Supplementary Information

Unveiling the Mechanism of Fe-Doping-Enhanced Oxygen Evolution Reaction of CoSe

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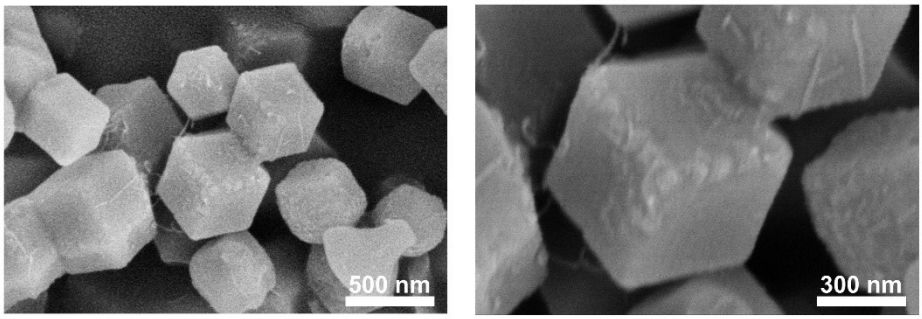

Figure S1. SEM images of Co-ZIF.

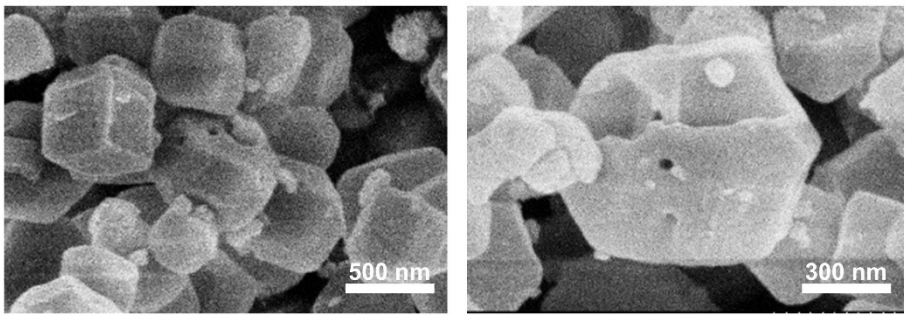

Figure S2. SEM images of CoFe-ZIF.

