Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Hollow Nano-flowers $NiCo_2O_4$@Nb_2COx MXene Heterostructure via Interfacial Engineering for High-performance Flexible Supercapacitor Electrodes

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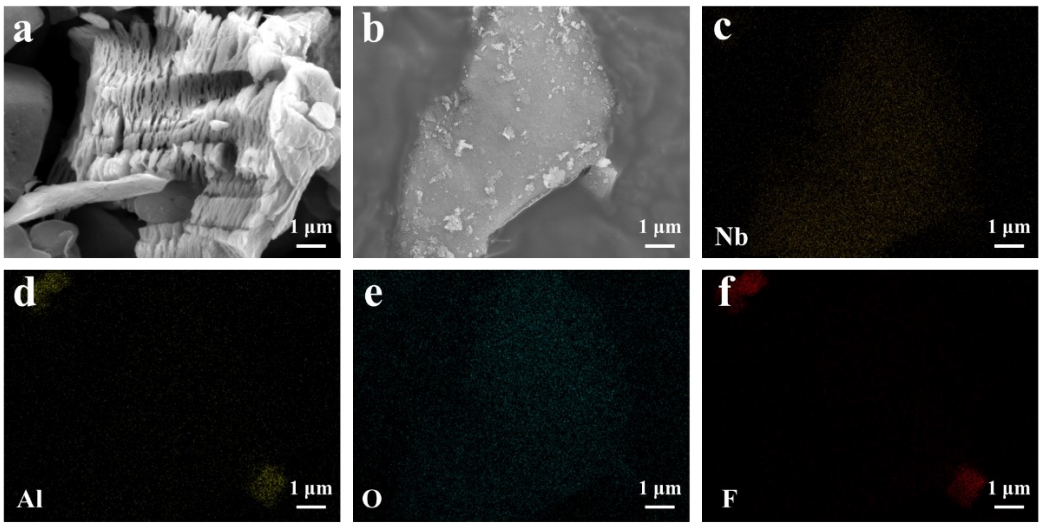

Fig.S1 (a) and (b) are the images of muti-layers and few-layers Nb_2CTx MXene, respectively. (c)-(f) are the distribution of the four elements Nb Al O and F on the surface of Nb_2CTx MXene, respectively.

