Supplementary Information

A Facile Method to Synthesis High Performance CoV_2O_6 as Supercapacitor Cathode

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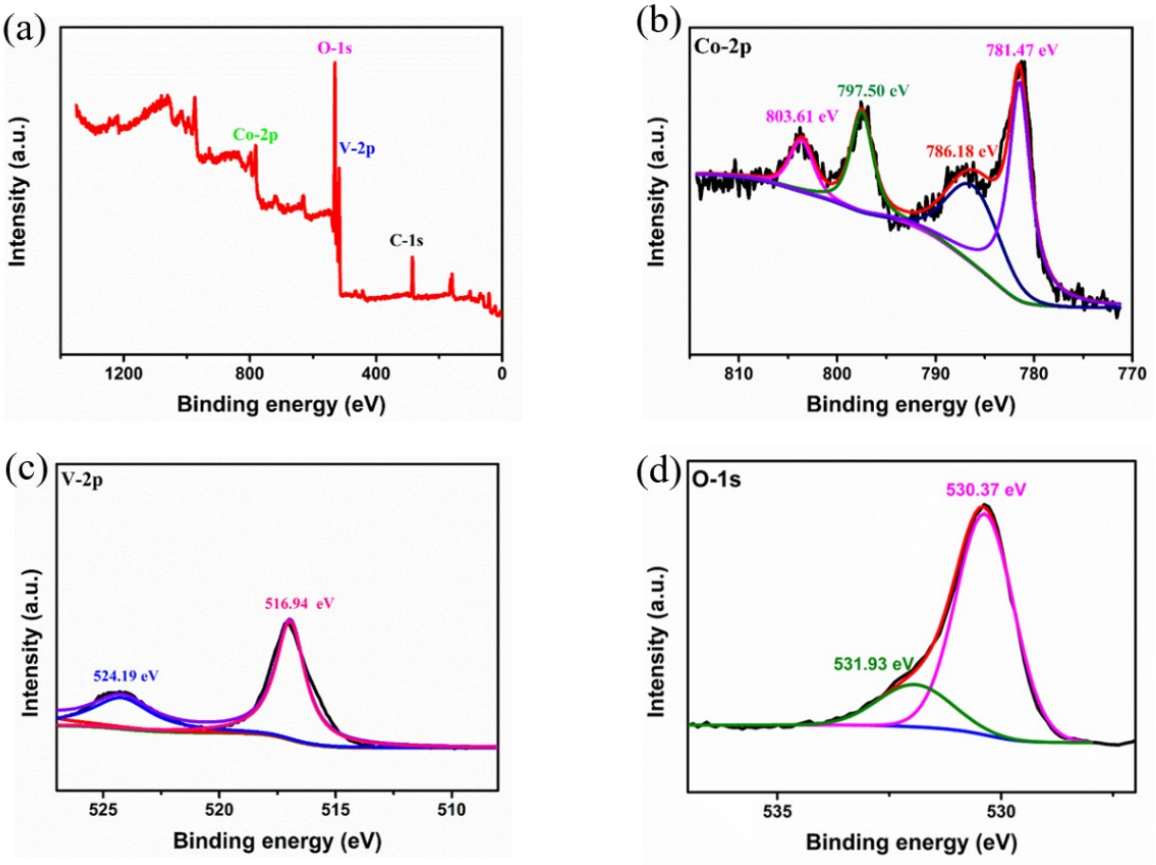


Fig. S1. XPS patterns of (a) full scan of the CoV_2O_6. (b) Co 2p, (c) V 2p and (d) O 1s

