Supplementary Materials: Kinetic Analysis of Oxygen Evolution on Spin-coated Thin-film Electrodes by Electrochemical Impedance Spectroscopy

Yu-Wei Lin [1†], Yi-Syuan Li [1†], Chun-Wei Chang [1], Li-Cheng Huang [1], Tai-Hsin Yin [1], Yu-Ting Liu [1], Dong Kyoo Park [2], Changsik Choi [2,*] and YongMan Choi [1,*]

[1] College of Photonics, National Yang Ming Chiao Tung University, Tainan 71150, Taiwan
[2] Clean Energy Conversion Research Center, Institute for Advanced Engineering, Yongin 17180, Republic of Korea
* Correspondence: cschoi@iae.re.kr (C.C.); ymchoi@nycu.edu.tw (Y.C.)
† These authors contributed equally to this work.

Table S1. Comparison of HER activities of Pt/C.

Electrocatalyst	Electrolyte	Overpotential@10mA/cm² (mV vs. RHE)	Substrate [1]	Year, Ref
Pt/C	0.1 M $HClO_4$	71.3	FTO	This work
Commercial Pt/C	0.5 M H_2SO_4	14.9	CP	2023, [56]
Commercial Pt/C	0.5 M H_2SO_4	25	CP	2023, [57]
Commercial Pt/C	0.5 M H_2SO_4	36	GCE	2023, [58]
Commercial Pt/C	0.5 M H_2SO_4	30	CP	2023, [59]
Commercial Pt/C	0.5 M H_2SO_4	29	GCE	2023, [60]
Commercial Pt/C	0.5 M H_2SO_4	90	Ti foil	2023, [61]
Commercial Pt/C	0.5 M H_2SO_4	28	GCE	2021, [62]
Commercial Pt/C	0.1 M $HClO_4$	50	GCE	2022, [63]
Pt/C	0.1 M $HClO_4$	16.3	RDE	2022, [64]

1. FTO, CP, GCE, and RDE are the substrates of fluorine-doped tin oxide glass, carbon fiber paper, glassy carbon electrodes, and rotating disk electrodes.

Table S2. Comparison of OER activities of IrO_2-based electrocatalysts**.**

Electrocatalyst	Electrolyte	Overpotential@10mA/cm² (mV vs. RHE)	Substrate	Year, Ref
IrO_2	0.1 M $HClO_4$	371.7	FTO	This work
Commercial IrO_2	0.1M $HClO_4$	347	GCE	2023, [68]
Commercial IrO_2	0.5 M H_2SO_4	295	Ti	2023, [69]
IrO_2	0.5 M H_2SO_4	323	FTO	2022, [70]
T- IrO_2	0.1 M $HClO_4$	197	GCE	2021, [71]
C- IrO_2	0.1 M $HClO_4$	276	GCE	2021, [71]
Np-IrO_2	0.5 M H_2SO_4	240	self-supported nanoporous electrode	2020, [72]
Commercial IrO_2	0.5 M H_2SO_4	350	GCE	2020, [73]
Commercial IrO_2	0.1 M $HClO_4$	350	GCE	2020, [74]
Commercial IrO_2	0.5 M H_2SO_4	315	GCE	2021, [75]
Commercial IrO_2	0.1 M $HClO_4$	342	GCE	2019, [76]
Commercial IrO_2	0.5 M H_2SO_4	321	GCE	2017, [77]