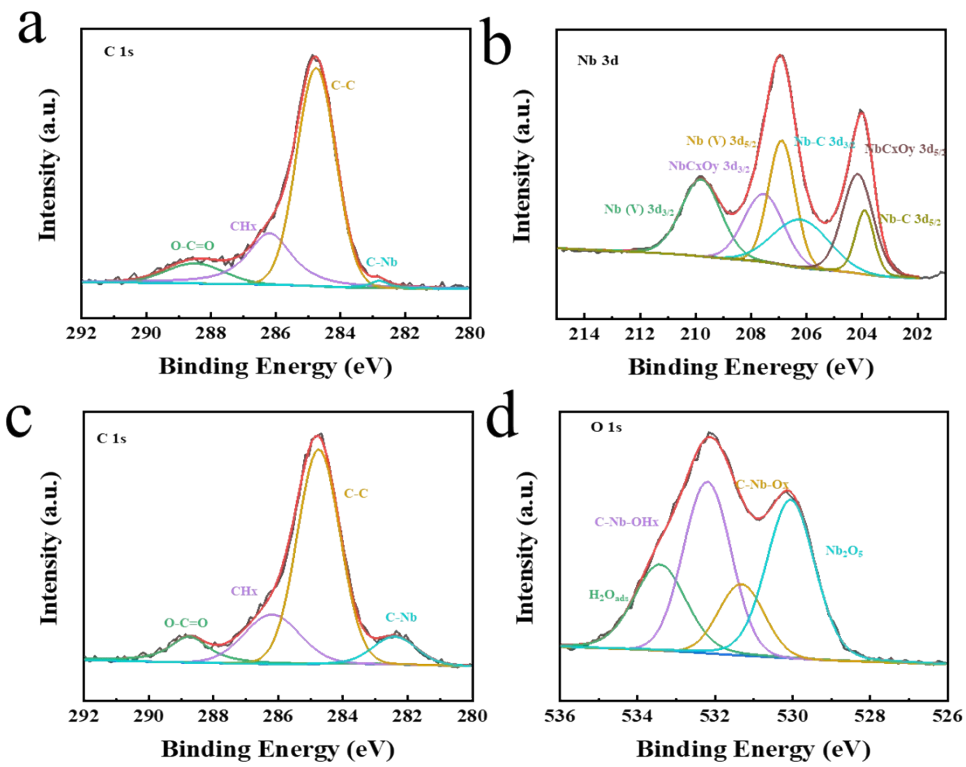

Fig.S2 (a) C 1s high-resolution spectra of $NiCo_2O_4$@Nb_2CTx-2composite, (c-d) Nb 3d, C 1s and O1s high-resolution spectra of pure Nb_2CTxMXene.

