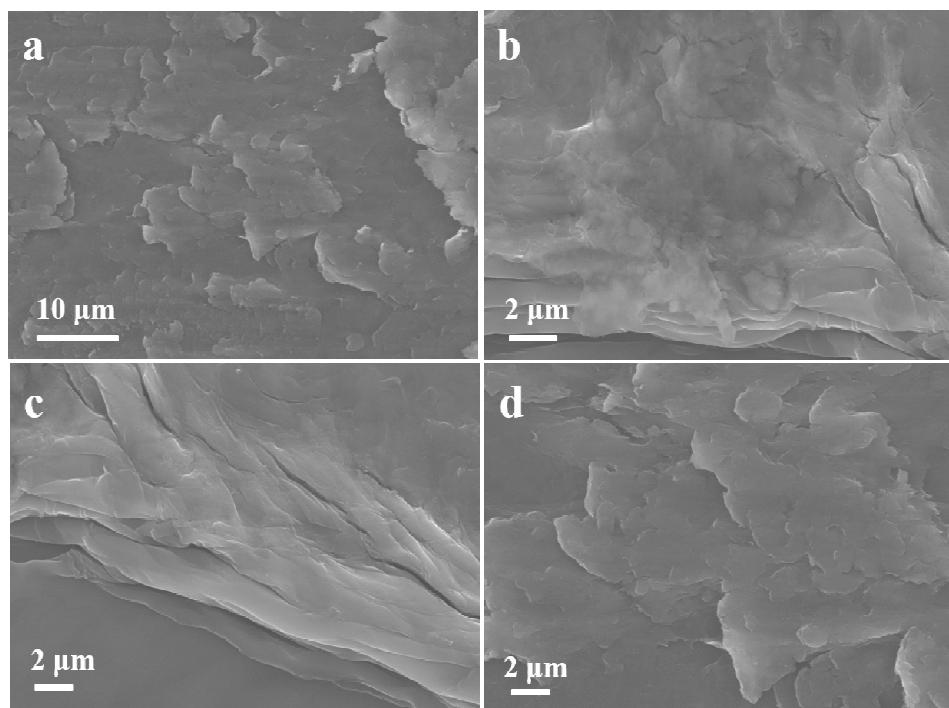


Figure S9. The SEM images of the sample without THAM before the solvothermal reaction.

