Supporting Information

Fig. S1. XRD patterns of ZnVO after heating in air for Zn-V-OH.
Fig. S2. FTIR spectrum of (a) the Zn-G microspheres, (b) Zn-V-OH and (c) ZnVO/PPY composite.
Fig. S3 Raman spectra of (a) Zn-G microspheres and (b) Zn$_3$V$_3$O$_8$/NC composite.
Fig. S4. FESEM images of the Zn-V-OH microspheres.
Fig. S5. FESEM images of ZnVO/PPY composite microspheres.
Fig. S6. EDS mappings of Zn, V, O and N for a nanosheet of Zn$_3$V$_3$O$_8$/NC composite.
Fig. S7. (a) Nitrogen adsorption/desorption isotherms and (b) pore size distribution of Zn$_3$V$_3$O$_8$/NC composite.
Fig. S8. Capacitive contribution at the scan rate of 0.1 mV/s for Zn$_3$V$_3$O$_8$/NC composite as anode for lithium ion batteries.
**Fig. S9.** Cycling performance and coulombic efficiency of $\text{Zn}_3\text{V}_3\text{O}_8$/NC composite as anode for lithium ion batteries at the current densities of (a) 500 mA g$^{-1}$ and (b) 1000 mA g$^{-1}$.
Fig. S10. Electrochemical performances of ZnVO composite as anode for lithium ion batteries. (a) The initial three cyclic voltammetry at a scan rate of 0.1 mV s$^{-1}$. (b) The 1$^{\text{st}}$, 2$^{\text{nd}}$, 10$^{\text{th}}$, 50$^{\text{th}}$ and 100$^{\text{th}}$ galvanostatic discharge/charge curves within a voltage window of 0.01-3.0 V at a current density of 200 mA g$^{-1}$. 
Fig. S11. Cycling stability at 500 mA g\textsuperscript{-1} for Zn\textsubscript{3}V\textsubscript{3}O\textsubscript{8}/NC composite as anode for sodium ion batteries.