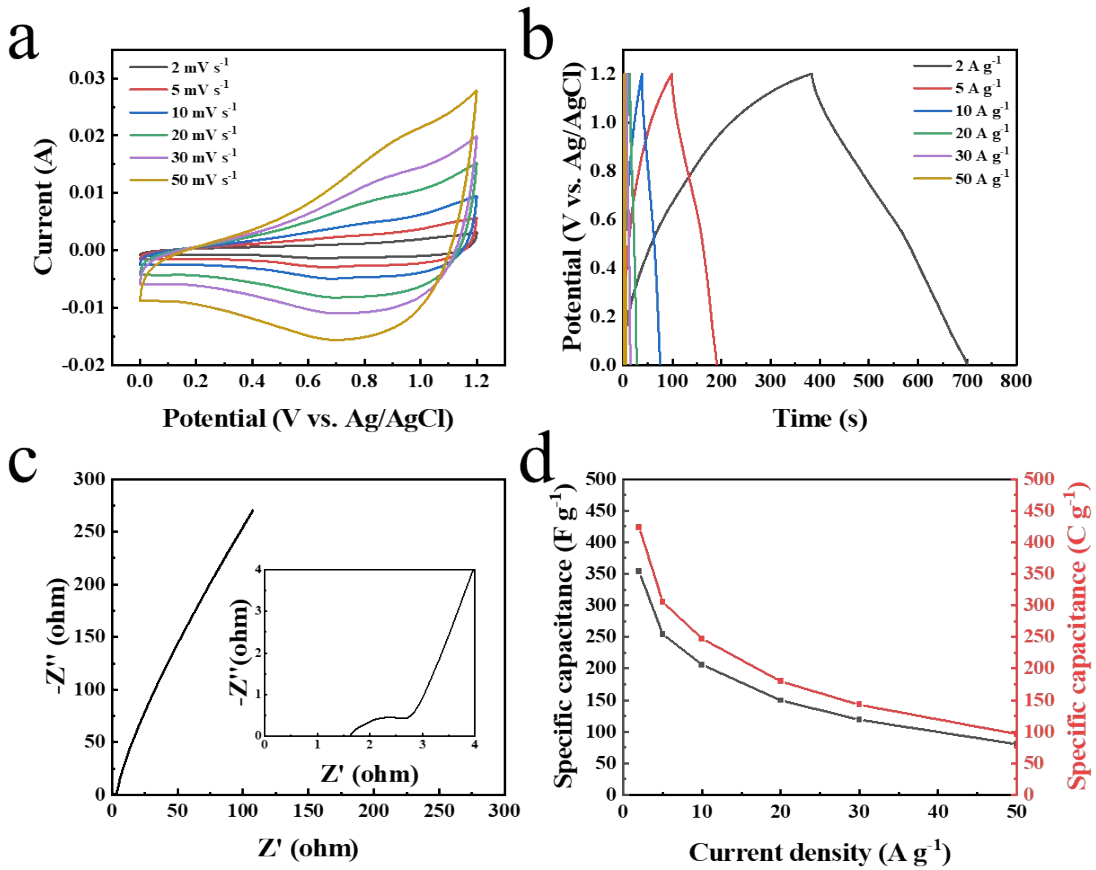

Fig.S3. Electrochemical performances of $NiCo_2O_4$@Nb_2CTx -2 electrodes in 1M Na_2SO_4 electrolyte. (a) CV and (b) GCD curves at different scan rates and current densities, respectively; (c) The EIS curves of $NiCo_2O_4$@Nb_2CTx-2 and $NiCo_2O_4$@Nb_2CTx-3 electrodes; (d) Specific capacitance change curves over different current densities.

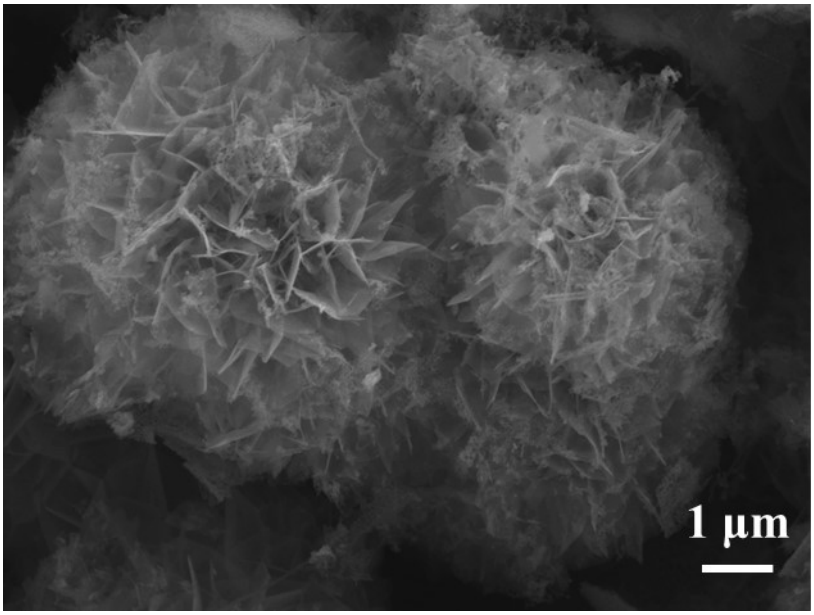

Fig.S4. SEM image of the $NiCo_2O_4$@Nb_2CTx-2 composite after 5000 cycles.

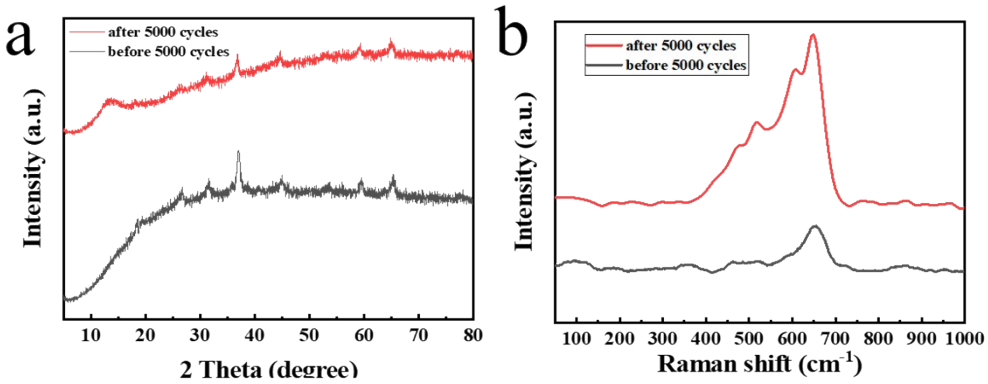

Fig.S5. (a) and (b) are the XRD and Raman pattern before and after 5000 cycles of the $NiCo_2O_4$@Nb_2CTx-2 electrode.