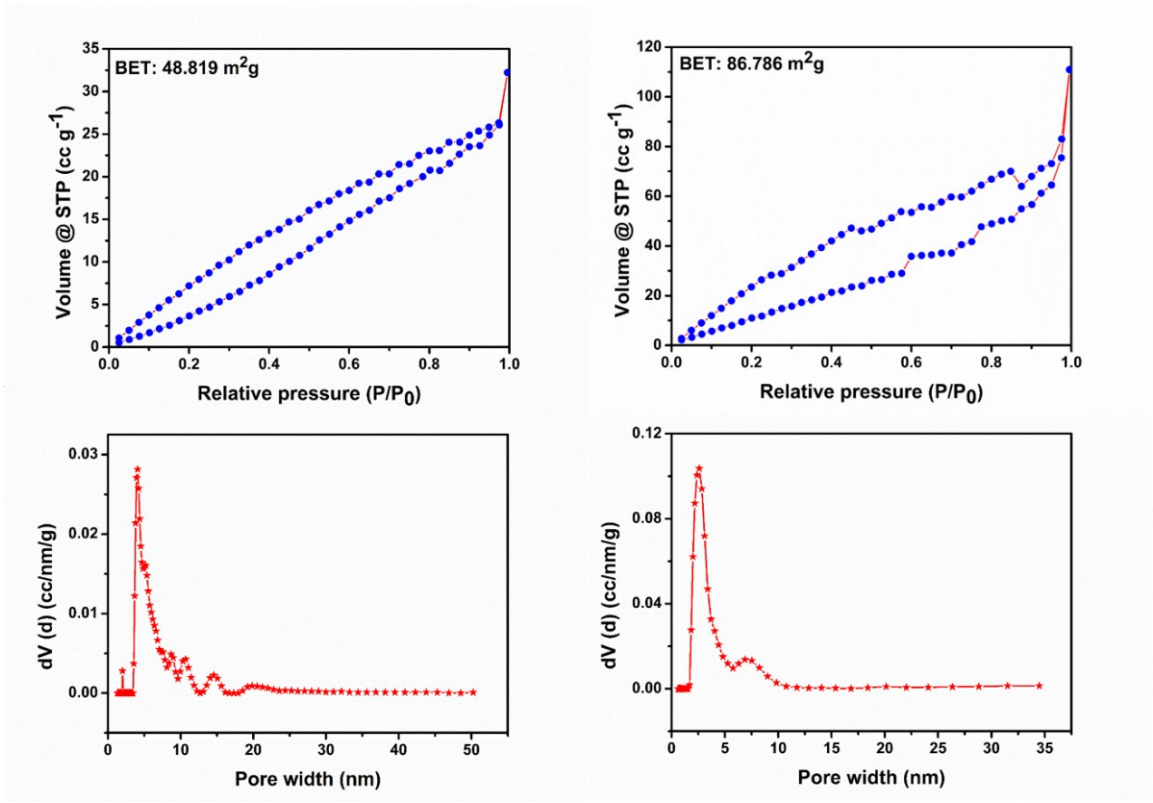


Fig. S2. N_2 adsorption and desorption isotherms and the corresponding pore size distributions of (a, c) $CoV_2O_6 \cdot 4H_2O$ and (b, d) CoV_2O_6.