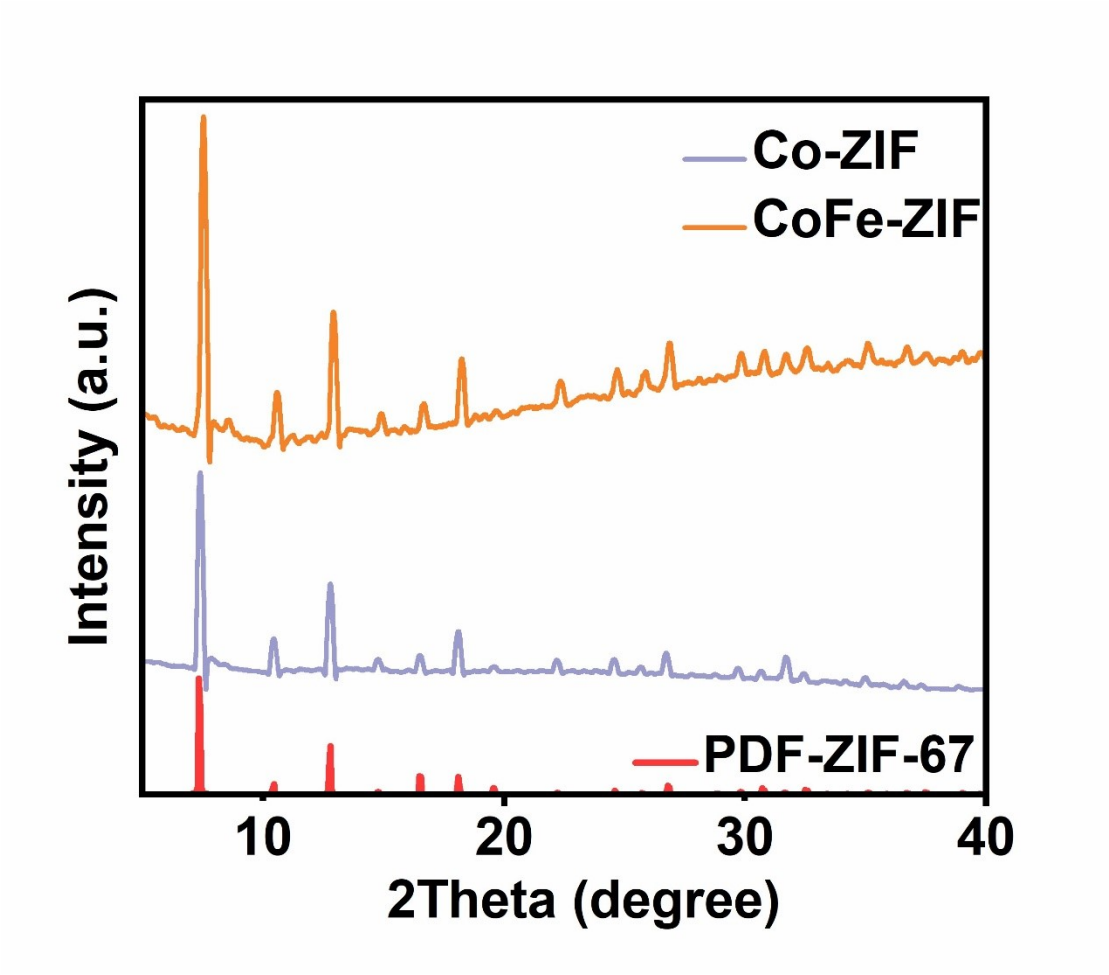

Figure S3. XRD patterns of Co-ZIF and CoFe-ZIF.

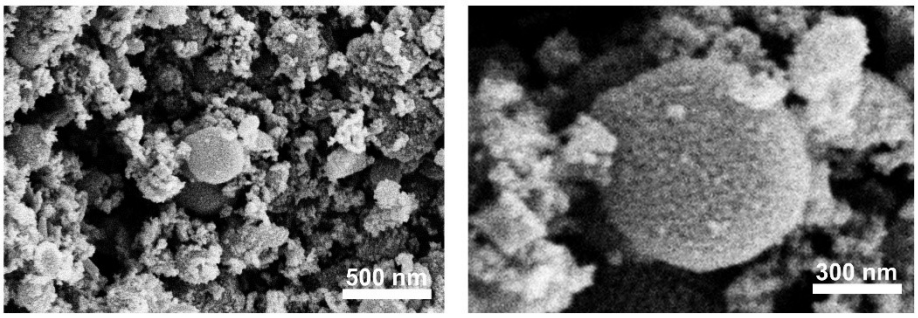

Figure S4. SEM images of CoFeSe.

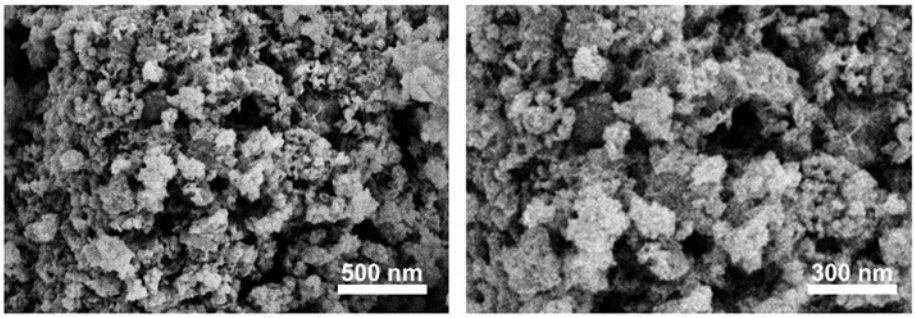

Figure S5. SEM images of CoSe.

