

Self-Supporting Mn–RuO₂ Nanoarrays for Stable Oxygen Evolution Reaction in Acid

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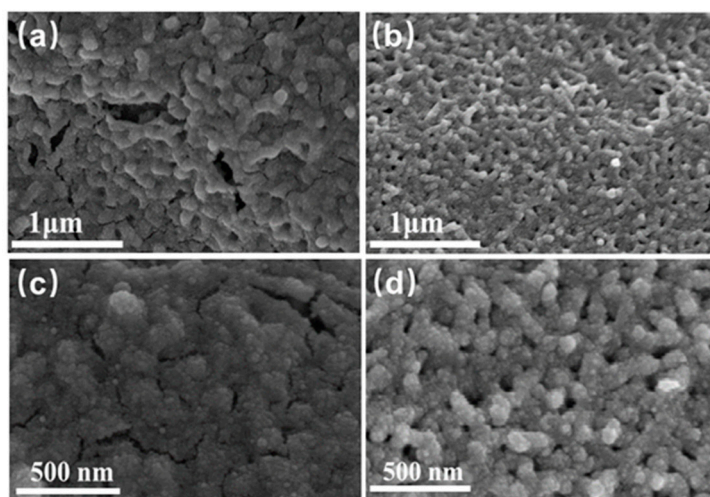


Figure S1: SEM of (a, c) Mn-RuO₂ (250) and (b, d) Mn-RuO₂ (350)

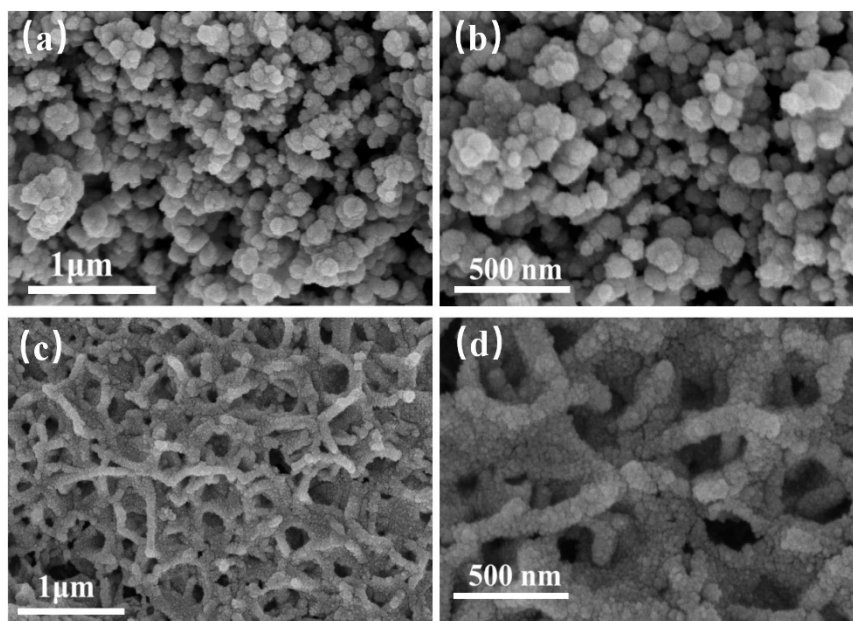


Figure S2. SEM images of commercial RuO₂ (a, b) and Mn-RuO₂ (300) (c, d).

