Supporting information for

A new type of catalyst for enhancing water decomposition capacity: MOFs-derived materials doped with citric acid

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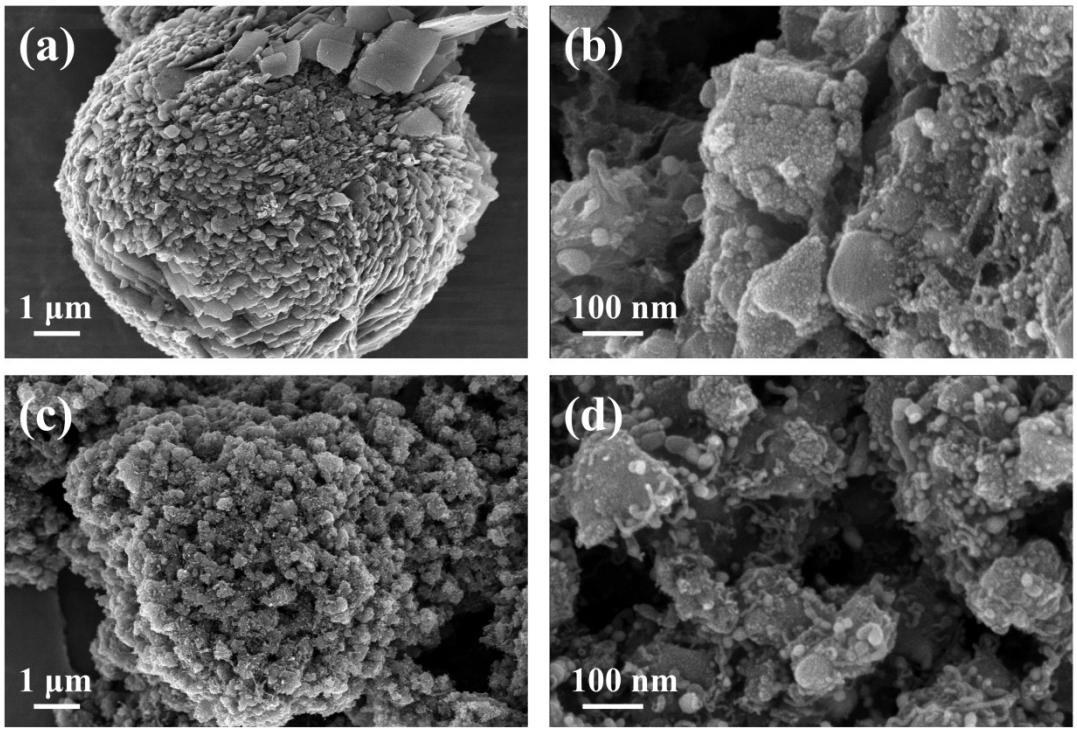