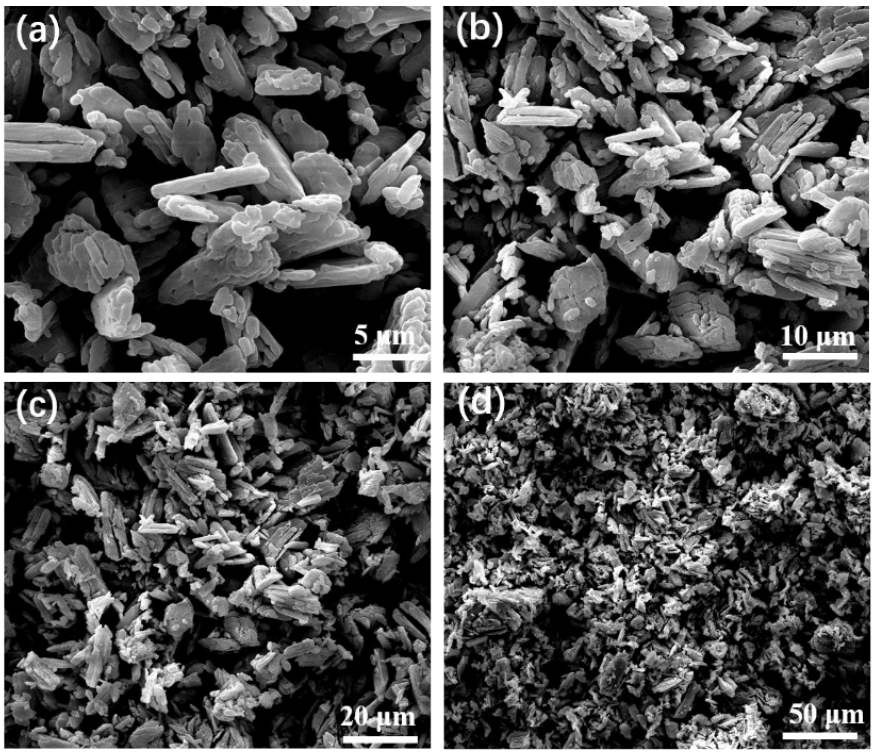


Fig. S3 SEM images of CoV_2O_6

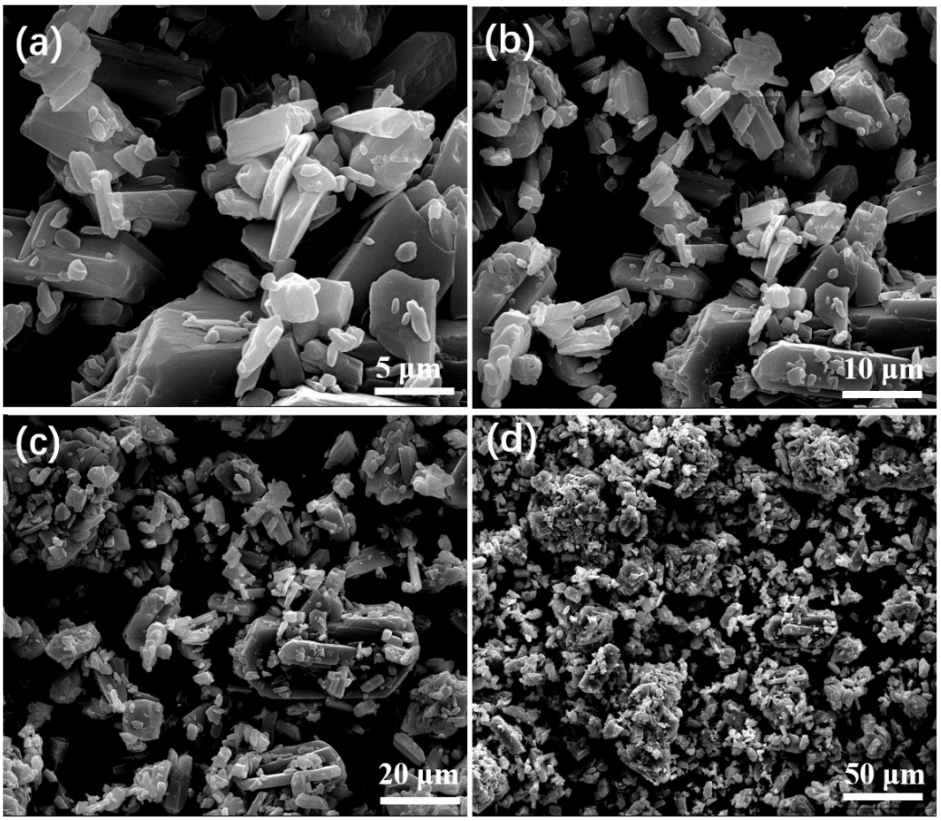


Fig. S4 SEM images of $CoV_2O_6 \cdot 4H_2O$

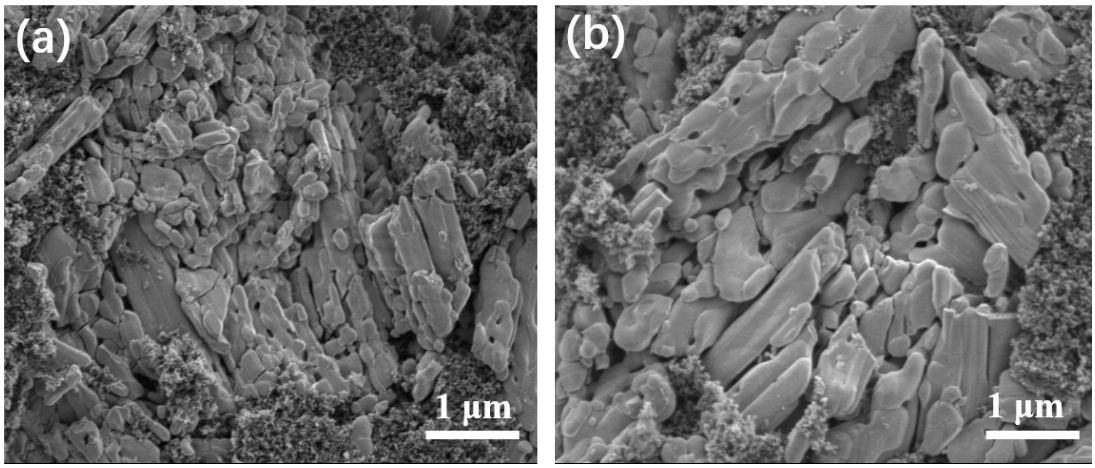
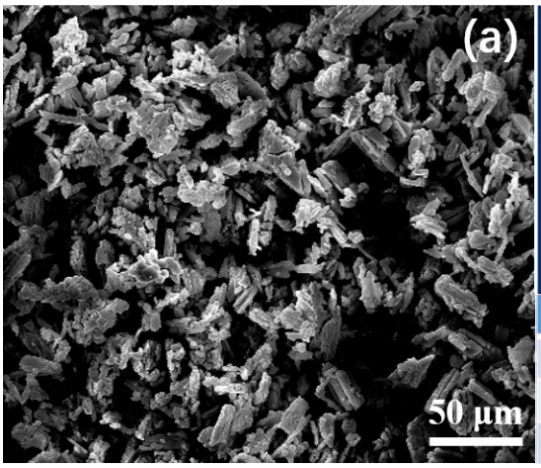
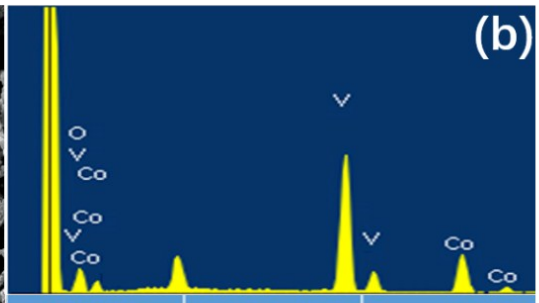