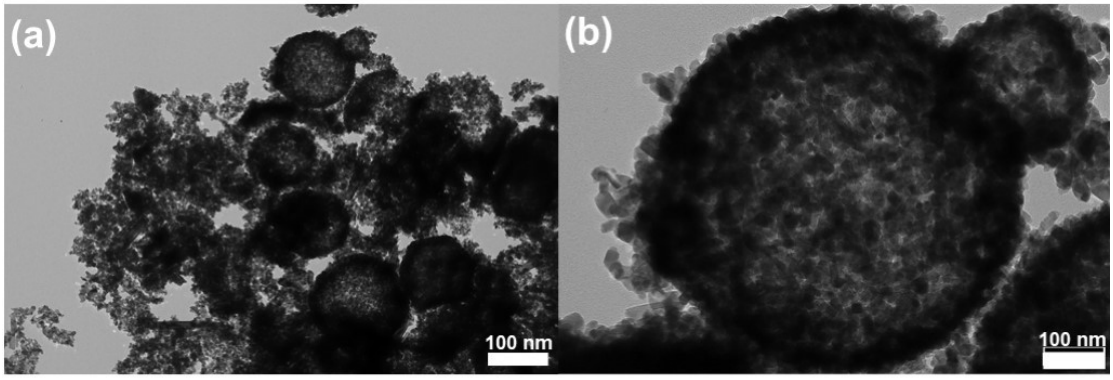

Figure S6. TEM images of CoFeSe.

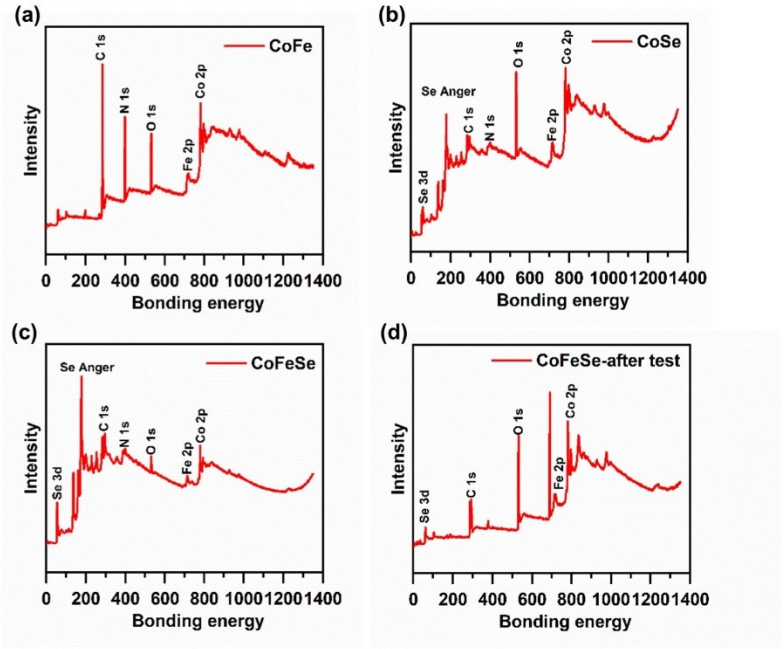

Figure S7. XPS overall spectrum of (a) CoFe-ZIF, (b) CoSe, (c) CoFeSe and (d) CoFeSe-after test in high-resolution.