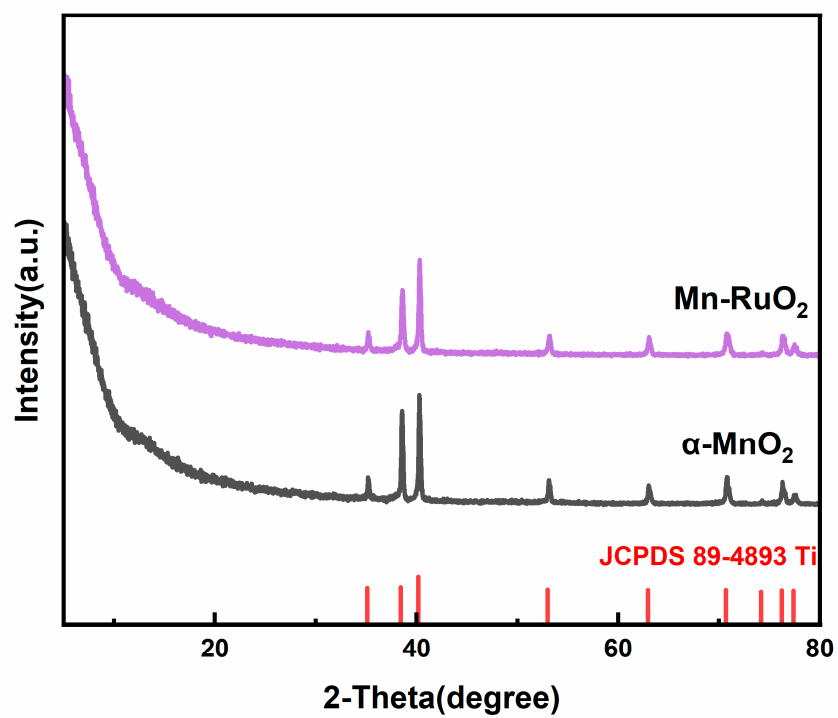


Figure S3. XRD pattern of Mn-RuO₂ (300) and α -MnO₂ nanoarrays.

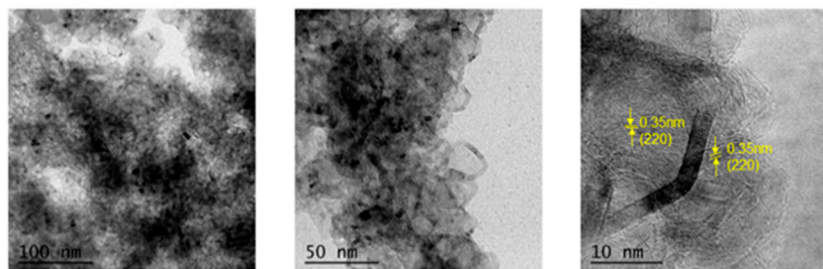


Figure S4: TEM images of α - MnO_2 .