Figure S1 (a-b) SEM images of CA-Co-NC (c-d) SEM images of Co-NC

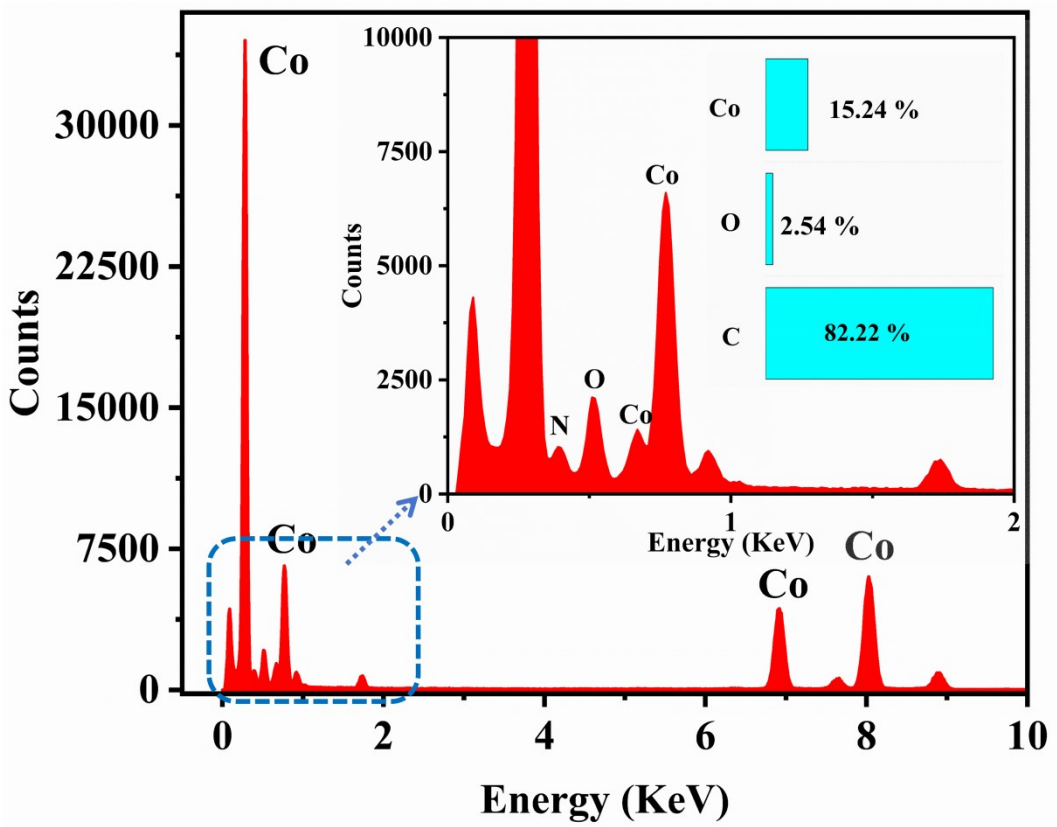

Figure S2 EDS mapping images and the corresponding element contents of CA-Co-NC

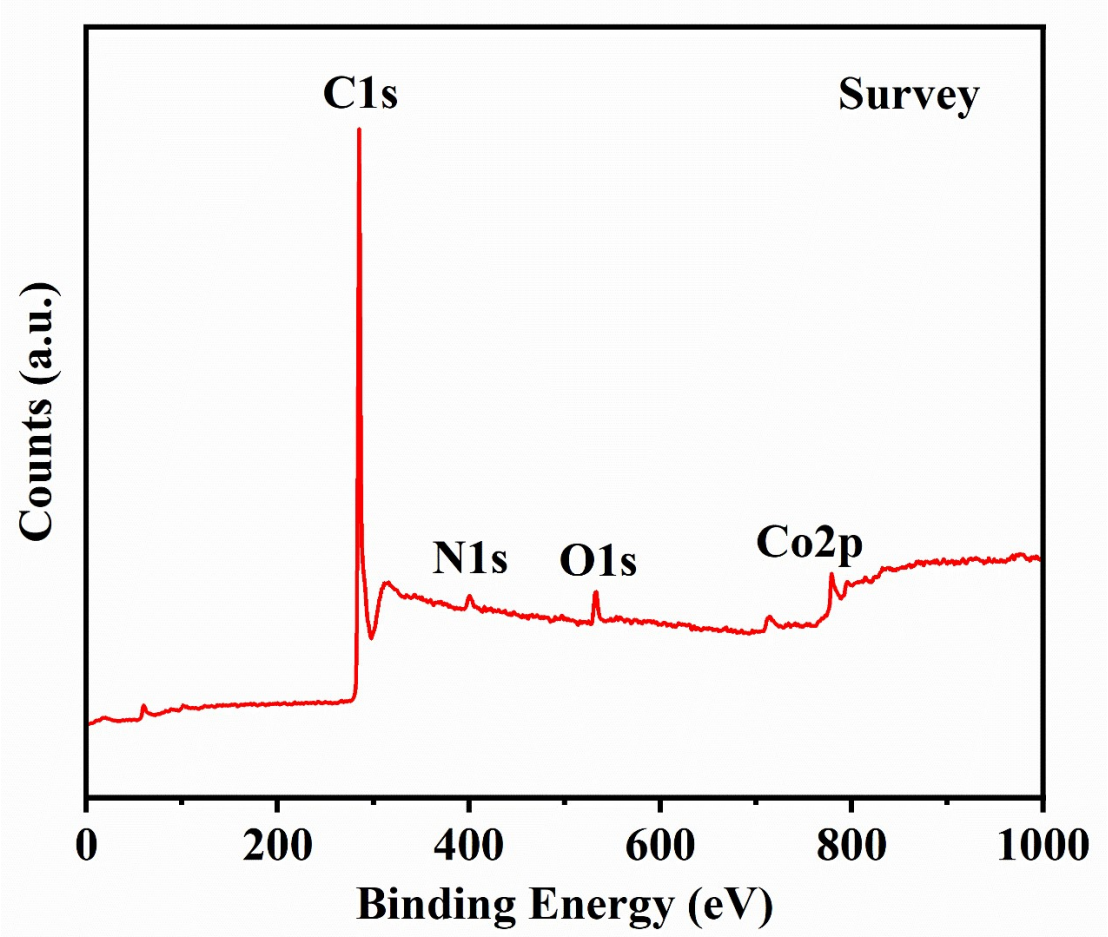

Figure S3 XPS survey spectrum of CA-Co-NC

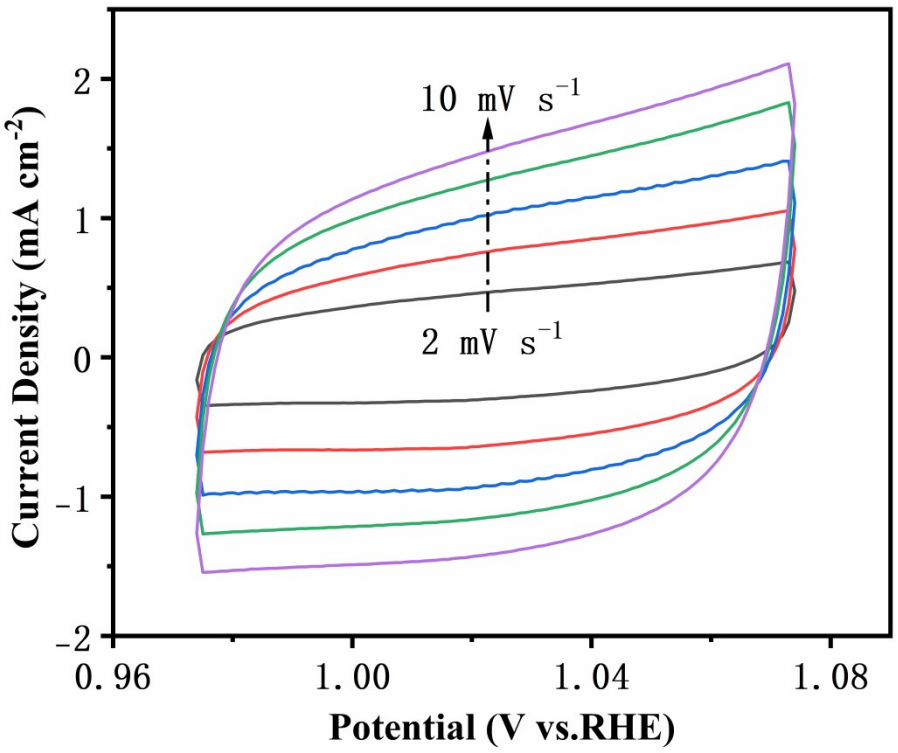

Figure S4 OER CV images under different scanning rates of CA-Co-NC

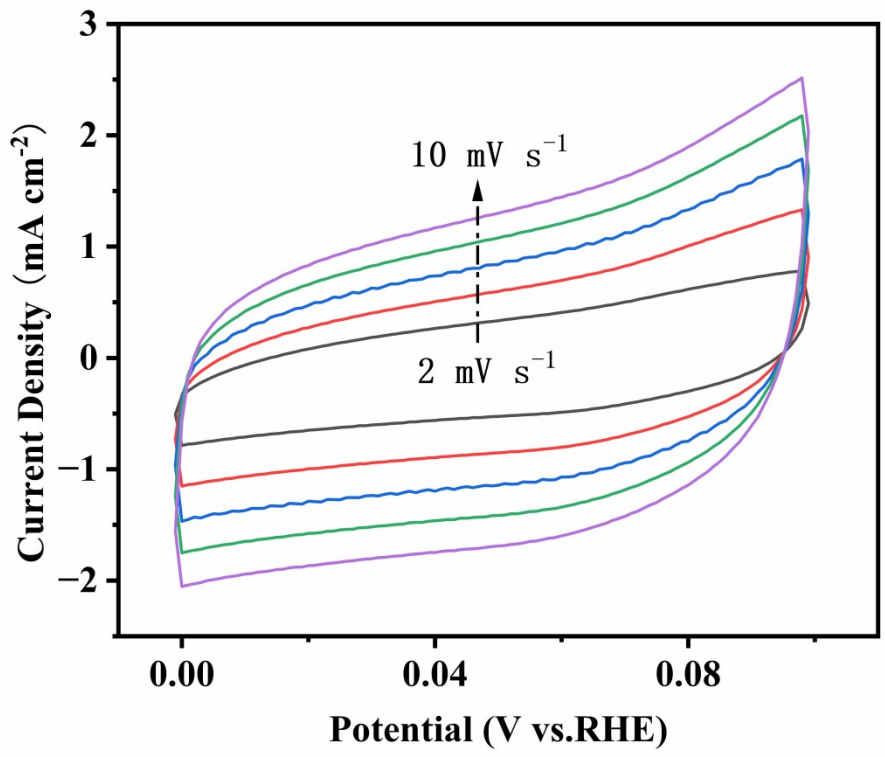

Figure S5 HER CV images under different scanning rates of CA-Co-NC

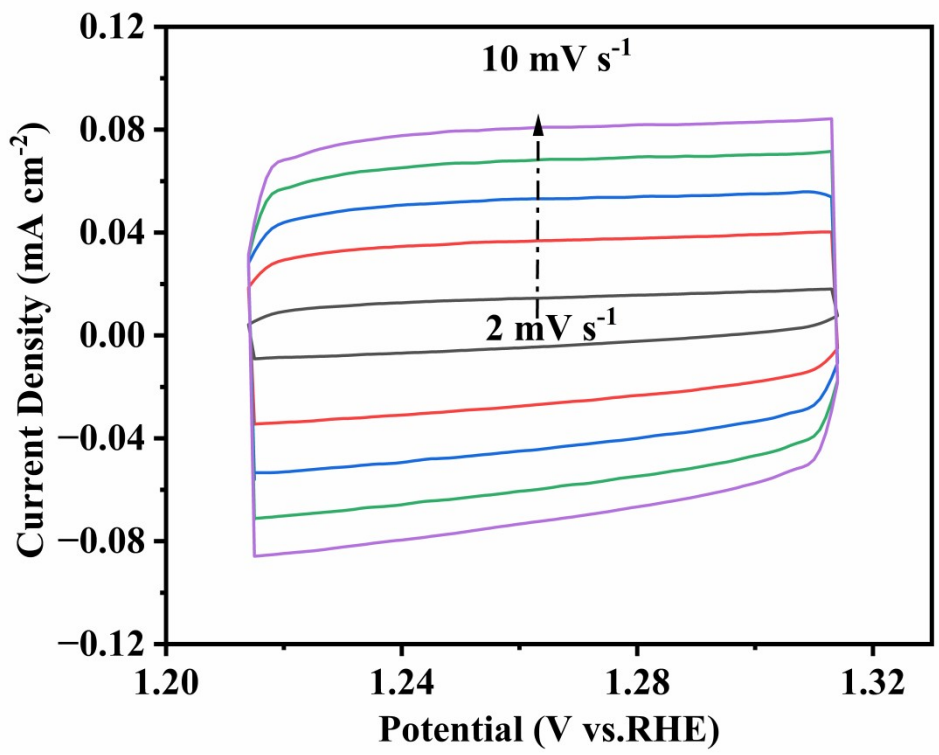

Figure S6 OER CV images under different scanning rates of IrO_2