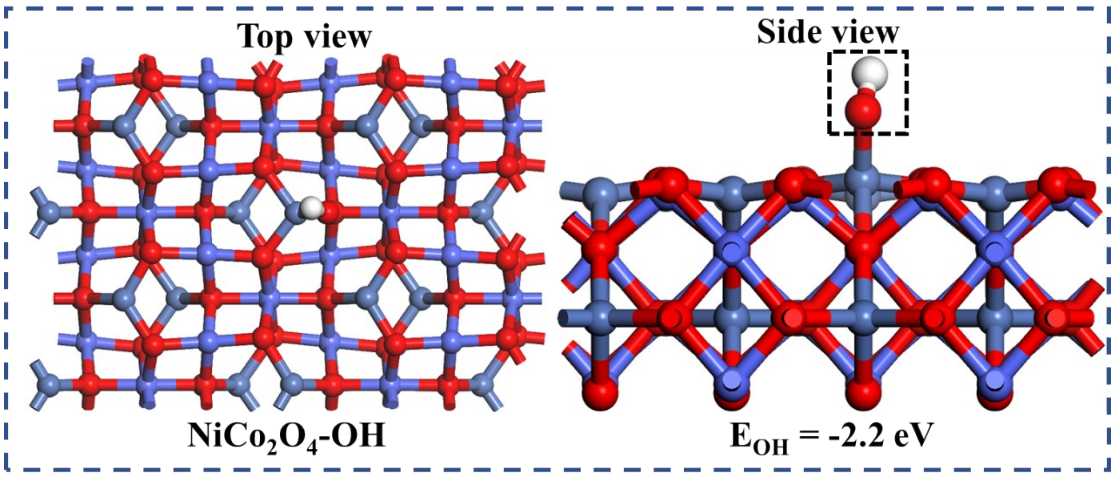

Fig.S6 The structure of $NiCo_2O_4$-OH.

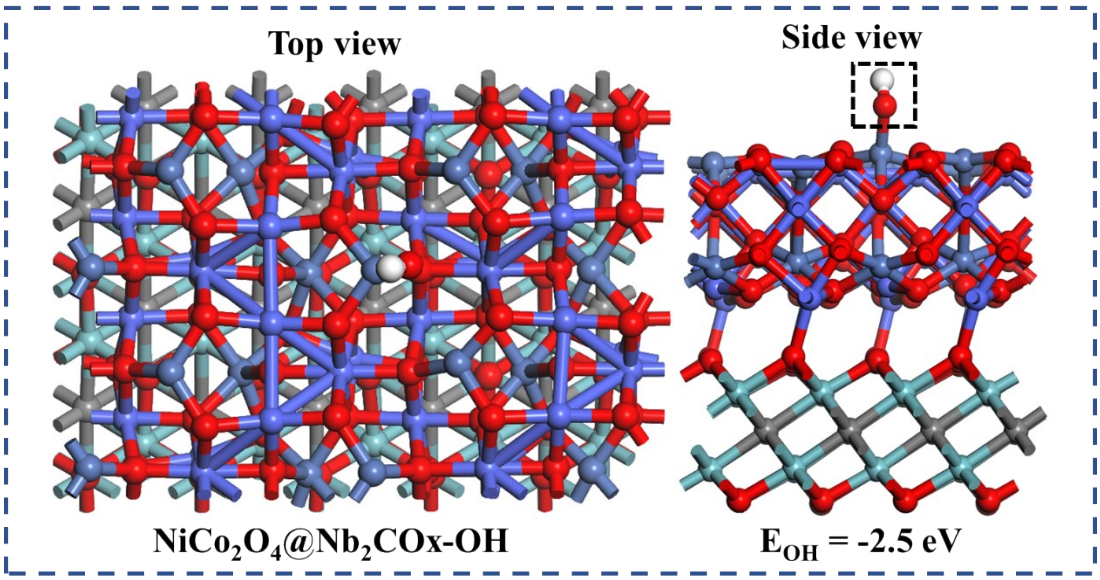

Fig.S7 The structure of $NiCo_2O_4$@Nb_2CTx-OH.