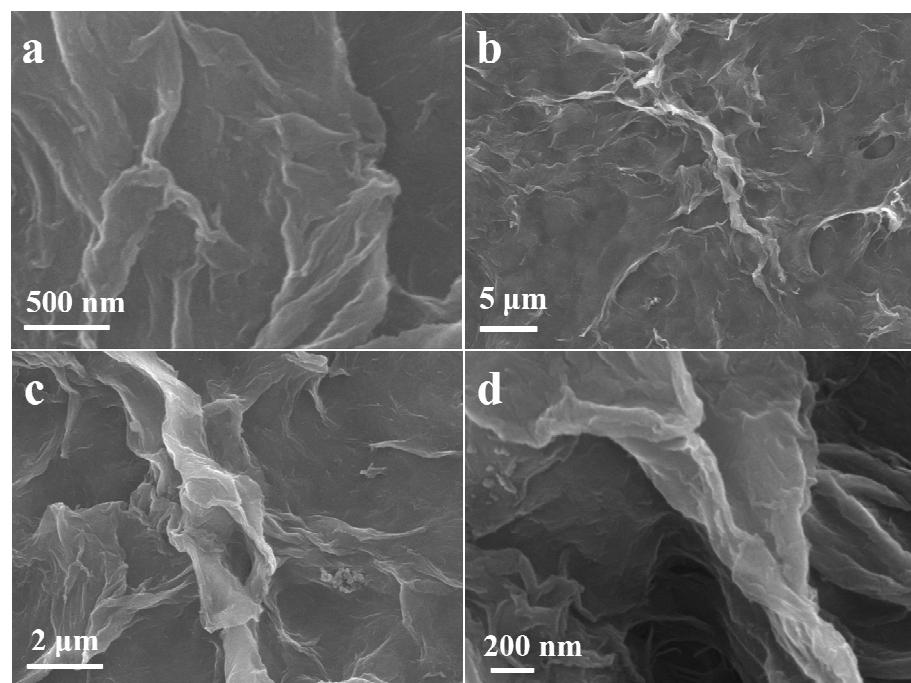
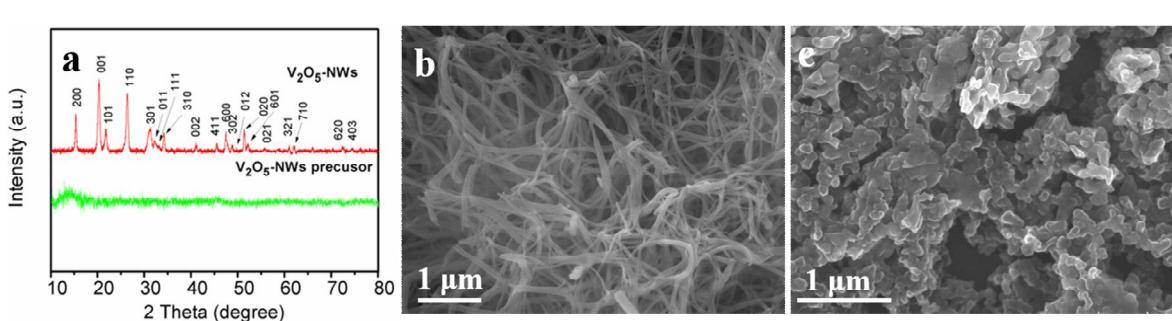
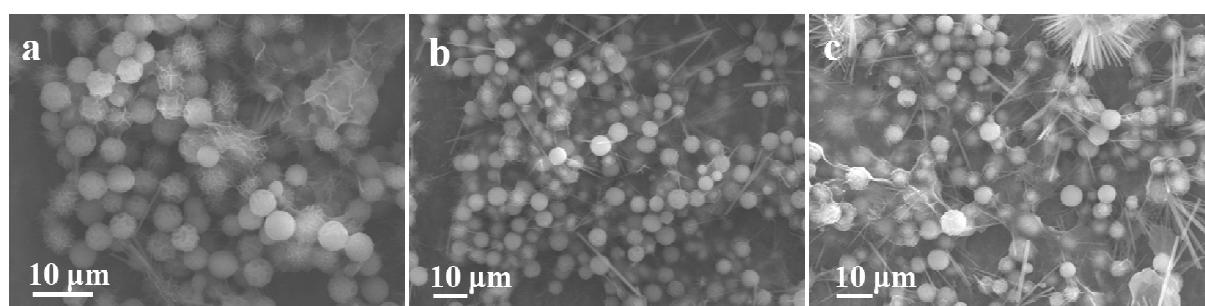
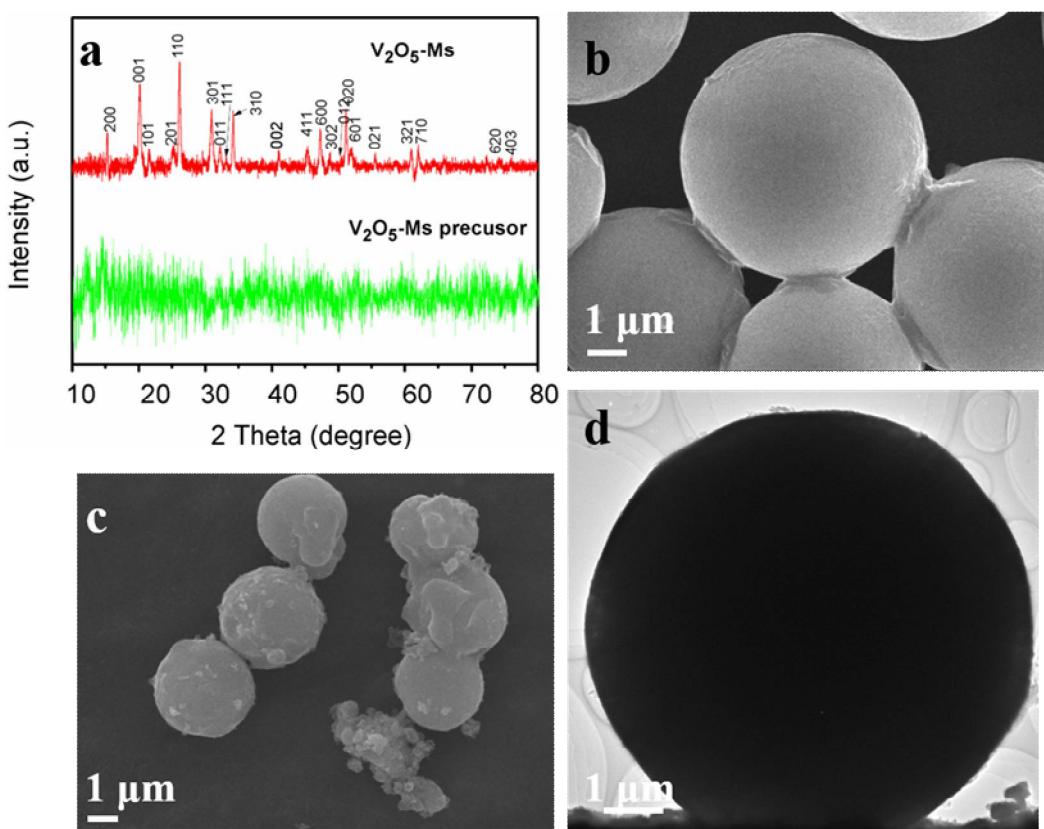


