Ir-doped $Co(OH)_2$ Nanosheets as Efficient Electrocatalyst for Oxygen Evolution Reaction

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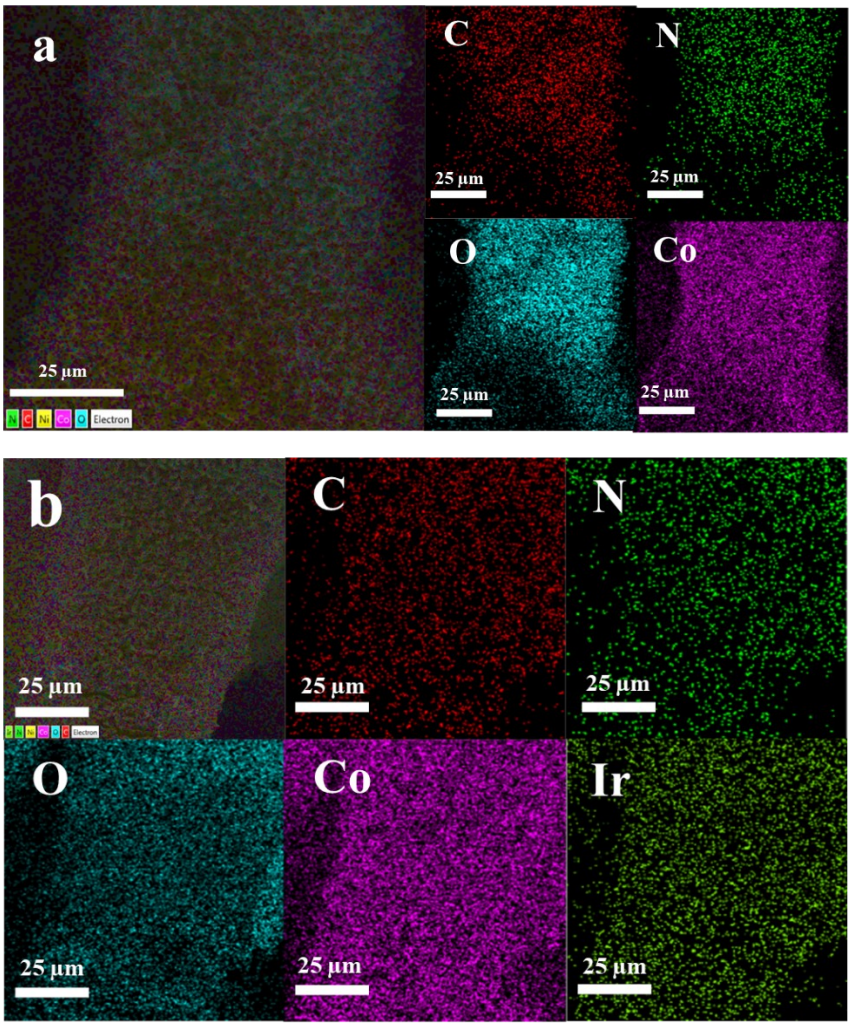

Fig. S1 SEM-EDS mapping images (a and b) of $Co(OH)_2$@ZIF-67/NF and Ir-$Co(OH)_2$@ZIF-67/NF.

