Three-dimensional porous V$_2$O$_5$ cathode with a ultra high rate capability

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Figure S1. Low magnification SEM images of the thin films in different deposit temperatures: (a) 230°C, (b) 245°C, (c) 260°C, (d) 275°C.
Figure S2. SEM image of the vanadium oxide thin film with different solvent: (a) use 1, 2-propylene glycol /Acetone/H₂O mixture as solvent; (b) the ratio of 1, 2-propylene glycol :ethanol:H₂O=75:15:10.
Figure S3. SEM images of V$_2$O$_5$ thin films
Figure S4. SEM images of V$_2$O$_5$ thin films after annealing at 350°C for 2h: (a) the deposit time=2h; (b) the deposit time=4h.
**Figure S5.** Galvanostatic cycling results of 3d-porous V₂O₅ thin film in the range of 1.5-4.0 V: (a) first three discharge curves at the voltage range of 2.0-4.0 V, (b) cycling performance.

**Figure S6.** AC impedance spectra of V₂O₅/Li cells after charged to 4.0 V in different cycles (1ˢᵗ, 7ᵗʰ, and 30ᵗʰ).