Supplementary Information

Porous $CoSe_2$ nanosheet arrays derived from zeolitic imidazolate framework on Ni foam for asymmetric supercapacitor

Jincheng Fan[a], Zhuo Peng[a], Meilin Chen[a], Wei Yang[a], Hanbo Zou[*a], Shengzhou Chen[*b]

a School of Chemistry and Chemical Engineering, Guangzhou University, Guangzhou 510006, China
b Guangzhou Key Laboratory for New Energy and Green Catalysis, Guangzhou University, Guangzhou 510006, China

Corresponding authors:

*[a] E-mail: *zouhb@gzhu.edu.cn (H. Zou)*
*[b] E-mail: *szchen@gzhu.edu.cn (S. Chen).*

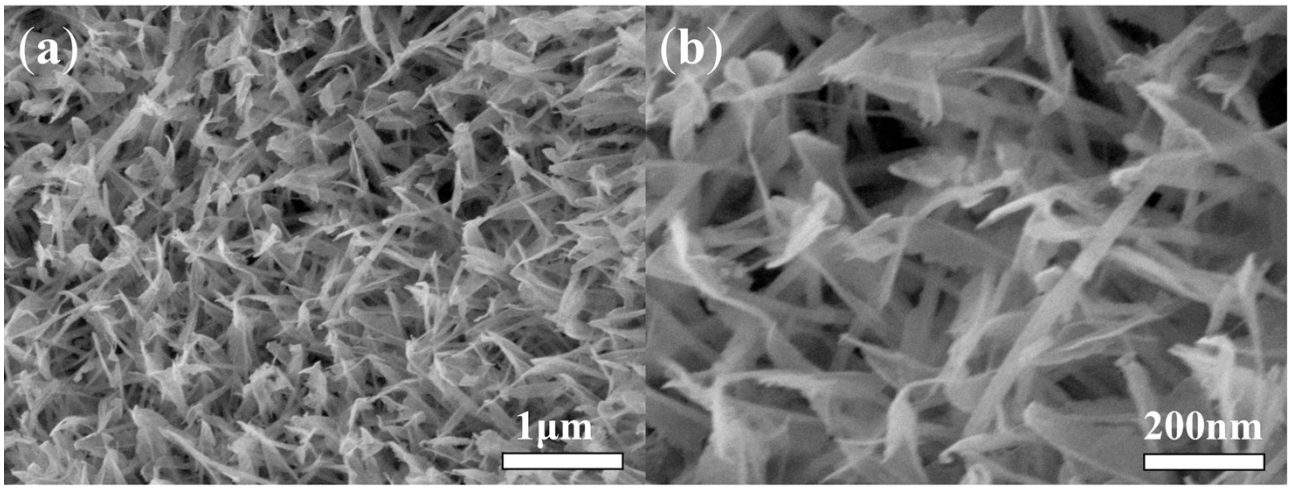

Fig. S1 SEM images of Co_3O_4 at different magnifications

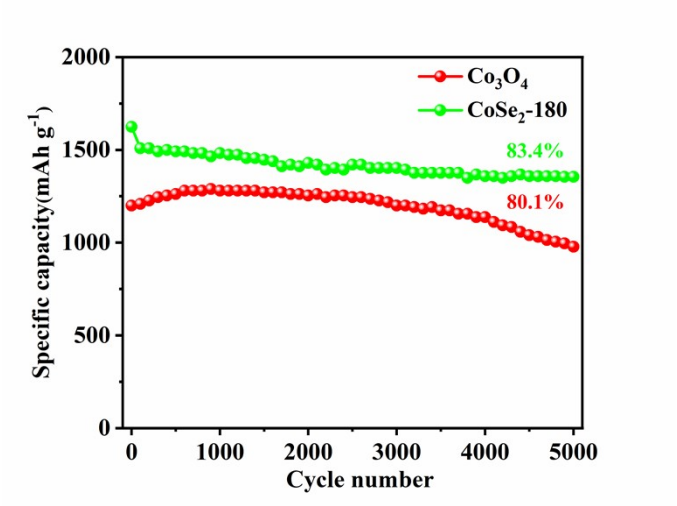

Fig. S2 Cycling performance of the Co_3O_4 and $CoSe_2$-180 electrodes

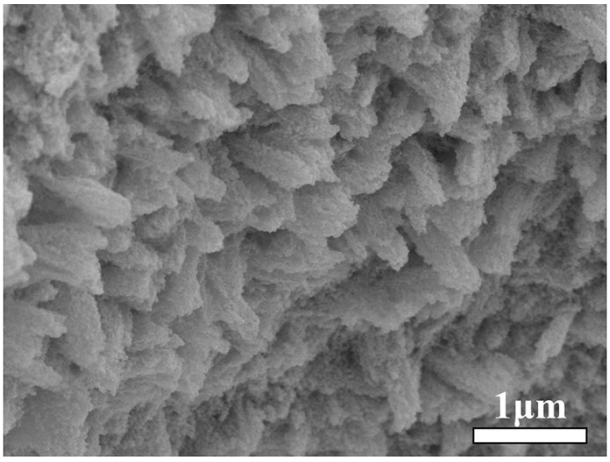

Fig. S3 SEM of $CoSe_2$-180 electrode after 5000 GCD cycles.

Table S1 Comparisons of specific capacity of the Co_3O_4 and $CoSe_2$-180 electrode

Current density (A g^{-1})	Specific capacity (mAh g^{-1})	
	Co_3O_4	$CoSe_2$-180
1	166.9	269.4
2	160.6	262.1
5	157.5	251.4
10	152.2	241.1
20	505	225.6

Table S2 Comparison of the electrical performance of different ASC devices

ASC device	Energy density (Wh kg^{-1})	Power density (W kg^{-1})	References
$CoSe_2$-180//AC	**45.6**	**800.8**	**This work**
E-$CoSe_2$/$Ni_{0.85}Se$//AC	40.5	538	[1]
$CoSe_2$/ NC-400//AC	40.9	980	[2]
$Co_{0.85}Se$ nanosheet//AC	39.7	789.6	[3]
Ni-Co-Se//AC	38.5	802.1	[4]
3D interconnected ultrathin CoSe nanosheets//AC	18.6	750	[5]
(Ni, Co)Se_2//BiSe	34.4	373	[6]

References

1. J. Lin, H. Wang, Y. Yan, X. Zheng, H. Jia, J. Qi, J. Cao, J. Tu, W. Fei and J. Feng, *J. Mater. Chem. A*, 2018, **6**, 19151-19158.
2. C. Miao, X. Xiao, Y. Gong, K. Zhu, K. Cheng, K. Ye, J. Yan, D. Cao, G. Wang and P. Xu, *ACS Appl Mater Interfaces*, 2020, **12**, 9365-9375.
3. C. Gong, M. Huang, P. Zhou, Z. Sun, L. Fan, J. Lin and J. Wu, *Appl. Surf. Sci.*, 2016, **362**, 469-476.
4. G. Qu, X. Zhang, G. Xiang, Y. Wei, J. Yin, Z. Wang, X. Zhang and X. Xu, *Chin. Chem. Lett.*, 2020, **31**, 2007-2012.
5. Y. Zhu, Z. Huang, Z. Hu, L. Xi, X. Ji and Y. Liu, *Electrochim. Acta*, 2018, **269**, 30-37.
6. H. Lei, J. Zhou, R. Zhao, H. Peng, Y. Xu, F. Wang, H. A. Hamouda, W. Zhang and G. Ma, *Electrochim. Acta*, 2020, **363**, 137206.