

Supplementary Information

# Boosting Water Oxidation Activity via Carbon-Nitrogen Vacancies in NiFe Prussian Blue Analogue Electrocatalysts

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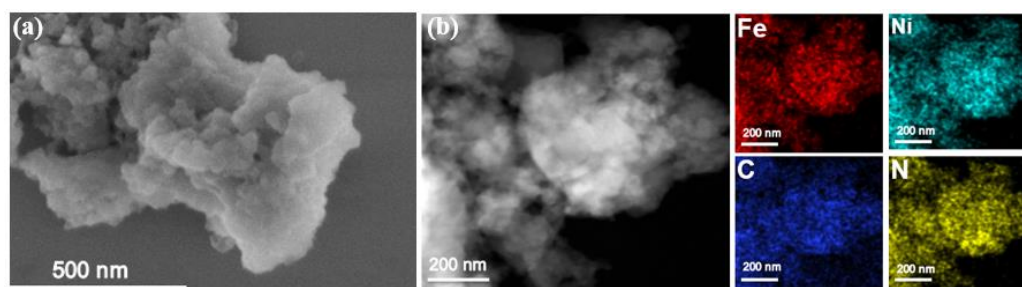


Figure S1. (a) SEM images of NiFe PBA (b) TEM element mapping D-NiFe PBA of Ni, Fe, N, and C.

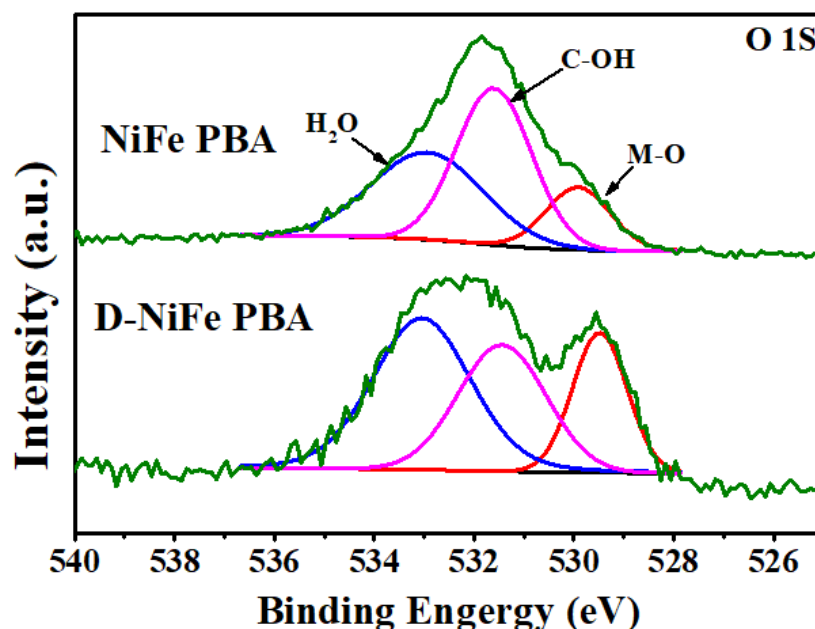


Figure S2. O 1s spectra of NiFe PBA and D-NiFe PBA.