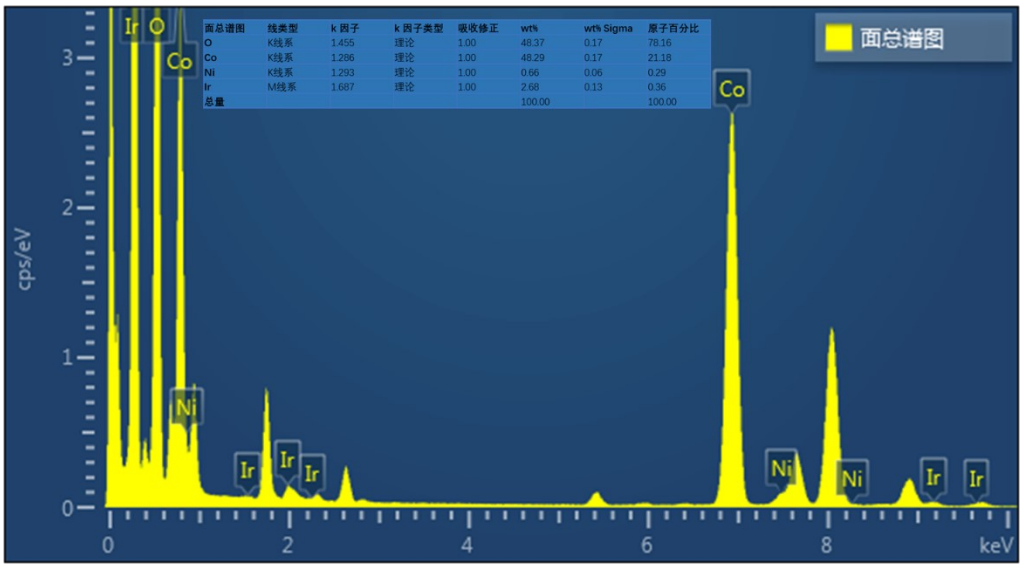

Fig. S2 TEM-EDS spectrum

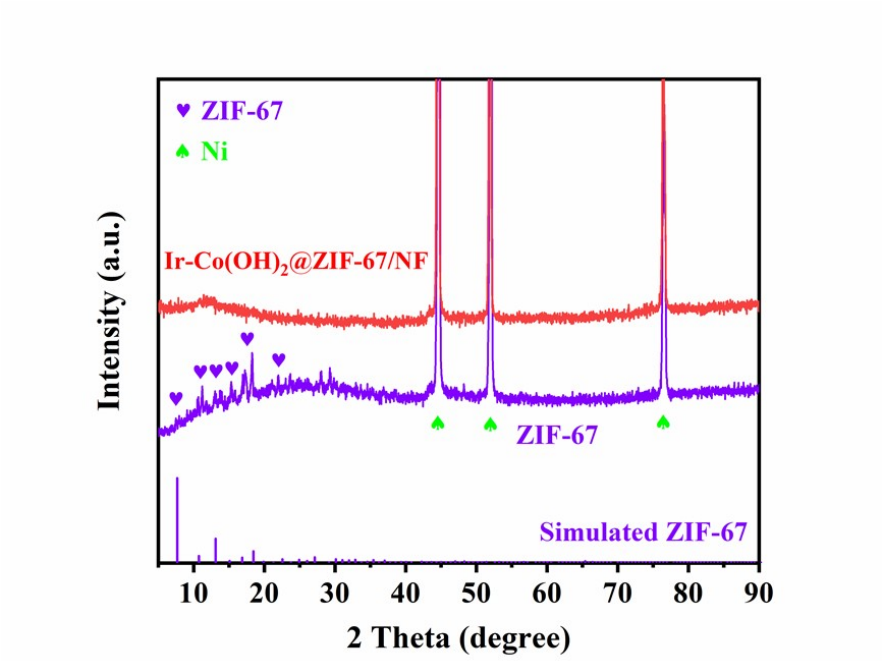

Fig. S3 X-ray diffraction patterns for ZIF-67/NF and Ir-Co$(OH)_2$@ZIF-67/NF

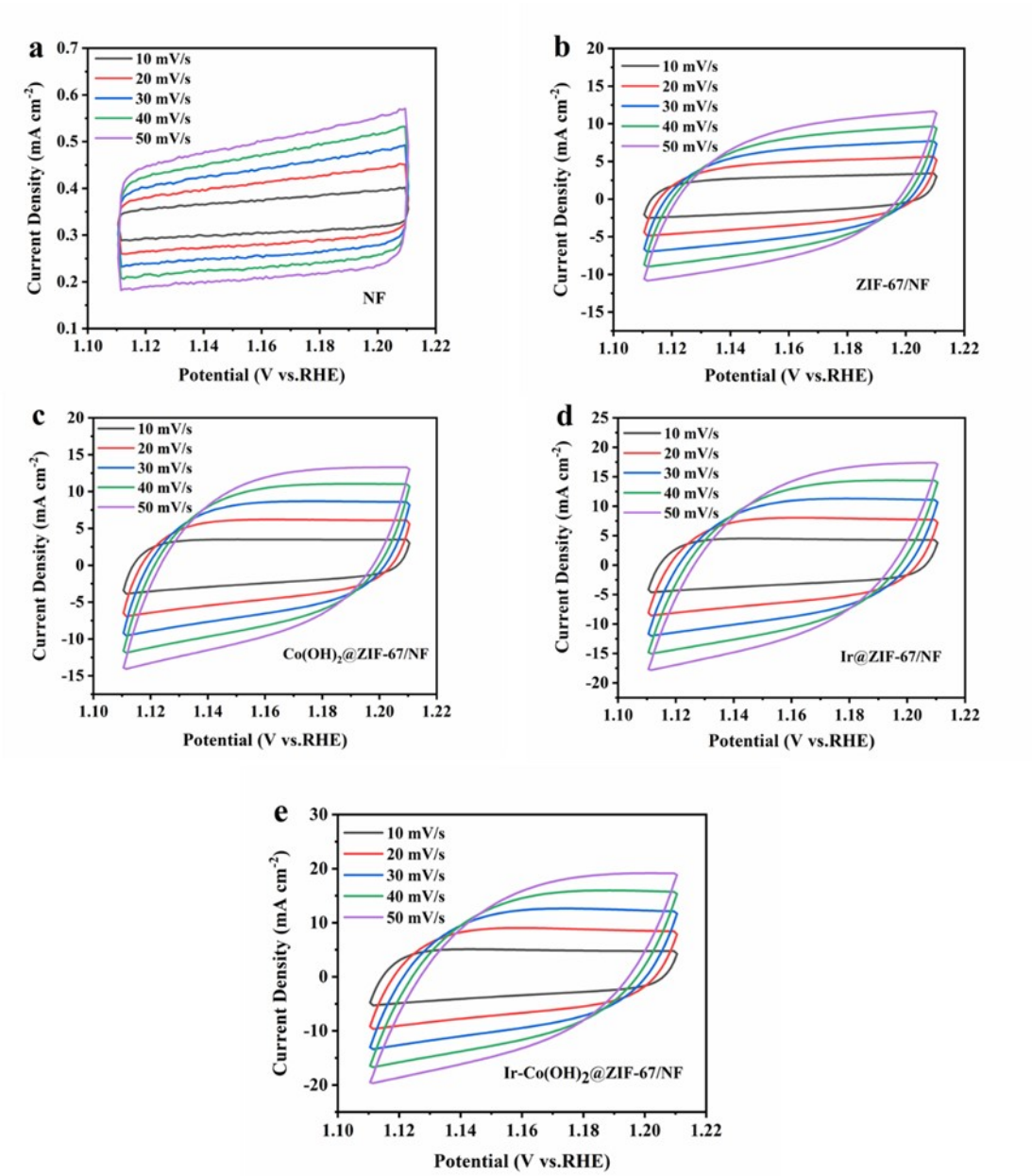

Fig. S4 Cyclic voltammograms (CV) of (a) NF, (b) ZIF-67/NF, (c) $Co(OH)_2$@ZIF-67/NF, (d) Ir@ZIF-67/NF, and (e) Ir-$Co(OH)_2$@ZIF-67/NF electrodes recorded in the non-Faradaic potential region (1.11 - 1.21 V vs. RHE) at different scan rates (10, 20, 30, 40, and 50 mV/s) toward OER in 1 M KOH.