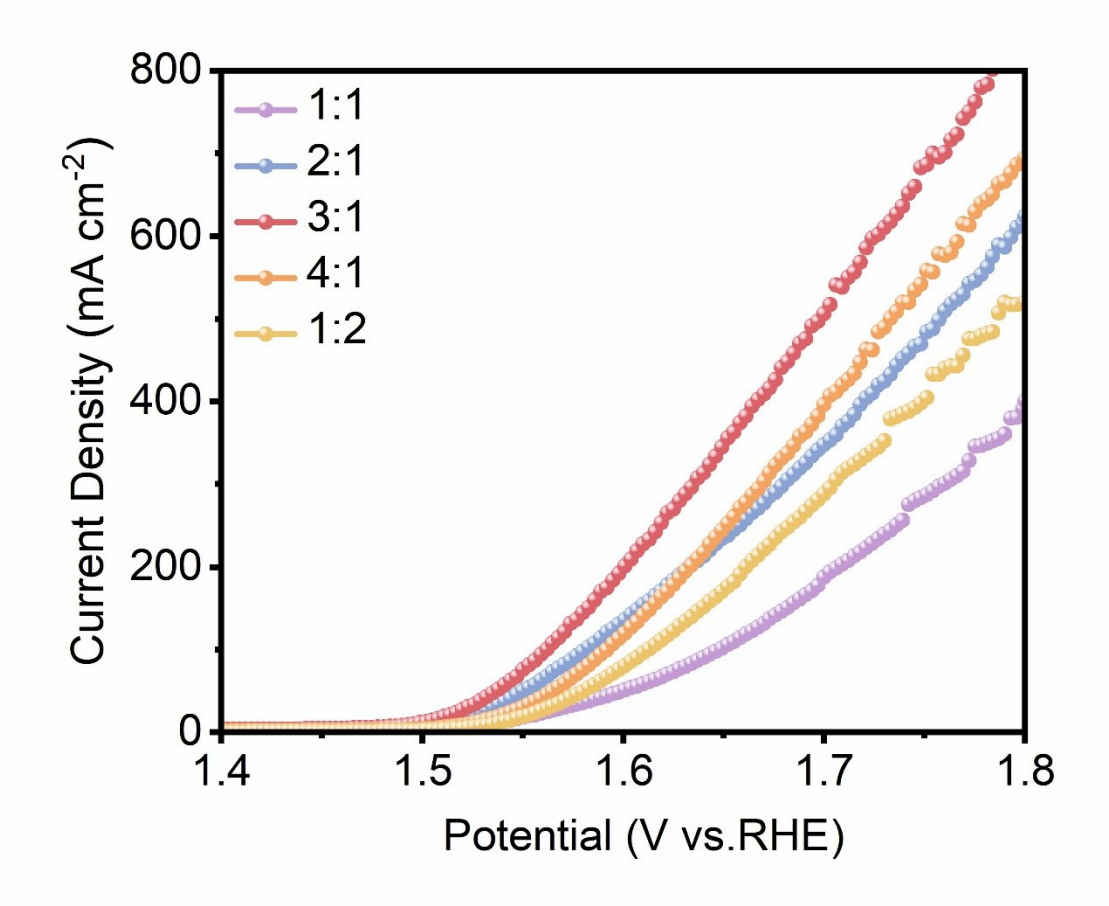

Figure S8. LSV curves of CoFeSe with different Se/Co ratios.

