Electronic Supplementary Information

In Situ Derivation of NiFe-LDH Ultra-thin Layer on Ni-BDC Nanosheets as Boosted Electrocatalyst for Oxygen evolution reaction

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Catalysts	j (mA cm^{-2})	η (mV)	Tafel slope (mV dec^{-1})	Reference
Ni-BDC@ NiFe-LDH	10	272	45	This work
NiCo-P/NF	35	300	71	[35]
Ni_3S_4/NF	10	266	77	[37]
Fe $(OH)_3$@Co-MOF	10	292	44	[44]
Ni_3S_2/CeO_2	20	264	146	[42]
$Ni_{0.75}Fe_{0.25}$-LDH	10	350	64	[43]
Co_3O_4@C-WCNTs	10	320	62	[45]
Ni-BDC @NiS	20	330	62	[46]

Table S1. Summary of OER performances of some catalysts in previous works.

Note: NF refers to foamed nickel; WCNTs refers to carbon nanotubes.

Table S2 Summary of the chemical compositions for different samples

Samples	XPS analysis [Atom%]			
	Ni	Fe	C	O
Ni-BDC@/NiFe-LDH-1	7.81	2.36	58.16	31.30
Ni-BDC@/NiFe-LDH-2	8.53	2.02	61.03	28.40
Ni-BDC@/NiFe-LDH-3	9.36	2.14	57.28	29.49
Ni-BDC@/NiFe-LDH-4	9.84	2.08	59.29	28.61

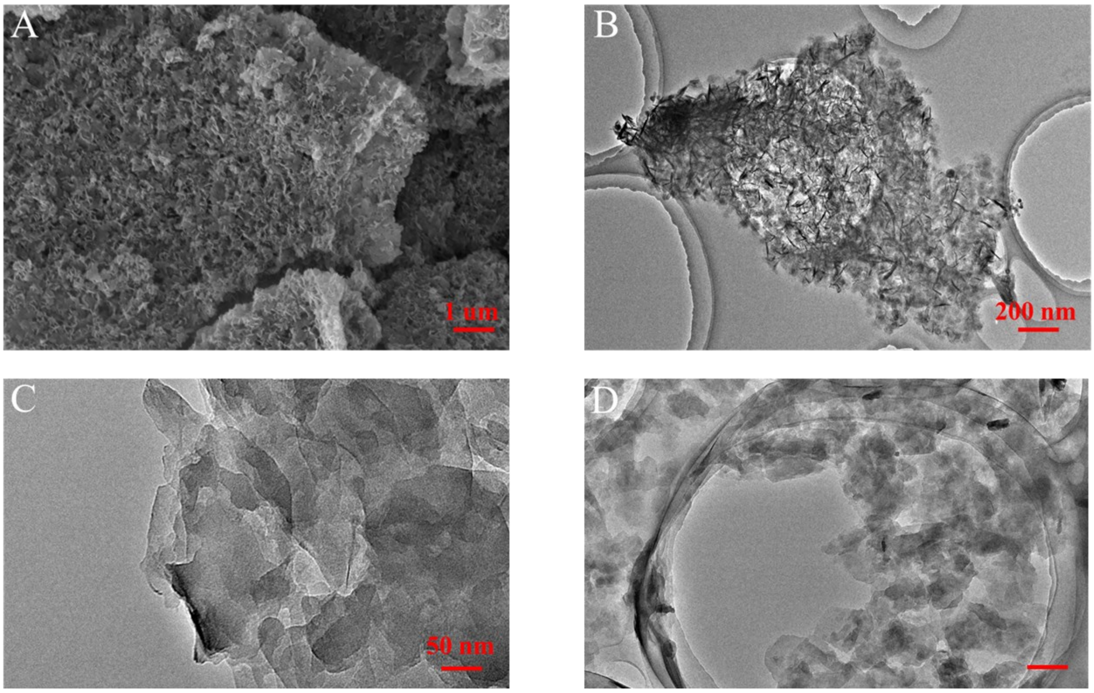

Figure S1. (A) SEM images of Ni-BDC@ NiFe-LDH and (B) TEM images of Ni-BDC@ NiFe-LDH; (C, D) TEM images of Ni-BDC.