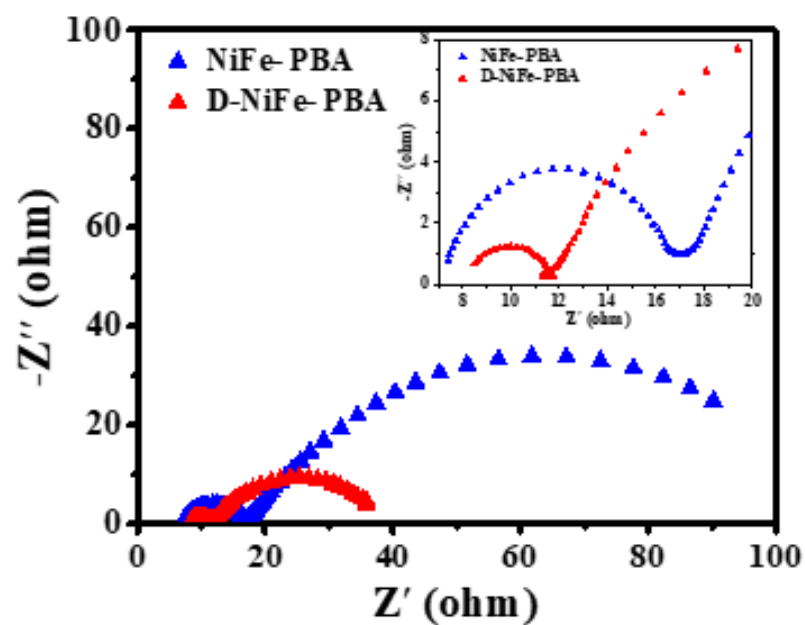


Figure S3. Nyquist plots of NiFe PBA and D-NiFe PBA.

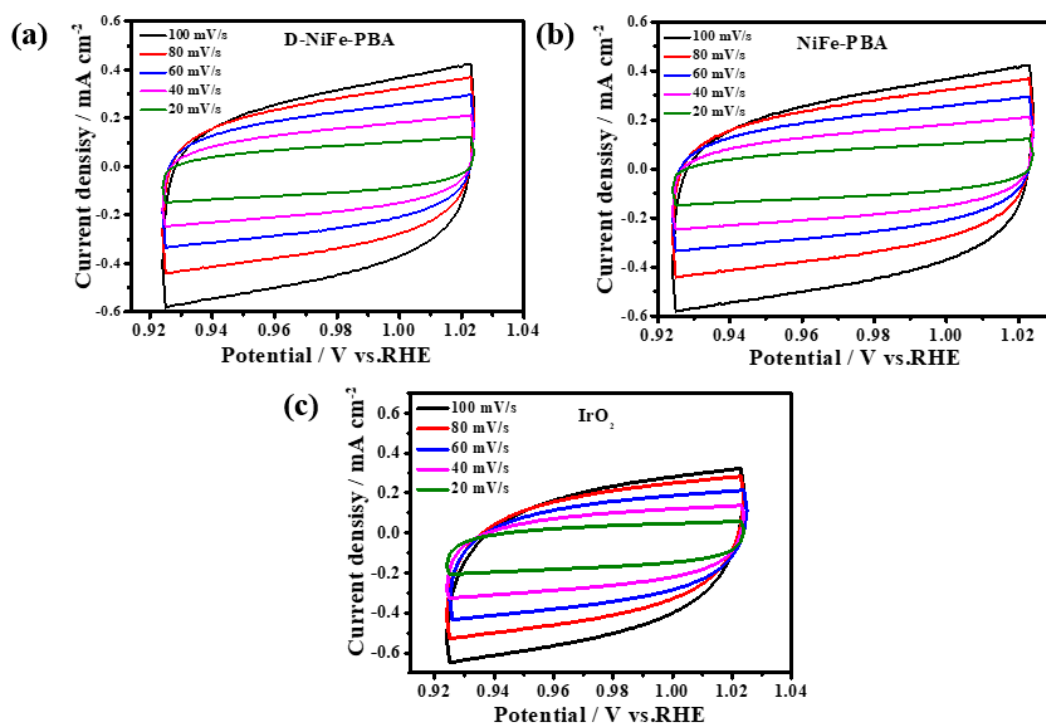


Figure S4. CV curves of (a) D-NiFe PBA (b) NiFe PBA (c) IrO<sub>2</sub>.