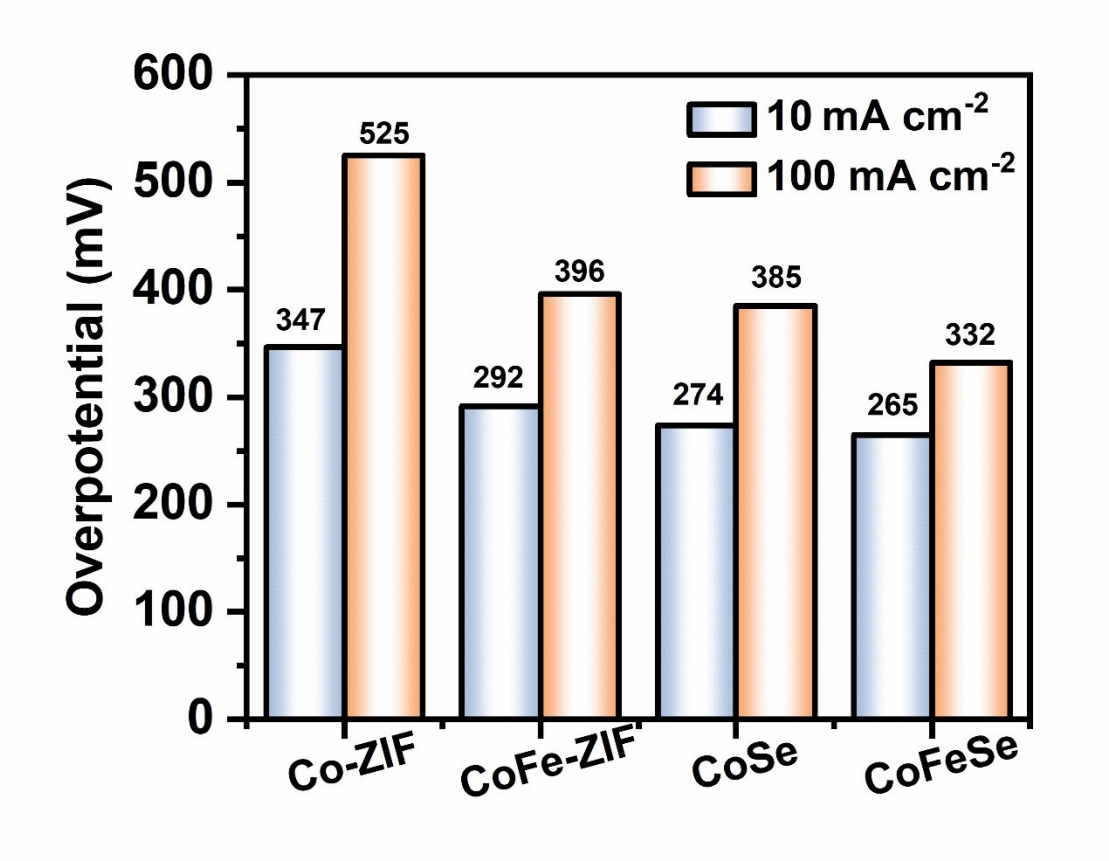

Figure S9. Overpotentials of the fabricated samples at the current densities 10 and 100 mA·cm^{-2}.

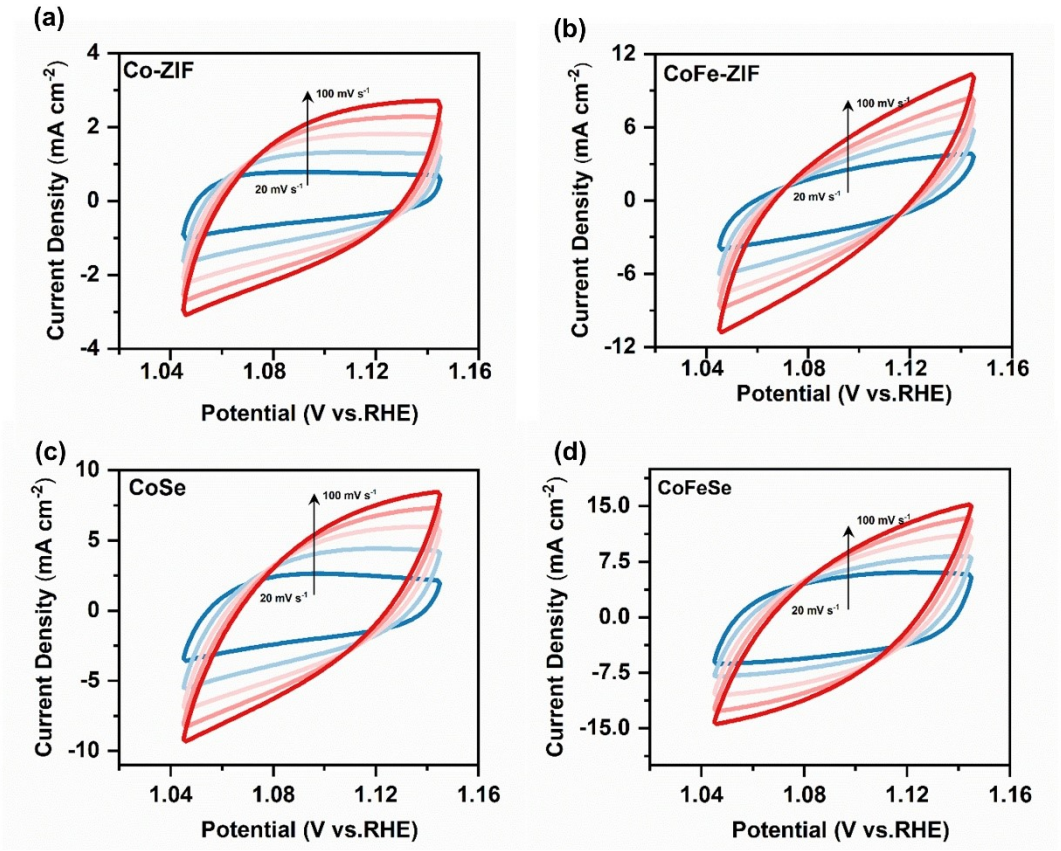

Figure S10. CV curves obtained in non-Faraday intervals for (a) Co-ZIF, (b) CoFe-ZIF, (c) CoSe, and (d) CoFeSe at different scan speeds from 20 to 100 mV s^{-1}.