Fig. S5 SEM patterns of CoV_2O_6 after 20,000 cycles





Element	Wt%	At%
Co	26.65	16.44
V	45.36	32.36
O	27.99	51.21

Fig. S6 EDS spectrum of $CoV_2O_6 \cdot 4H_2O$

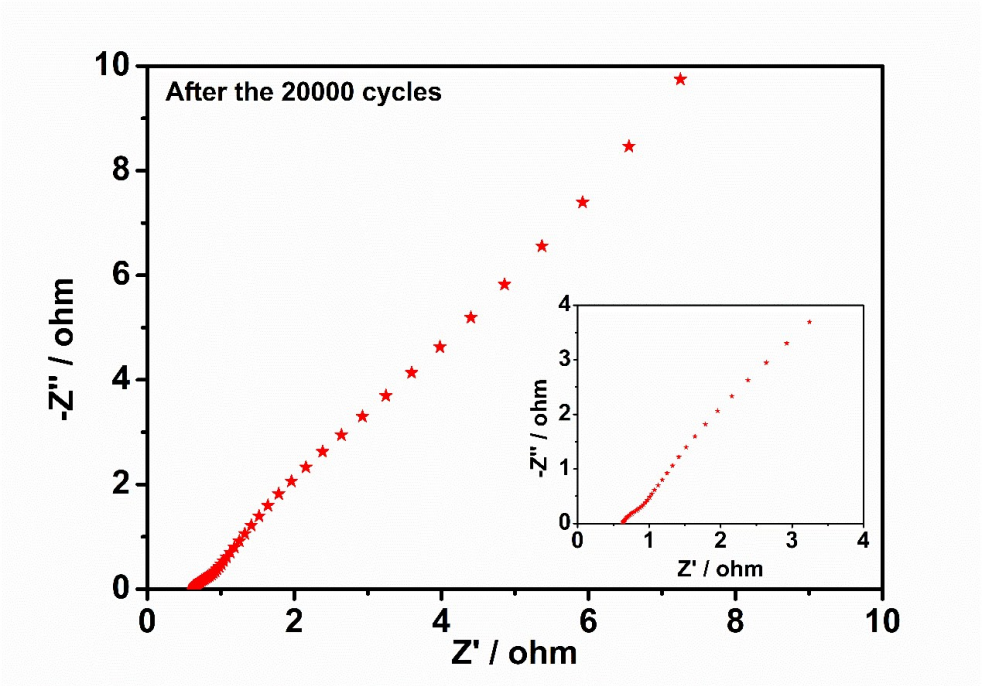


Fig. S7. EIS curves of the CoV_2O_6 (inset shows the magnified) after 20,000 cycles

Table S1. the Element Content of Co and V

Element	**Co**	**V**
Element content %	24.6	38.1

Table S2. A survey of electrochemical performance comparison

Description	**Specific Capacity ($F\ g^{-1}$)**	**Cycling Stability (%)**	**High Rate Capacity ($F\ g^{-1}$)**	**Reference**
CoV_2O_6	306.6 F g^{-1} at 1 A g^{-1}	83.30% after 20,000 cycles	219.2 F g^{-1} at 20 A g^{-1}	This work
CoV_2O_6[1]	223 F g^{-1} at 1 A g^{-1}	123.3% after 15,000 cycles	none	[1]
CoV_2O_6[2]	114.1 F g^{-1} at 1mA cm^{-2}	81.91% after 1,000 cycles	none	[2]
Pristine ZnV_3O_8[3]	219 F g^{-1} at 0.8 A g^{-1}	none	none	[3]

References:

1. Y. Wang, H. Chai, H. Dong, J. Xu, D. Jia and W. Zhou, *ACS applied materials & interfaces*, 2016, **8**, 27291-27297.
2. Y. Teng, Y. Li, D. Yu, Y. n. Meng, Y. Wu, X. Zhao and X. Liu, *ChemistrySelect*, 2019, **4**, 956-962.
3. W. H. Low, P. S. Khiew, S. S. Lim, C. W. Siong, C. H. Chia and E. R. Ezeigwe, *Journal of Alloys and Compounds*, 2019.