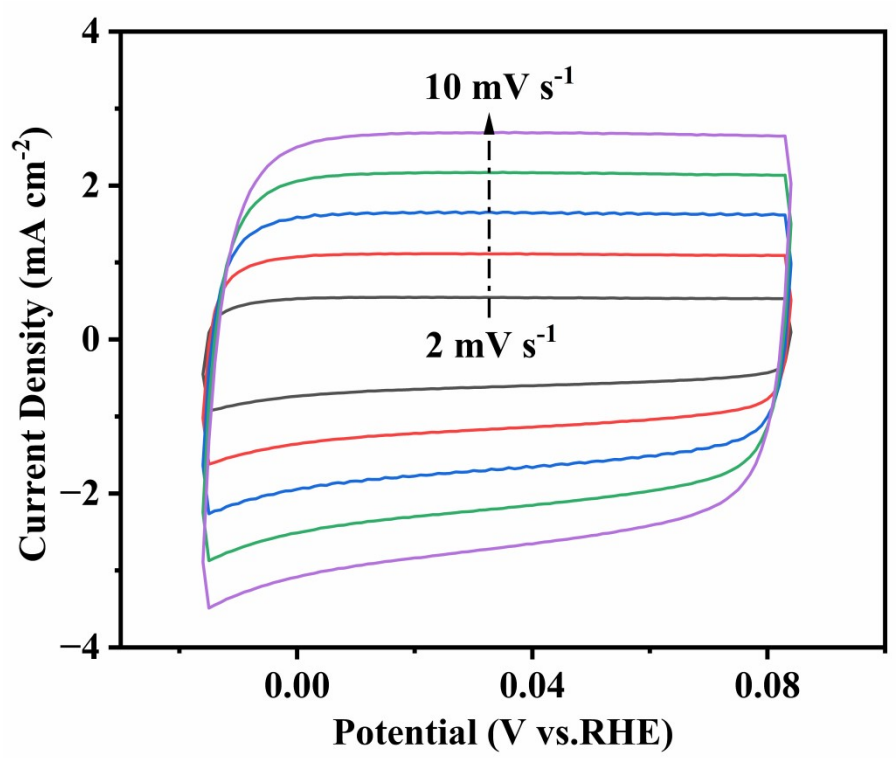

Figure S7 HER CV images under different scanning rates of Pt/C

Table S1 The element content of catalyst prepared by XPS test.

	Co-NC	CA-Co-NC
C (wt%)	86.5	91.73
N (wt%)	6.09	3.18
O (wt%)	5.13	3.37
Co (wt%)	1.43	1.27
Zn (wt%)	0.85	0.45

Table S2 Comparison of CA-Co-NC with some of the catalysts previously reported.

Catalyst	Periodical	Overpotential (mV)@10mA cm^{-2}				Cell voltage for overall water splitting (V) at 10 mA cm^{-2}	Ref.
		Electrolyte	OER	Electrolyte	HER		
