Supporting Information

Co$_3$V$_2$O$_8$ Sponge Network Morphology Derived from Metal-Organic Framework as an Excellent Lithium Storage Anode Material

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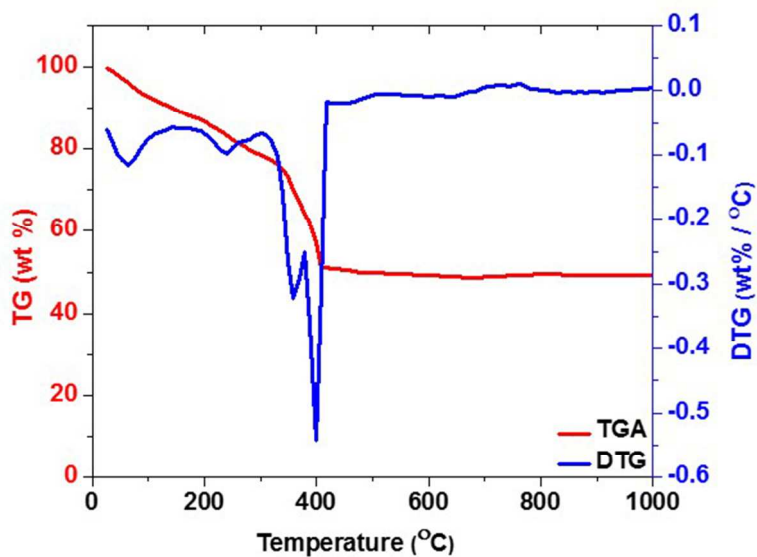
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Figure S1. Thermogravimetric analysis for $Co_3V_2O_8$.

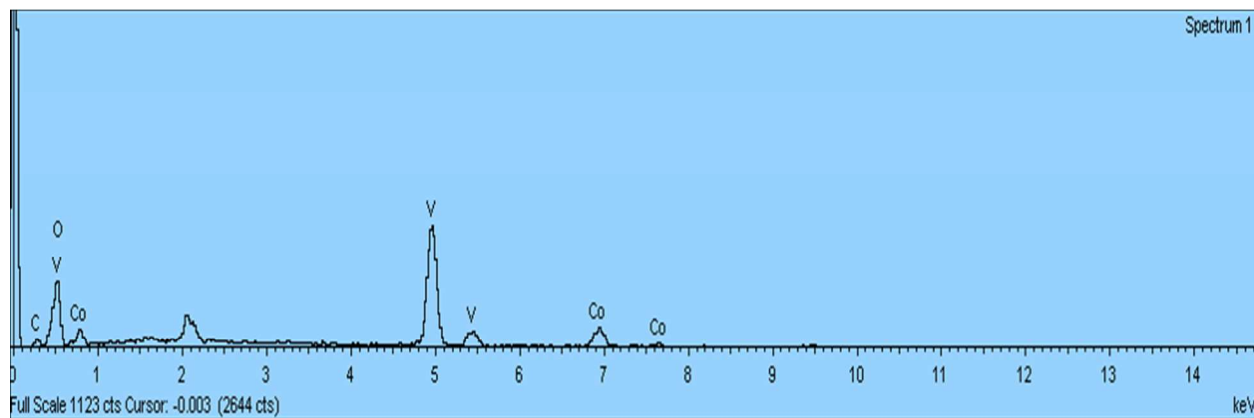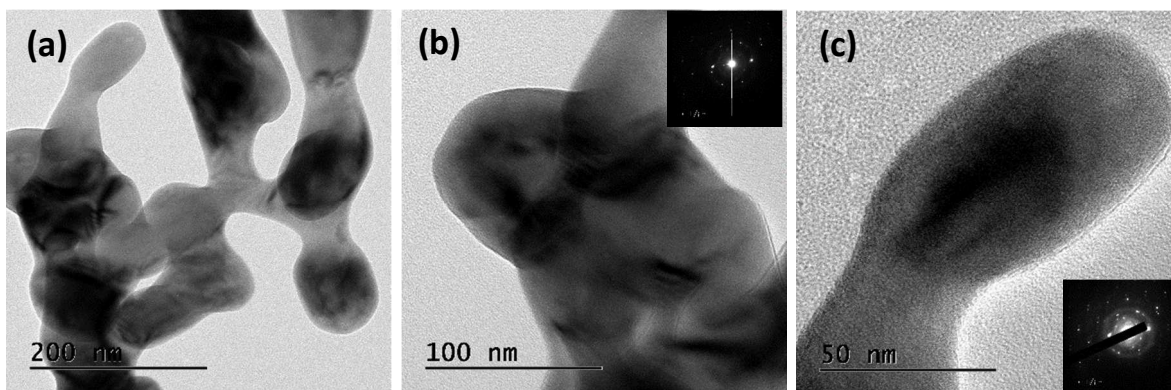**Figure S2.** SEM-EDS pattern for $Co_3V_2O_8$ with sponge like network morphology.