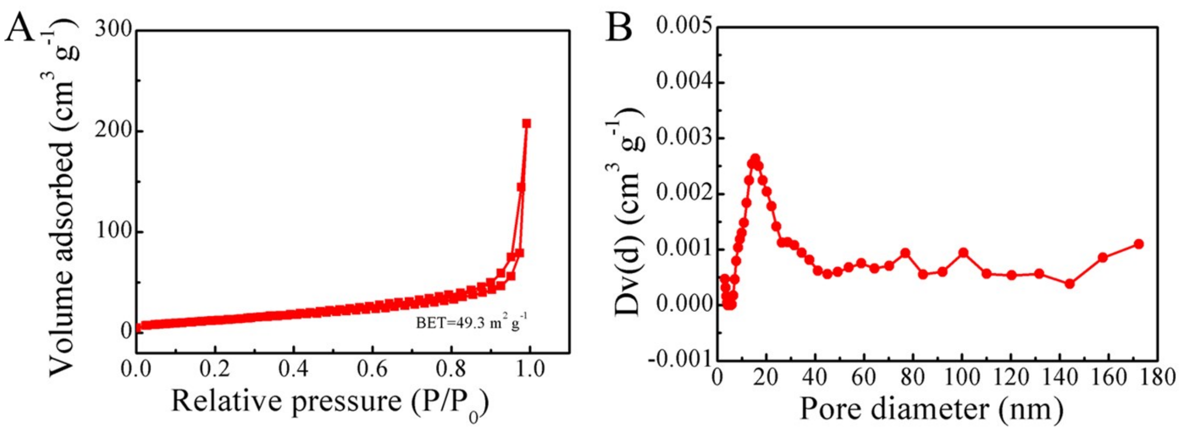

Figure S2. (A) N_2-adsorption/desorption isotherm and (B) pore-size distribution of NiFe-LDH.