CA-Co-NC	Physical Chemistry Chemical Physics	1 M KOH	361	1 M KOH	168	1.637	This work.
0.4 Co:FePi	Journal of Alloys and Compounds	1 M KOH	266	1 M H_3PO_4	82.3	1.72	**1**
$CoFe_2O_4$	Energy Technology	1 M KOH	300	1 M H_3PO_4	152	1.687	**2**
$Cu_{50}Co_{50}P$	ACS Applied Energy Materials,	1 M KOH	304	1 M KOH	184	1.72	**3**
$Co_5Mo_{1.0}O$ NSs@NF // $Co_5Mo_{1.0}P$ NSs@NF	Nano Energy	1 M KOH	270	0.5 M H_2SO_4	173	1.68	**4**

CFP-H3	Journal of Colloid and Interface Science	1 M KOH	251.9	1 M H_3PO_4	37.3	1.75	**5**
NCP	ACS Applied Energy Materials	1 M KOH	309	1 M KOH	236	1.745	**6**
Co-Cu-P/Cu	ACS Sustainable Chemistry & Engineering	1 M KOH	380	0.5 M H_2SO_4	261	1.8	**7**
Co/N-C-800	ACS Appl Mater Interfaces	1 M KOH	274	-	-	-	**8**
Co/Ce-NC	Inorganic Chemistry	1 M KOH	340	-	-	-	**9**
Co@CNT-NC	Journal of Power Sources	1 M KOH	404	-	-	-	**10**
Co@CNT-NC	Journal of Power Sources	1 M KOH	493	-	-	-	**10**
NiCo-MOF	Inorganic Chemistry Communications	-	-	1 M KOH	125	-	**11**
NF-PVP/Mn_4Co	Catalysis Surveys from Asia	-	-	1 M KOH	100	-	**12**

$Co_9S_8/CoS_{1.097}$/rGO	ChemElectroChem	-	-	0.5 M H_2SO_4	188	-	**13**

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