Figure S3. HRTEM images of CVO. (a) and (b) magnified images of sponge network like morphology of CVO; (c) high resolution image of the CVO. Insets: The corresponding SAED patterns has shown in inset.
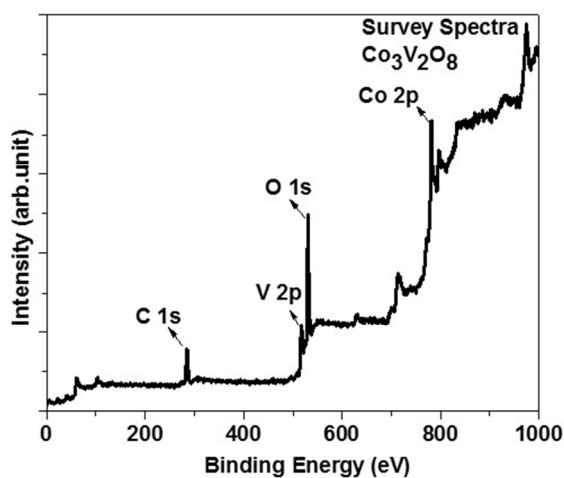

Figure S4. Survey spectra of $Co_3V_2O_8$ with sponge network morphology

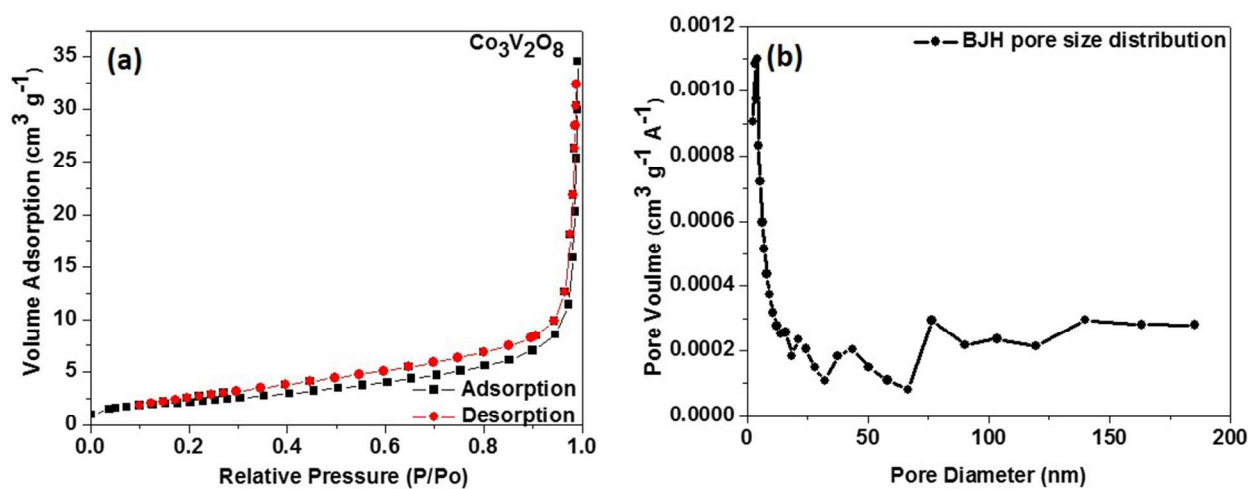**Figure S5.** BET surface area profile (a) Adsorption isotherm and (b) pore size distribution for $Co_3V_2O_8$ with sponge network morphology.
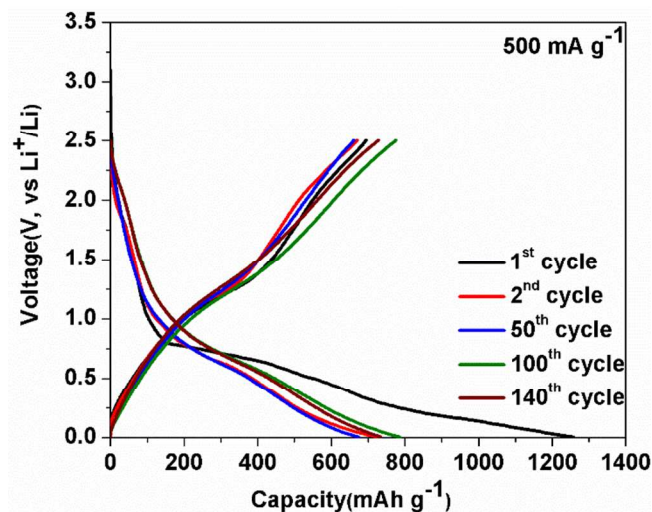
Figure S6. Selected Discharge/Charge profiles for $Co_3V_2O_8$ with sponge network like morphology at 500 mA g^{-1} current density.
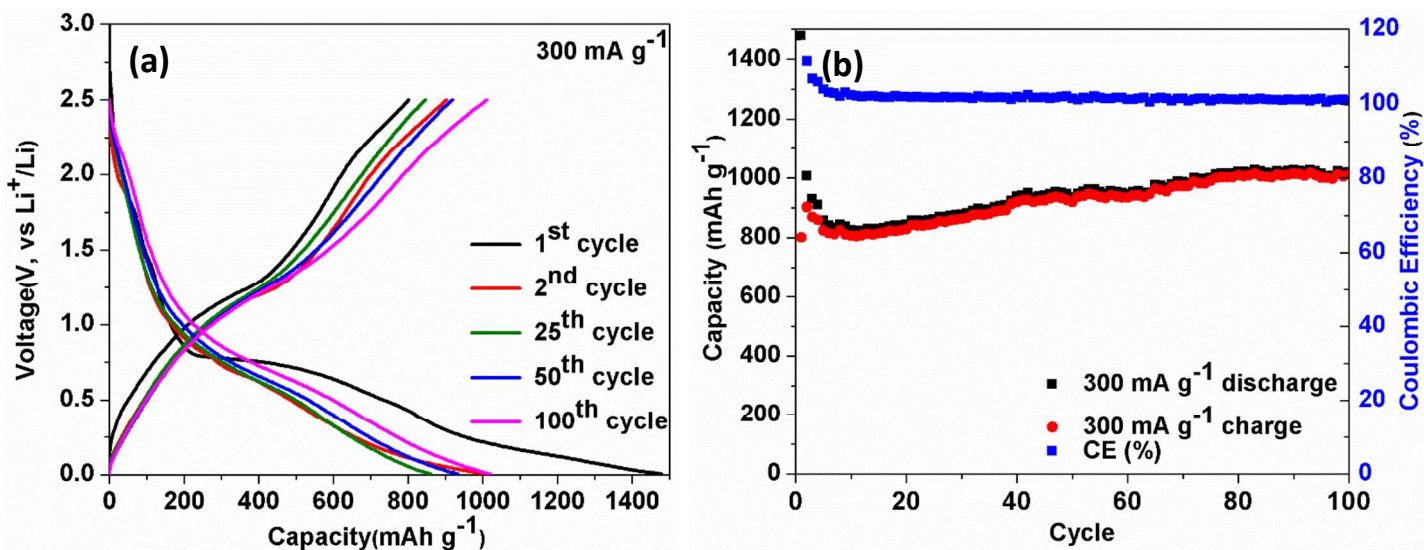