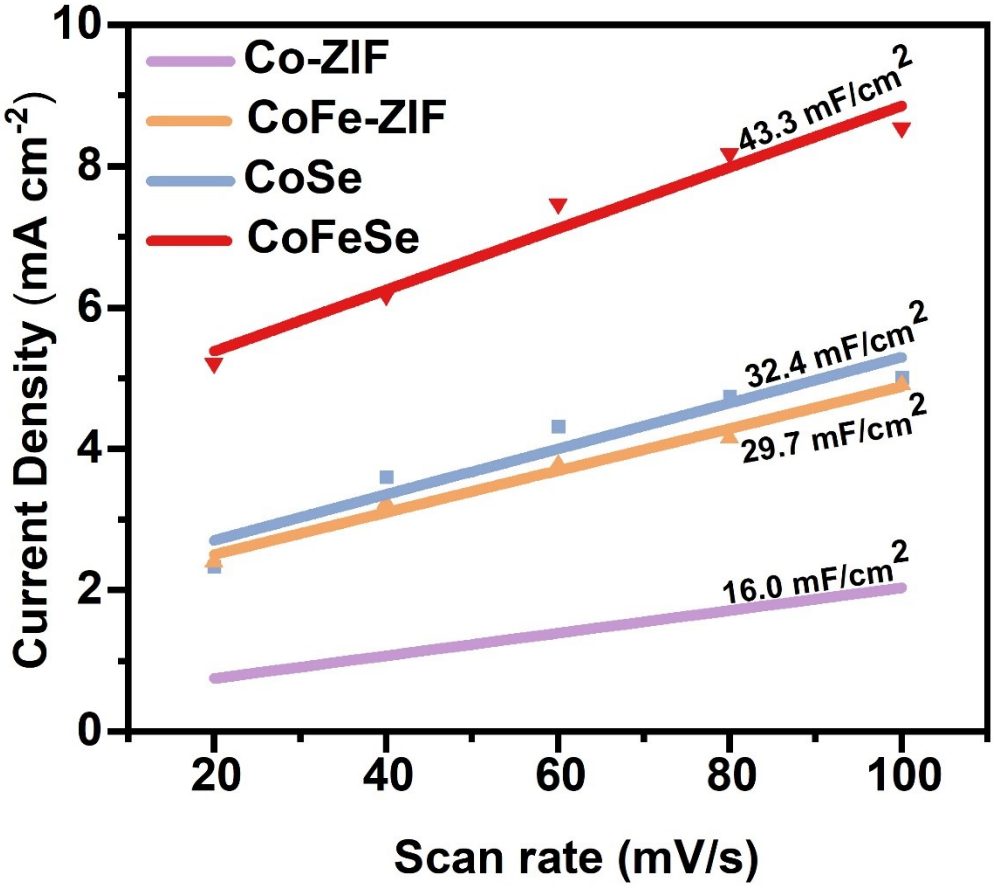

Figure S11. The C_{dl} of Co-ZIF, CoFe-ZIF, CoSe and CoFeSe.