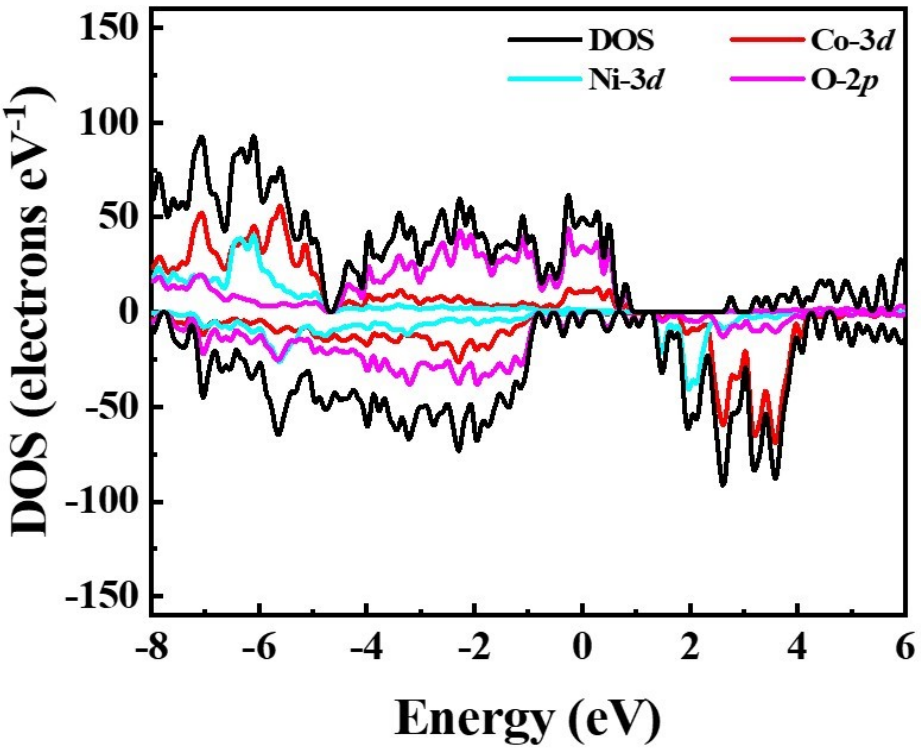

Fig.S8. DOS of pure $NiCo_2O_4$.

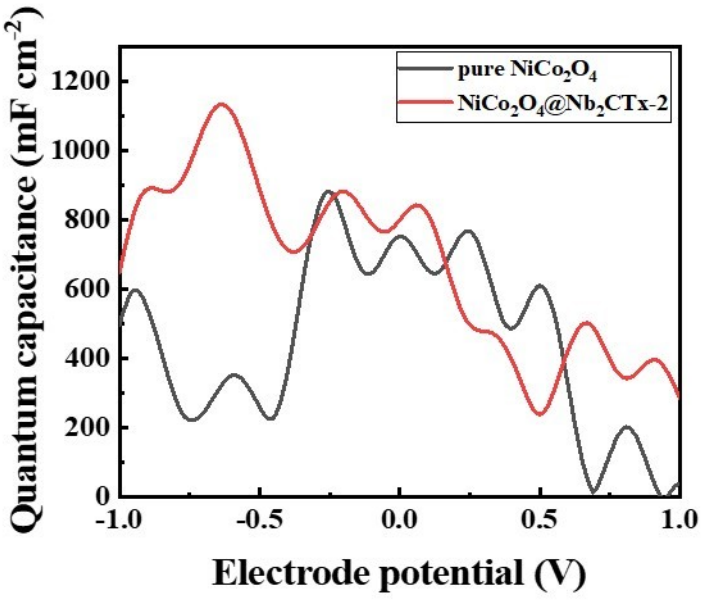

Fig.S9. Quantum capacitance plot for pure $NiCo_2O_4$ and $NiCo_2O_4$@Nb_2CTx-2 composite.