Figure S10. The SEM images of the sample without THAM after the solvothermal reaction for 2 h.



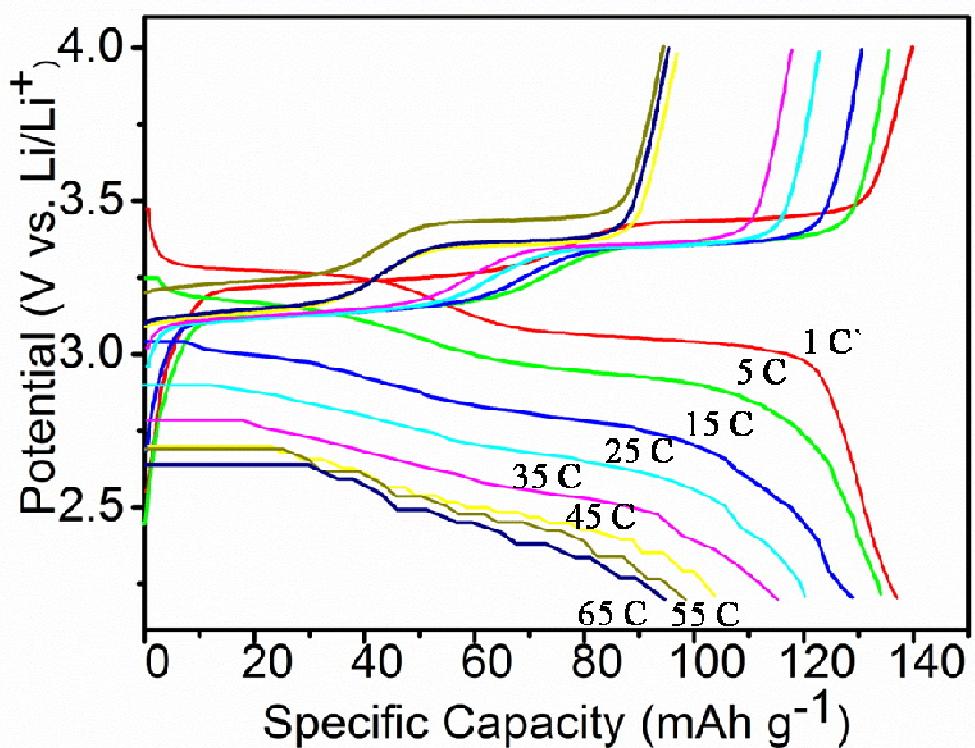


Figure S14. Charge-discharge voltage profiles of V_2O_5 -HMs at different rates.