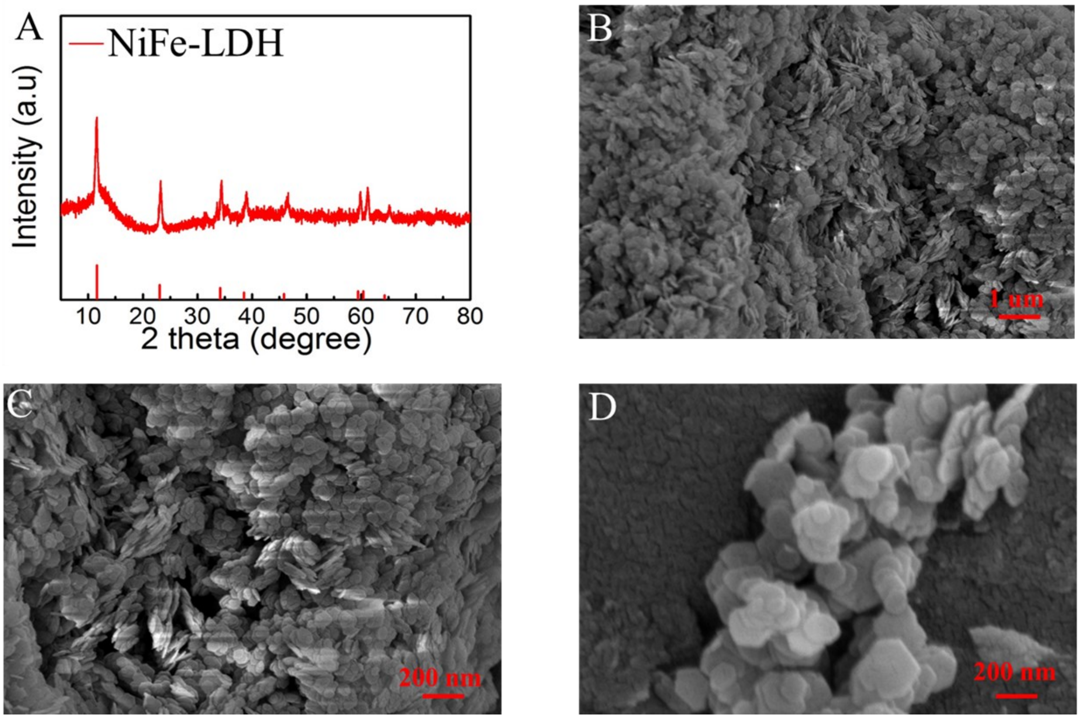

Figure S3. (A) XRD spectra of NiFe-LDH; SEM images of NiFe-LDH (B, C, D).

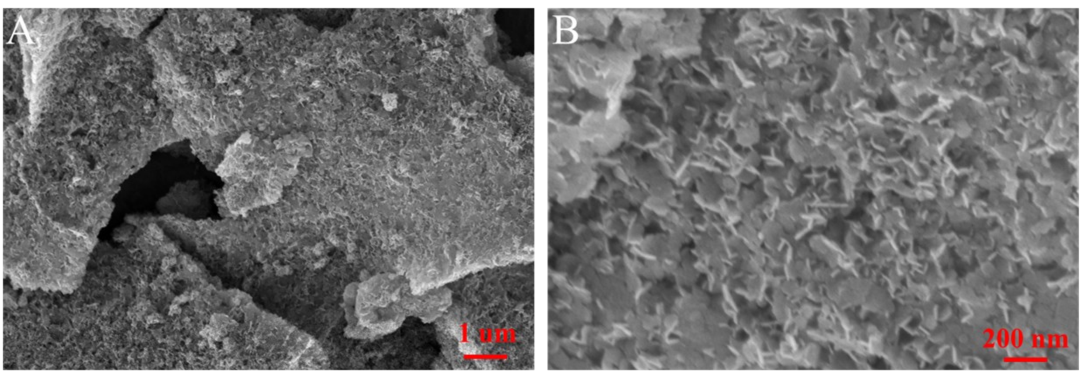

Figure S4. SEM images of Ni-BDC@ NiFe-LDH with different magnifications after 30 h long-term stability test (A, B).

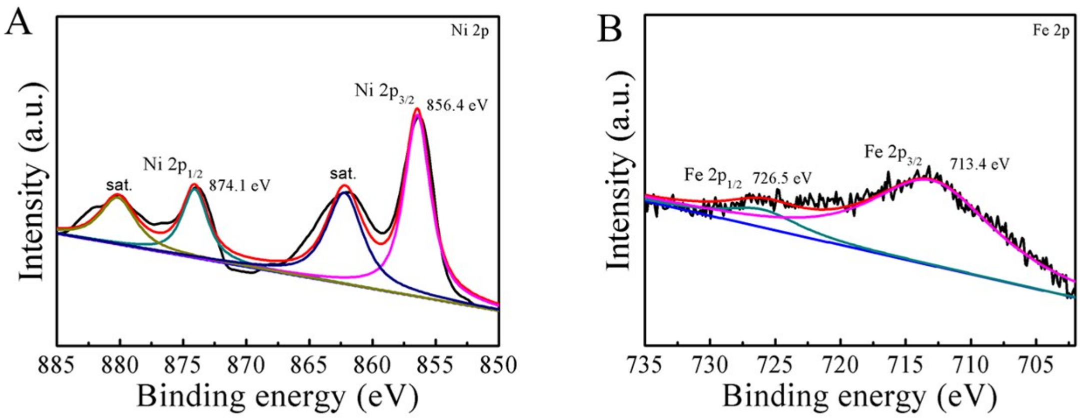

Figure S5. High resolution (b) N 1s, (c) Ni 2p and (d) Fe 2p XPS spectra of the Ni-BDC@ NiFe-LDH after the long-term test.