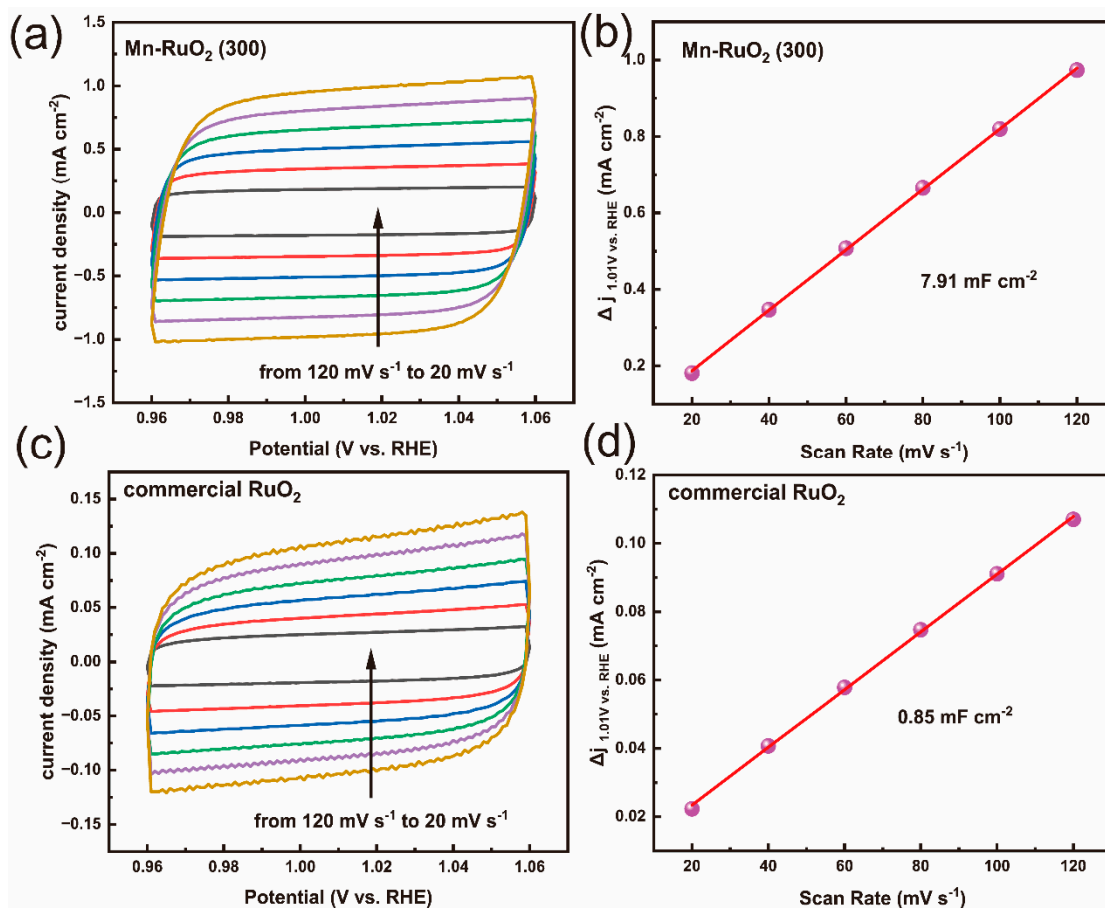


Figure S5. Measurements of the double layer capacitances. (a, b) Mn-RuO₂ (300) nanoarrays, (c, d) commercial RuO₂.

All CV curves with scan rates ranging from 20 mV s⁻¹ to 120 mV s⁻¹ with an interval point of 20 mV s⁻¹.

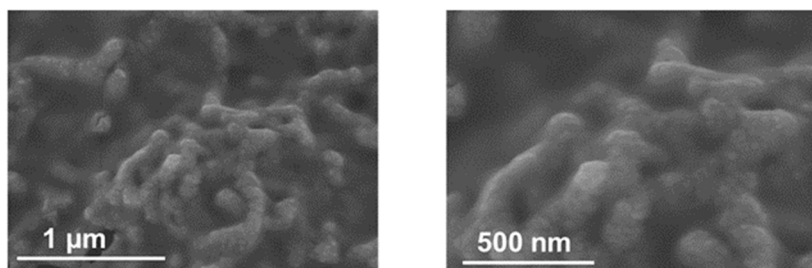


Figure S6: SEM images of Mn-RuO₂ (300) nanoarrays after 100-h chronopotentiometry test.

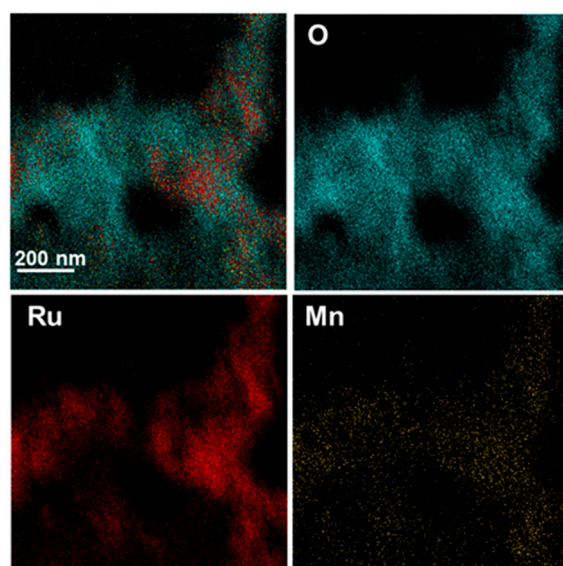


Figure S7: STEM images and elemental mapping images of O, Ru, and Mn of Mn-RuO₂ (300) nanoarrays after chronoamperometry test.