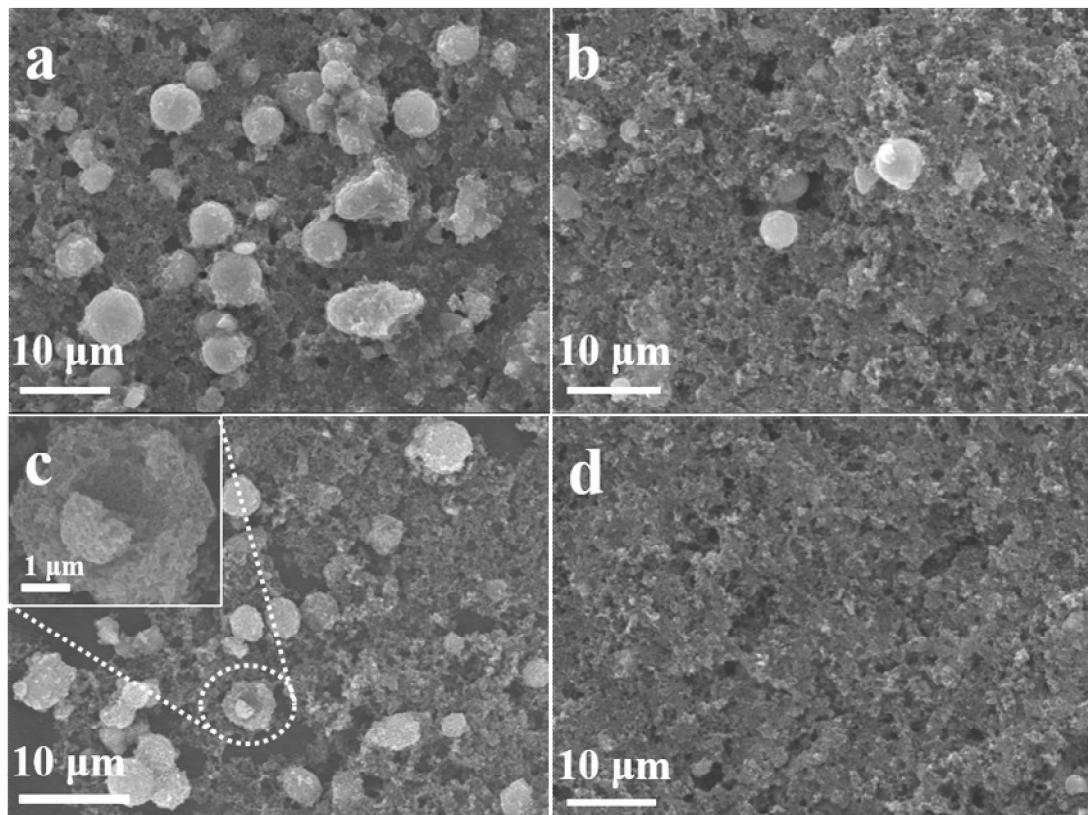


Figure S15. The SEM images of V_2O_5 -HMs (a, c) and V_2O_5 -Ms (b, d) before and after the rate measurements.