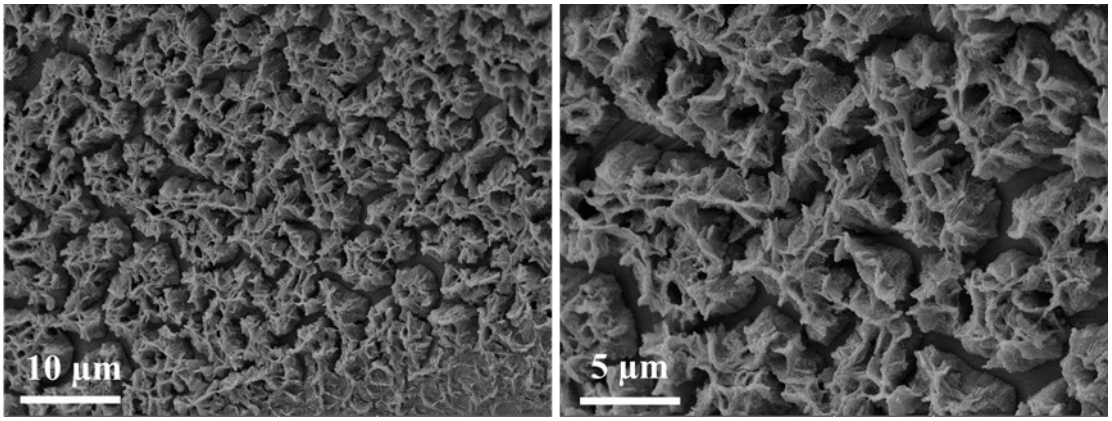

Fig. S5 SEM images after the stability test of Ir-$Co(OH)_2$@ZIF-67/NF

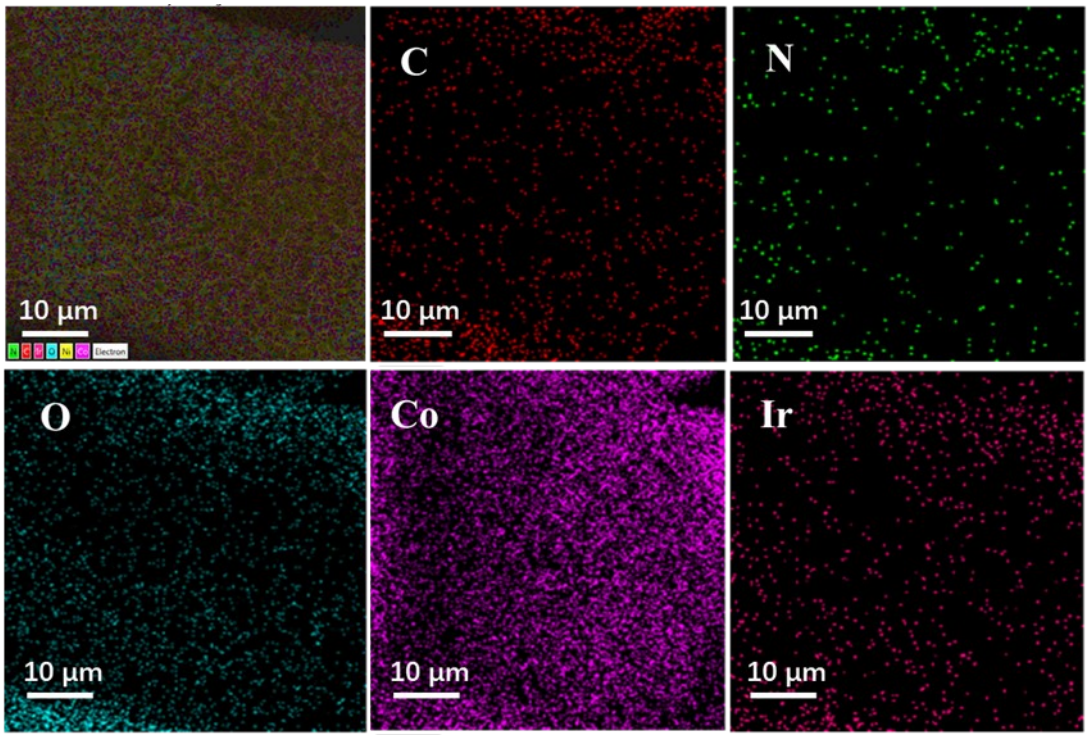

Fig. S6 SEM-EDS mapping images after the stability test of Ir-$Co(OH)_2$@ZIF-67/NF.

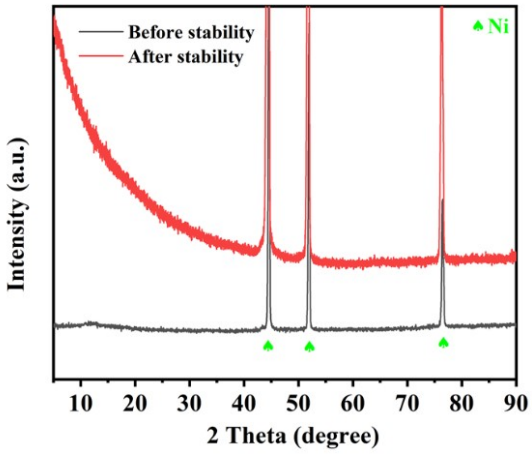

Fig. S7 Comparison of X-ray diffraction patterns before and after stability test of