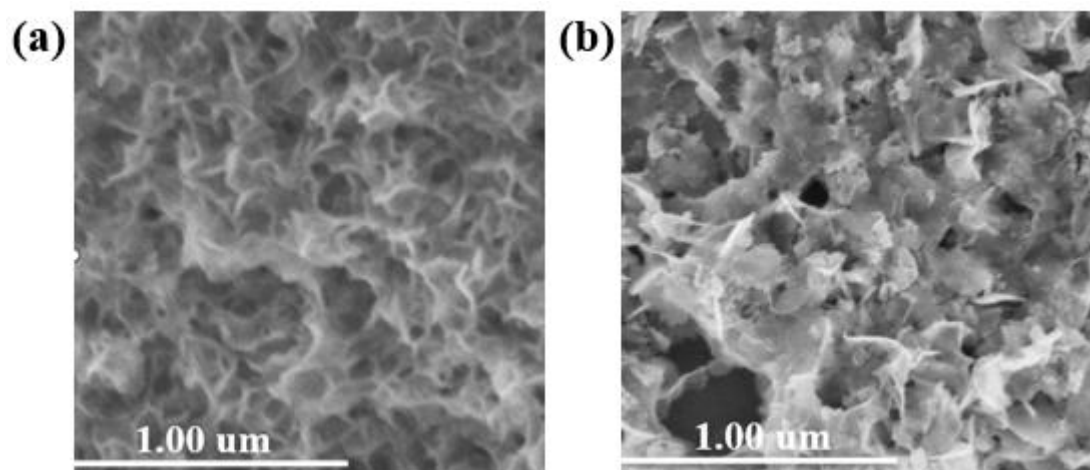


Figure S5. SEM images of D-NiFe PBA before(a) and after (b)24 h OER test.

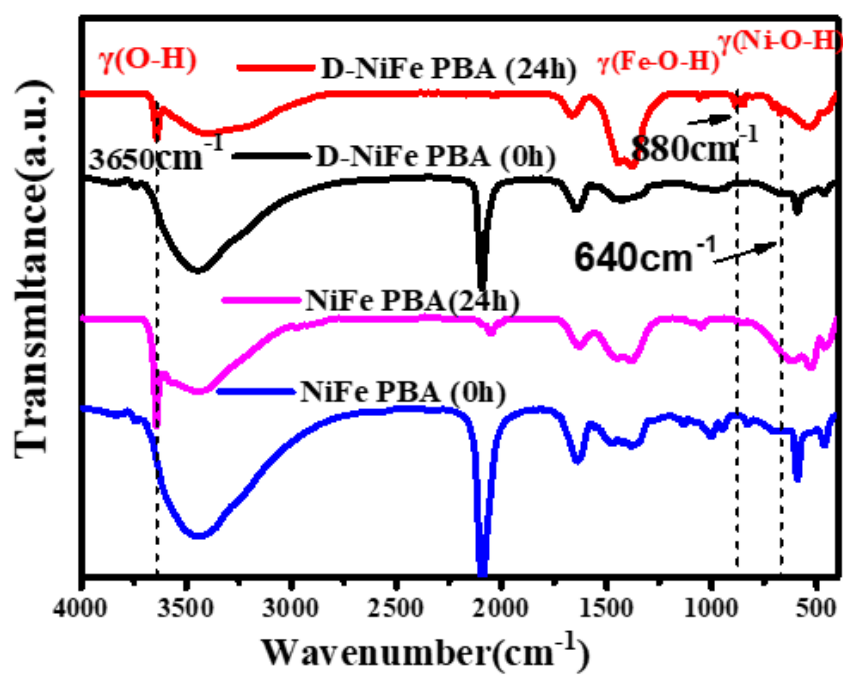


Figure S6. FT-IR spectra of NiFe PBA and D-NiFe PBA before and after 24 h OER test.