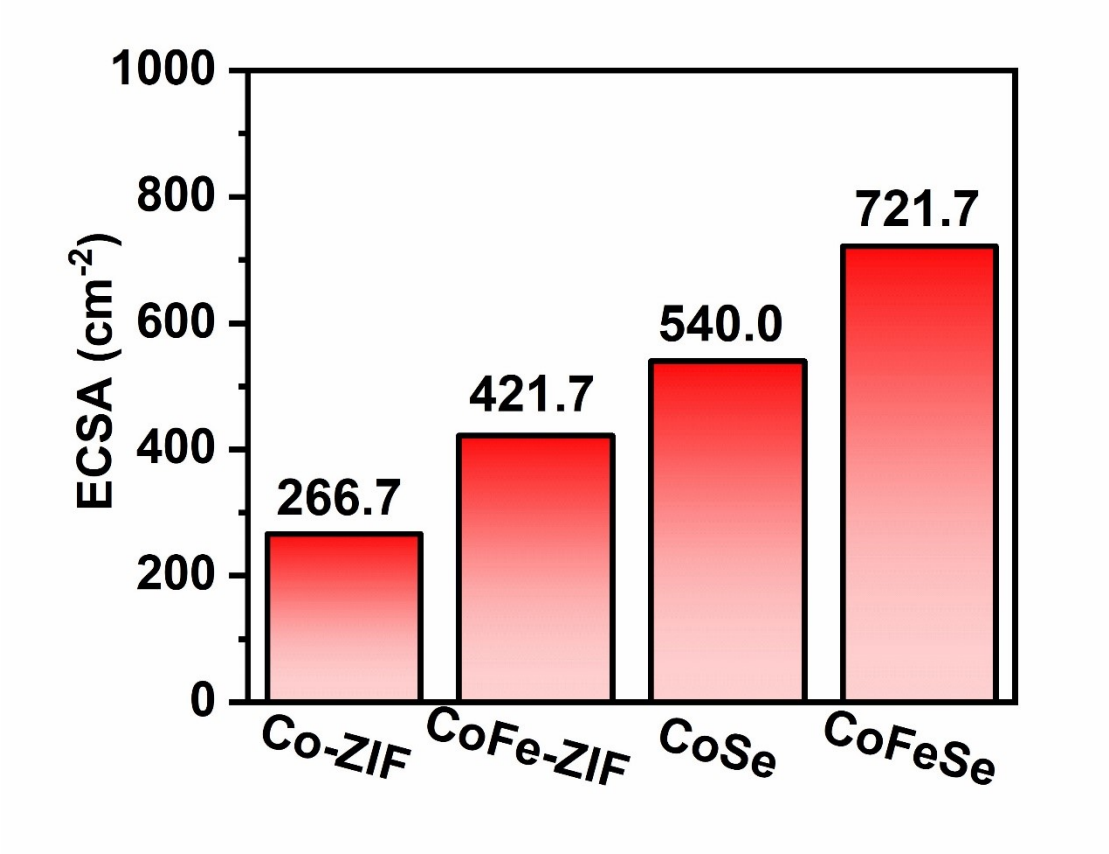

Figure S12. The ECSA of Co-ZIF, CoFe-ZIF, CoSe and CoFeSe.

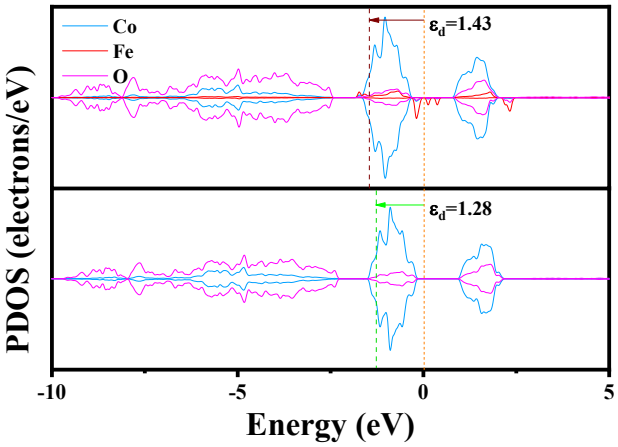

Figure S13 PDOS for CoOOH and CoFeOOH.