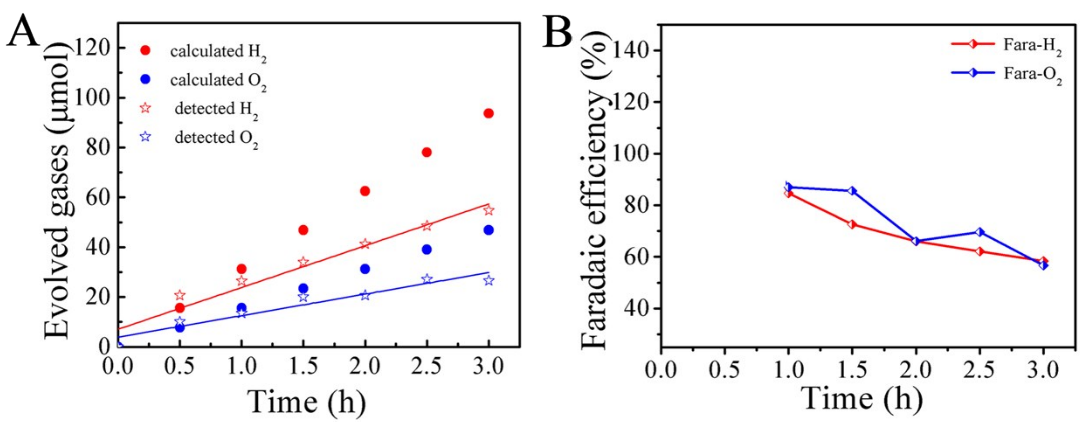

Figure S6. (A) The Faraday efficiency and (B) the amount of O_2 and H_2 produced by Ni-BDC@ NiFe-LDH during water splitting at 10 mA cm^{-2}.