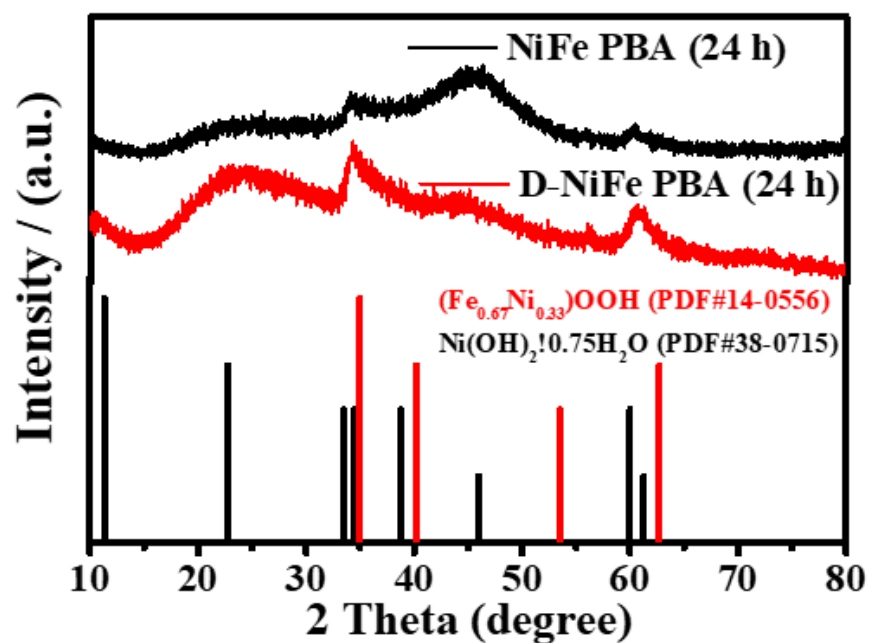


Figure S7. XRD spectra of NiFe PBA and D-NiFe PBA after 24 h OER test.

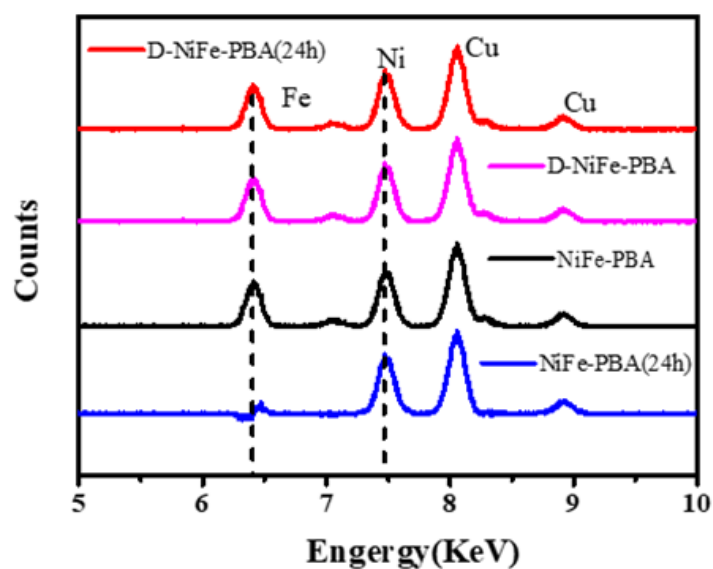


Figure S8. EDX spectra of NiFe PBA and D-NiFe PBA before and after 24 h OER test.

Table S1. The atomic ratio obtained from ICP (measuring Fe and Ni) and elemental analysis (measuring C and N).

Sample	Ni/Fe	C/N	C/Fe	N/Ni	V <sub>CN</sub> Content
NiFe PBA	1.97	1.03	5.98	3.3	0 %
D-NiFe PBA	1.96	1.01	5.83	2.5	24 %

**Table S2.** The comparison of OER activity of D-NiFe PBA with recently reported other nonnoble-metal OER catalysts under 1 M KOH.

Catalysts	$\eta(\text{mV})$ @10mA cm <sup>-2</sup>	Tafel slope (mV dec <sup>-1</sup> )	stability	Ref.
<b>D-NiFe-MOF</b>	<b>280 mV</b>	<b>67.92</b>	<b>110 h</b>	<b>This work</b>
D-Co-PBA	400	70.3	10 h	1
Co-Fe PBA cages	290	72	24 h	2
Co/Fe (1:1)-MOF	317	92	92 h	3
NiCo@A-NiCo-PBA-AA	292	74.1	40	4
CoFeZn-PBA	343	75	12 h	5
NiFe hollow cages	330	87	12 h	6
CoFe-PBA	463	92	60 h	7
FeFe-PBA	528	131	20 h	
CoCo PBA	329	82	50 h	
NiFe PBA	587	138	40 h	
Ni <sub>3</sub> FeN	355	70	10 h	8
Co <sub>0.5</sub> Mn <sub>0.5</sub> WO <sub>4</sub>	400	84	10 h	9
CoFe <sub>2</sub> O <sub>4</sub>	408	82	12 h	10
FeCoNi	325	70	10 h	11

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