Figure S7. (a) Discharge and charge profile with different intervals of cycles at 300 mA g^{-1} of current density; (b) cyclability curve for the same with Coulombic efficiency.
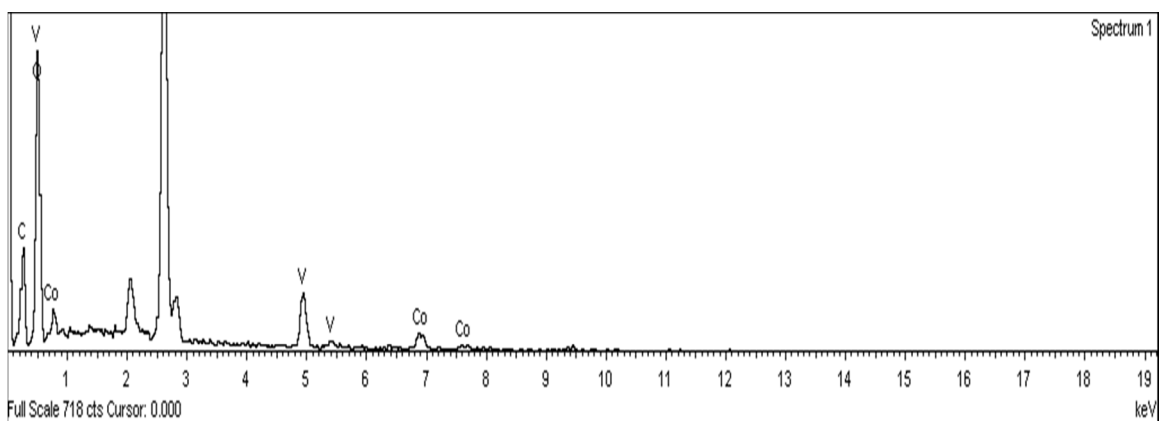
Figure S8. Ex-situ SEM-EDS pattern for $Co_3V_2O_8$ electrode after 700th cycle at the current density of 1000 mA g^{-1}.

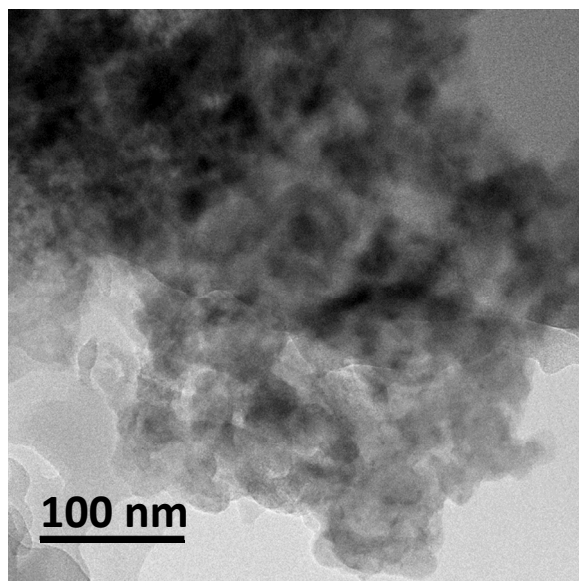**Figure S9.** Ex-situ TEM image for $Co_3V_2O_8$ electrode after 700th cycle at the current density of 1000 mA g^{-1}.