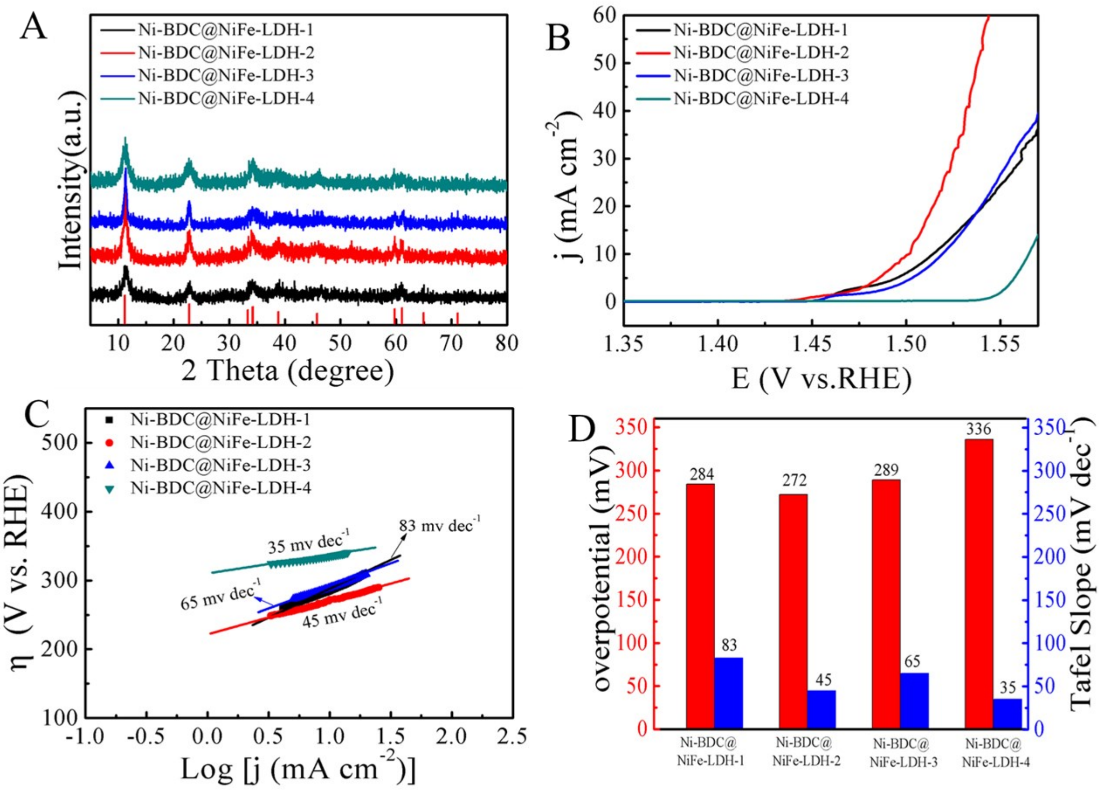

Figure S7. XRD patterns and OER polarization curves of Ni-BDC@ NiFe-LDH nanosheets with different feed ratios of iron salt and BDC (A, B); (C) The corresponding Tafel diagram derived from (B); Intuitive bar graph of overpotential and Tafel (D).

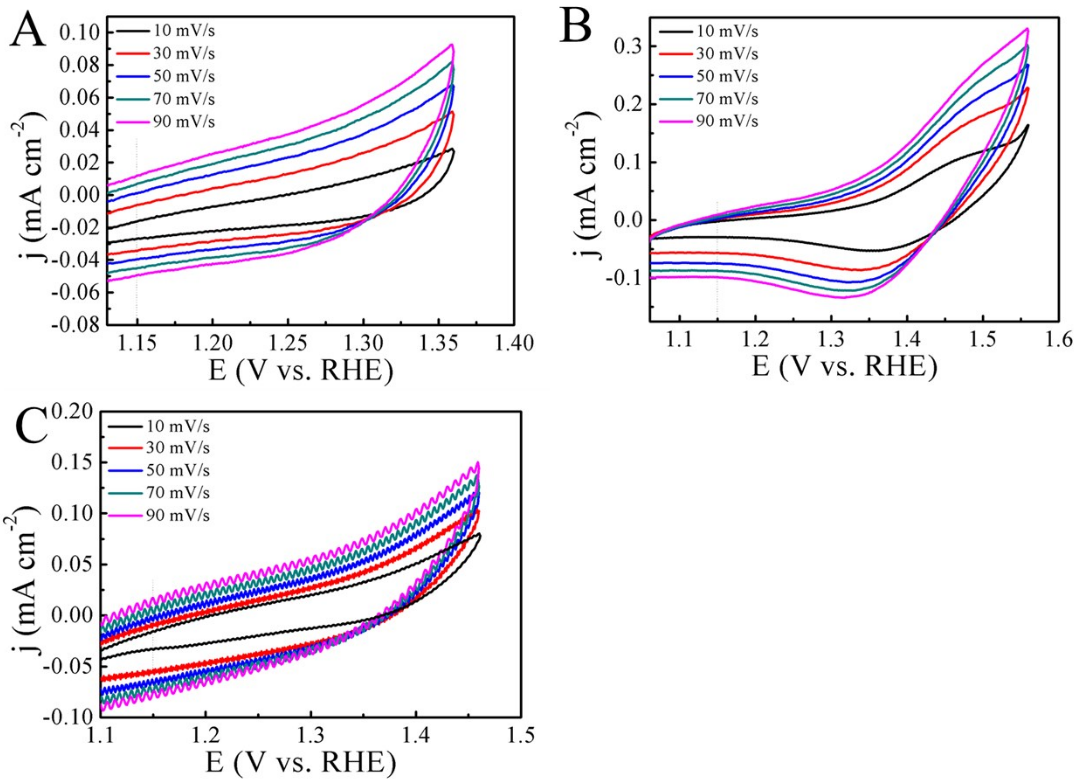

Figure S8. CV plots of (A) Ni-BDC@NiFe-LDH-1, (B) Ni-BDC@NiFe-LDH-3 and (C) Ni-BDC@NiFe-LDH-4 measured at various scan rate from 10-90 mV/s.