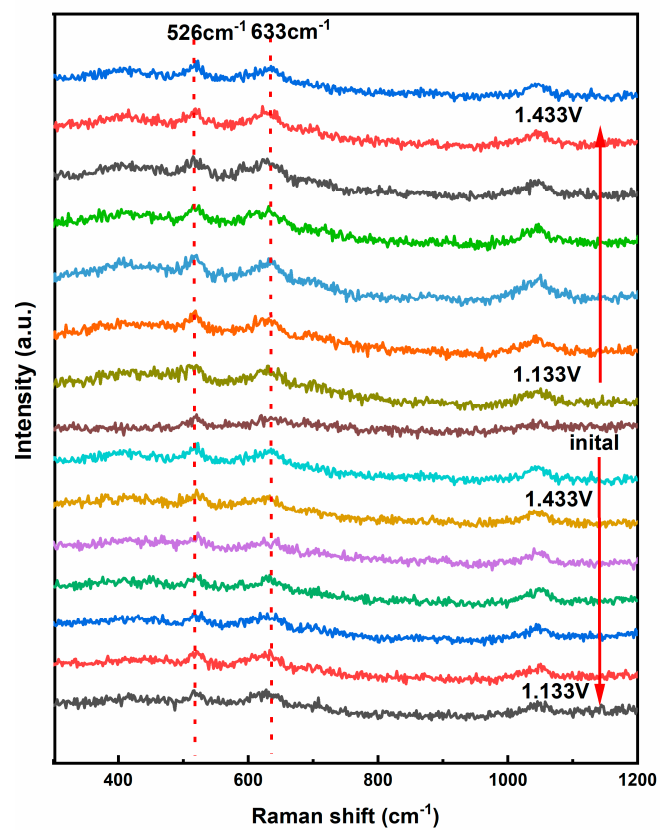


Figure S8. In-situ electrochemical Raman spectra of Mn-RuO₂(300) nanoarrays.

Table S1: ICP-OES analysis of Mn-RuO₂ (300)

Sample	Ru (mg cm ⁻²)	Mn (mg cm ⁻²)
Mn-RuO ₂ (300)	0.5	0.01

Table S2: ICP-OES analysis of dissolved Ru after stability test

Sample	Ru (mg)
Mn-RuO ₂	0.0346

Table S3: Comparison of OER activities between Mn-RuO₂ (300) and other electrocatalysts in acidic solutions.

Electrocatalyst	J (mA·cm ⁻²)	Overpotential(mV)	Stability	Electrolyte	Ref.
Mn-RuO₂ (300)	10	217	100h	0.5M H ₂ SO ₄	This work
R20-Mn	10	210	20h	0.5M H ₂ SO ₄	1
Mesoporous Ir nanosheets	10	240	8h	0.5M H ₂ SO ₄	2
Mn-RuO ₂	10	158	5000cycles	0.5M H ₂ SO ₄	3
Ir-SA@Fe@NCNT	10	250	11.5h	0.5M H ₂ SO ₄	4
Ru-N-C	10	267	30h	0.5M H ₂ SO ₄	5
Ir _{0.06} Co _{2.94} O ₄	10	297	200h	0.5M H ₂ SO ₄	6
Ru@FLC	10	258	5000cycles	0.5M H ₂ SO ₄	7
IrGa-IMC@IrO _x	10	272	3000cycles	0.1M HClO ₄	8
IrRu@Te	10	220	20h	0.5M H ₂ SO ₄	9
RuO ₂ /(Co,Mn) ₃ O ₄ /CC	10	270	24h	0.5M H ₂ SO ₄	10
(Ru, Mn) ₂ O ₃	10	168	40h	0.5M H ₂ SO ₄	11

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