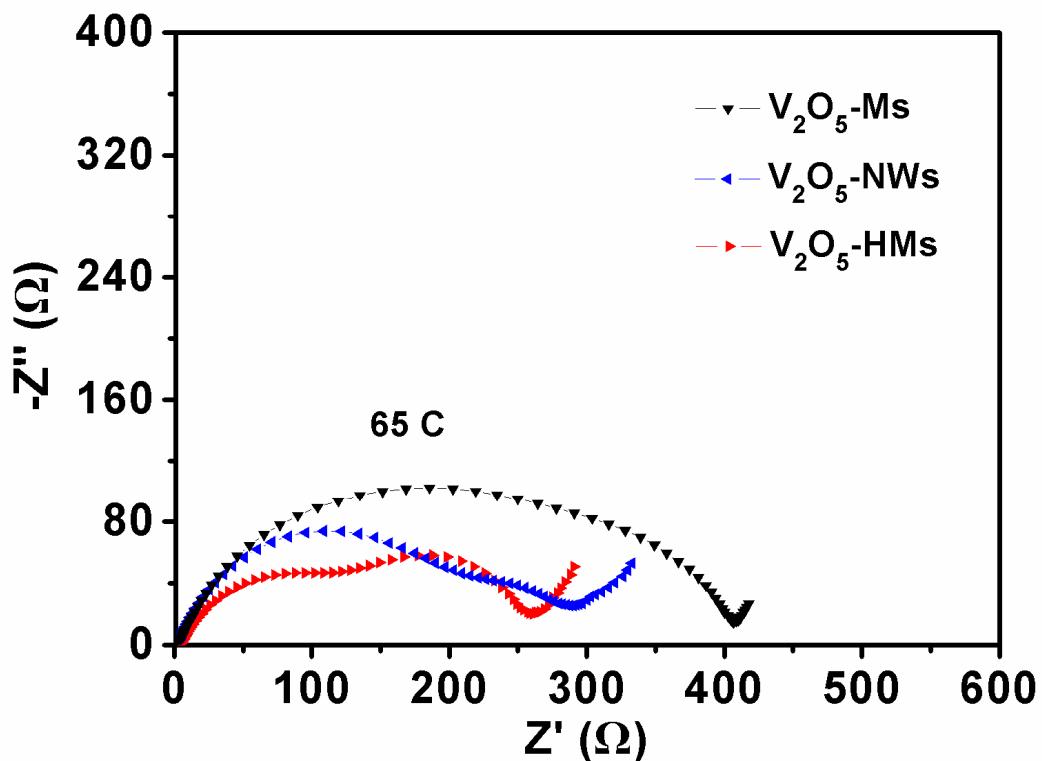


Figure S16. AC-impedance spectra of $\text{V}_2\text{O}_5\text{-Ms}$, $\text{V}_2\text{O}_5\text{-NWs}$ and $\text{V}_2\text{O}_5\text{-HMs}$ after cycles at 65 C.

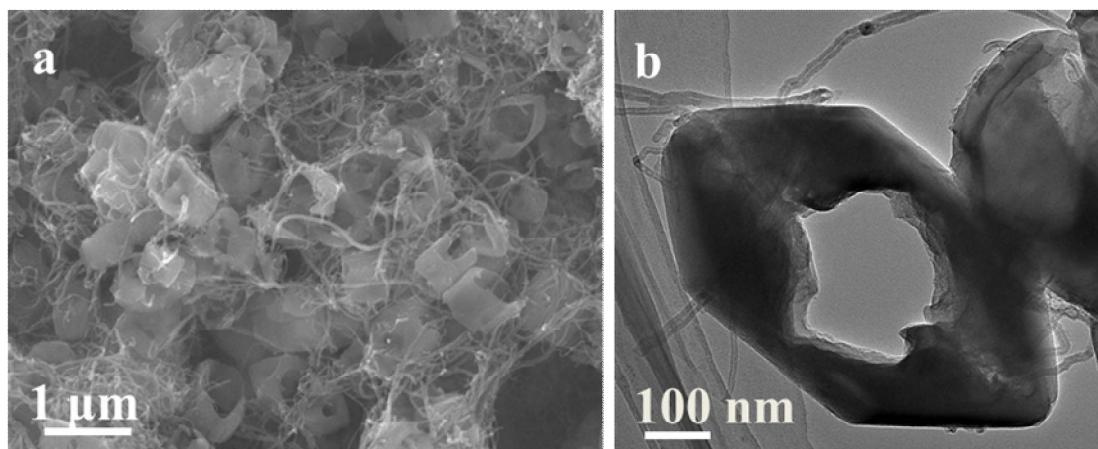


Figure S17. (a) The SEM image of the hollow $\text{Li}_3\text{VO}_4\text{-CNT}$ composite. (b) TEM images of the hollow $\text{Li}_3\text{VO}_4\text{-CNT}$ particles.