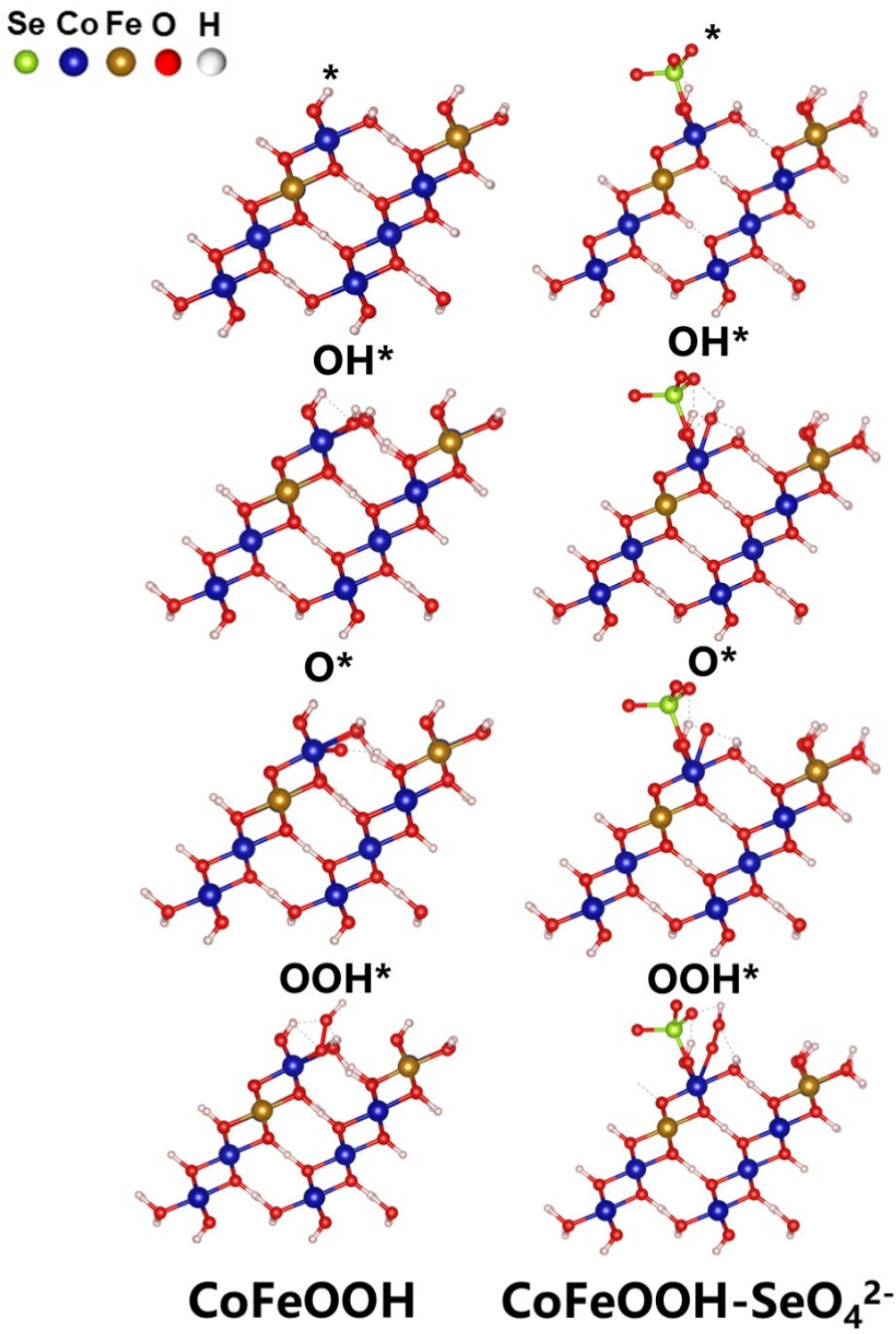

Figure S14 The balanced geometric configuration and intermediate adsorption structure of CoFeOOH and CoFeOOH-SeO_4^{2-}.

Table S1. The elements content in the fabricated samples based on the ICP-OES analysis

Catalysts	Co (wt.%)	Fe (wt.%)
CoFeSe	35.6%	3.29%
CoFe	34.8%	7.6%
CoSe	38.1%	

Table S2. Comparison of the overpotential and Tafel slope of CoFeSe with reported ZIF-67 derived catalysts in alkaline electrolyte.

Catalysts	Overpotential (mV)	Tafel (mV dec^{-1})	References
CoFeSe	265	57.3	This Work
$Co(OH)_2$-MoO_3/NF	273	72	1
NiCoP	273	88.9	2
Co-S@CA	291	61.8	3
ZIF@NiBiCo	300	77	4
CoNC@FePc	314	73.4	5
Z-67/Ni-V	320	71	6
ZIF-67@Ni@FeOOH	329	42.95	7
Cu_4-ZIF-67	340	65.64	8
ZIF-8/ZIF-67@Pd	340	85	9
ZIF-67 200	347	105.1	10
75NZ67	350	120	11
Co-LDH-1	354	79.06	12
NiFe-LDH-Sn/ZIF-67	360	79	13
ZIF-67@Fe28	379	130	14

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