Ir-Co(OH)$_2$@ZIF-67/NF

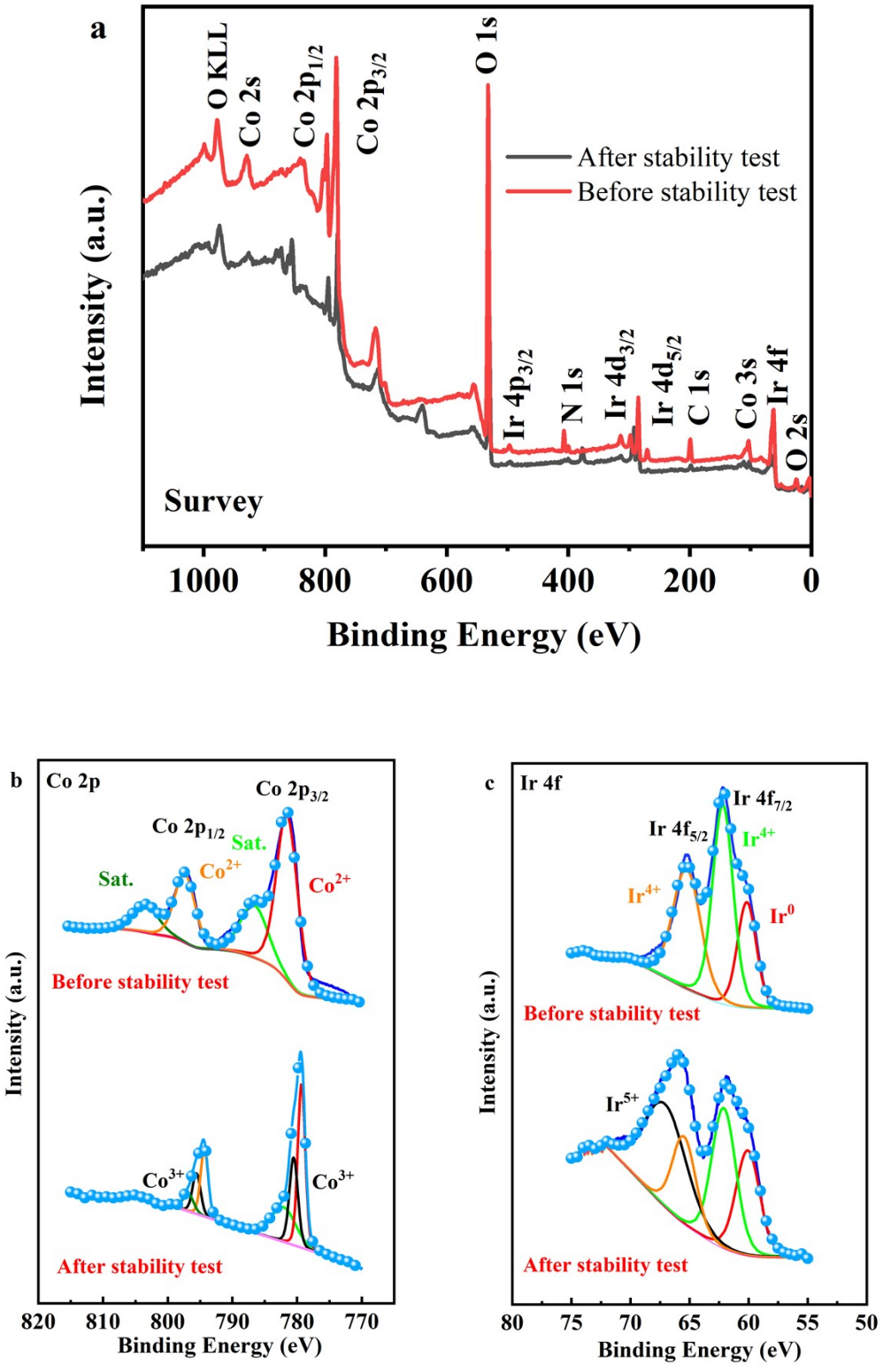

Fig. S8 Comparison of XPS spectra before and after stability test, (a) survey, (b) Co 2p, (c) Ir 4f

Table. S1 A performance comparison of Ir-$Co(OH)_2$@ZIF-67/NF to reported OER electrocatalysts in 1 M KOH recently.

Catalyst	**η_{10} (mV)**	**Reference**
Ir-$Co(OH)_2$@ZIF-67/NF	**198**	**This work**
Ir-$Ni(OH)_2$ nanocages	248	Chemical Engineering Journal 2022, 429, 132478
$Ba_{0.9}Sr_{0.1}Co_{0.8}Fe_{0.1}Ir_{0.1}O_{3-\delta}$	300	ACS Appl. Energy Mater. 2020, 3, 7149-7158.
Ir-$Co(OH)_2$ nanosheets	262	Dalton Trans., 2022, Advance Article.
IrO_2@MTO-S	240	ChemCatChem, 2019, 11, 583-592.
Ir@NG-750	273	J. Mater. Chem. A, 2020, 8, 19665-19673.
Ir/Ni Oxide	264	ACS Appl. Mater. Interfaces, 2016, 8, 15985-15990.
Co@Ir/NC-x	280	ACS Sustainable Chem. Eng., 2018, 6, 5105-5114.
IrO_2@Ir-MOF	207	J. Mater. Chem. A, 2020, 8, 25687-25695.
Cry-Ir	340	J. Mater. Chem. A, 2016, 4, 12561.
Ir-doped $NiCo_2O_4$ Nanostructure	303	Applied Catalysis A: General, 2021, 626, 118377.

Table. S2 Fitting parameters of Nyquist plots.

Catalyst	**R_{ct}/Ω**
ZIF-67/NF	7.547
$Co(OH)_2$@ZIF-67/NF	6.6
Ir@ZIF-67/NF	3.431
Ir-$Co(OH)_2$@ZIF-67/NF	**2.588**
NF	15.36