

**Table S1.** Data on  $E_{1/2}$  ORR catalysts from the literature.

Catalyst	$E_{1/2}$ (V vs. RHE)	Application	Electrolyte	Ref.
Fe-SAs@NCTCs	0.91	ORR	0.1 M KOH	[53]
Fe-N-C	0.85 V	ORR	0.5 M H <sub>2</sub> SO <sub>4</sub>	[56]
Ti <sub>3</sub> C <sub>2</sub> MXene	0.92	ORR	0.1 M KOH	[59]
Fe/S <sub>2</sub> -NC	0.91	ORR	0.1 M KOH	[69]
Cu-SA/SNC	0.893	ORR	0.1 M KOH	[73]
CuSACs	0.81	ORR	0.1 M KOH	[74]
Cu-SACs	0.895	ORR	0.1 M KOH	[75]
Cu-NGS	0.81	ORR	0.1 M KOH	[76]
Mn/C-NO	0.86	ORR	0.1 M KOH	[77]
S-Cu-ISA/SNC	0.918	ORR	0.1 M KOH	[79].
Mn-N-C	0.800	ORR	0.5 M H <sub>2</sub> SO <sub>4</sub>	[80]
Mn@NG	0.82	ORR	0.1 M KOH	[83]
Zn-N-C-1	0.873	ORR	0.1 M KOH	[86].
20Co-NC-1100	0.80	ORR	0.1 M HClO <sub>4</sub>	[91]
W-N-C	0.88	ORR	0.1 M KOH	[93]
Cr/N/C-950	0.773	ORR	0.1 M HClO <sub>4</sub>	[94]
Mg-SACs	0.91	ORR	0.1 M KOH	[96]
O-Zr-N-C	0.91	ORR	0.1 M KOH	[104]
N-Fe <sub>2</sub> MoC-GC	0.887	ORR	0.1 M KOH	[118]
Mn-Fe-N/S@mC	0.896	ORR	0.1 M KOH	[119]
Co <sub>2</sub> /Fe-N@CHC	0.915	ORR	0.1 M KOH	[136]
Ru-N/G	0.75	ORR	0.1 M HClO <sub>4</sub>	[145]
Ru-SSC	0.824	ORR	0.1 M HClO <sub>4</sub>	[146]
IrSACs	0.831	ORR	0.1 M HClO <sub>4</sub>	[147]
BCICNTs	0.84	ORR	0.1 M KOH	[174]
GH-BGQD <sub>2</sub>	0.87	ORR/OER/HER	0.1 M KOH	[175]
NCNT-10	0.82	ORR	0.1 M KOH	[179]
NOSC <sub>8</sub> -900	0.74	ORR	0.1 M KOH	[182]
S-N-C	0.835	ORR	0.1 M KOH	[184]
ECN-950	0.97	ORR	0.1 M NaOH	[194]
D-NSOC	0.81	ORR/OER	0.1 M KOH	[198]
Pd <sub>3</sub> Co-BMOF	0.977	ORR	0.1 M KOH	[206]
MIL-101@ZIF-67	0.86	ORR	0.1 M KOH	[207]
Fe <sub>1</sub> Co <sub>2</sub> -NC	0.88	ORR	0.1 M KOH	[210]
Fe <sub>2</sub> Co <sub>2</sub> Ni <sub>2</sub> /N-CNT	0.749	ORR	0.1 M KOH	[232]
FeCoNiCuPd-HEANP	0.90	ORR	0.1 M KOH	[274]
PdCuMoNiCoNHS/RGO <sub>3</sub> -CNT	0.86	ORR	0.1 M KOH	[275]
HESACs (FeCoNiCuMn)	0.887 V	ORR	0.1 M KOH	[280]
(3DOM) Co <sub>3</sub> O <sub>4</sub>	0.839	ORR/OER	0.1 M KOH	[289]
Co <sub>3</sub> O <sub>4</sub> (x)/Ism-TiO <sub>2</sub>	0.70	ORR/OER	0.1 M KOH	[297]
Co <sub>9</sub> S <sub>8</sub> -N-C	0.70	ORR	0.1 M NaOH	[315]
VO <sub>x</sub> N <sub>y</sub> -CNTs	0.77	ORR	0.1 M KOH	[318]
Co <sub>2</sub> N/CoP@PNCNTs	0.85	ORR	0.1 M KOH	[319]
Fe <sub>3</sub> C@NCNF-900	0.342	ORR	0.1 M HClO <sub>4</sub>	[322]
P-O/FeN <sub>4</sub> -CNS	0.89	ORR	0.1 M KOH	[323]
YF <sub>3</sub> @NC	0.836	ORR	0.1 M KOH	[328]