Engineering of VO$_x$ structure integrating oxygen vacancies for improved zinc ions storage based on cations doping regulation with electric density

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**Fig. S1** (a,b,c,d,e) SEM images of K-VO$_x$, Fe-VO$_x$, Sn-VO$_x$, Nb-VO$_x$ and W-VO$_x$ compounds, respectively.

**Fig. S2** CV curves of K-VO$_x$, Cu-VO$_x$, Fe-VO$_x$, Sn-VO$_x$, Nb-VO$_x$ and W-VO$_x$ electrodes at the scan rate of 0.1 mV s$^{-1}$, respectively.
Fig. S3 (a,b,c,d,e) CV curves of K-VO<sub>x</sub>, Fe-VO<sub>x</sub>, Sn-VO<sub>x</sub>, Nb-VO<sub>x</sub> and W-VO<sub>x</sub> electrodes at various scan rates from 0.2 to 1 mV s<sup>−1</sup>, respectively.

Fig. S4 Discharging GITT curves of K-VO<sub>x</sub>, Fe-VO<sub>x</sub>, Sn-VO<sub>x</sub>, Nb-VO<sub>x</sub> and W-VO<sub>x</sub> electrodes, respectively.