Supporting information for:

Tunable Nano-Interfaces between MnO_x and Layered Double Hydroxides Boost Oxygen Evolving Electrocatalysis

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Supplementary Figures (Figures S1 – S5, Tables S1 – S4)

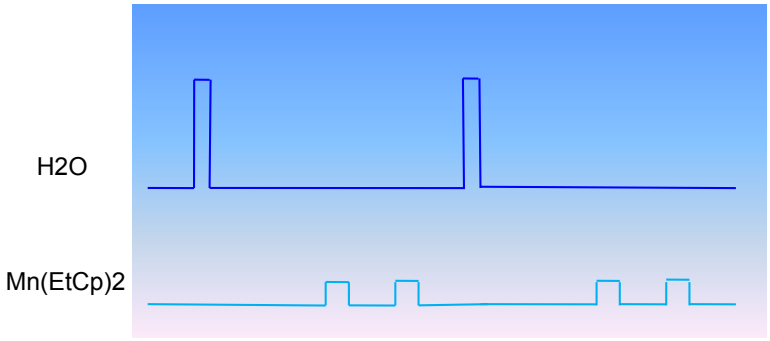


Fig. S1 Schematics for the ALD precursor sequence of growing MnO_x during each cycle.

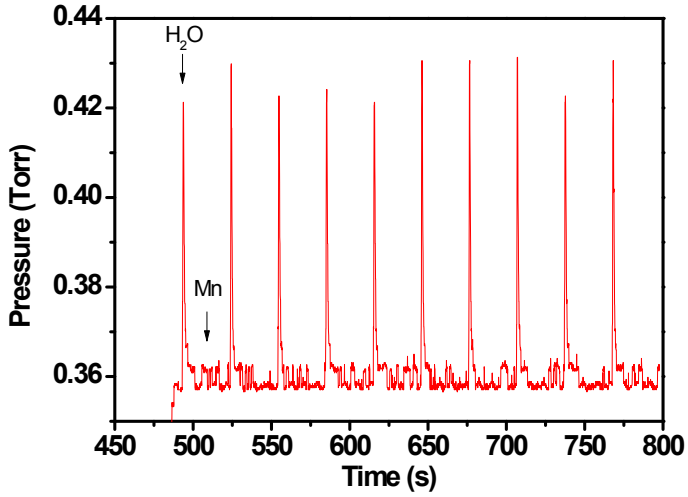
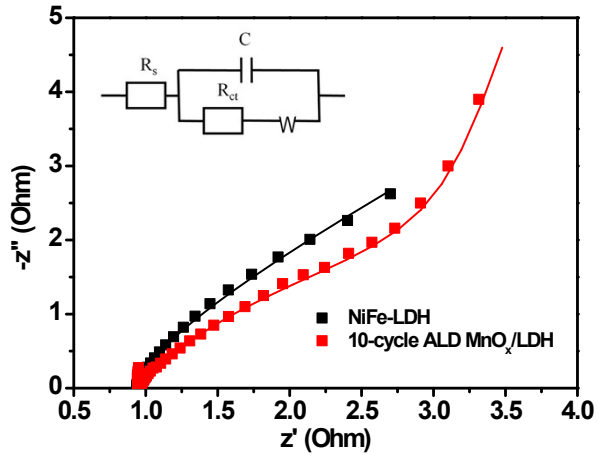


Fig. S2 Recorded ALD pulse sequences by monitoring the reactor pressure as a function of time, when using $Mn(EtCp)_2$ and H_2O as the precursor and the co-reactants, respectively, for ALD MnO_x growth.



	Solution resistance (R_s), Ω	Charge transfer resistance (R_{ct}), Ω	Capacitance (C), nF cm^{-2}
NiFe-LDH	0.939	8.125	18.597
10-cycle MnO_x/LDH	0.938	5.890	18.913

Fig. S3 Nyquist plots of ALD MnO_x/LDH electrodes held at overpotential of 300 mV and the corresponding equivalent circuitry. Fitted values are listed in the table.

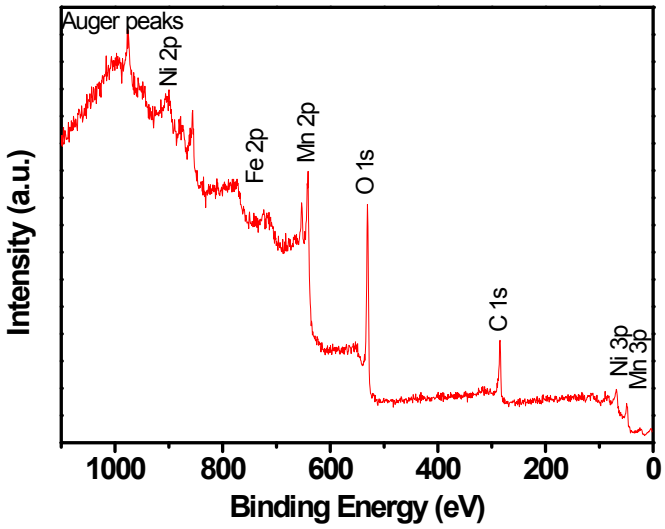


Fig. S4 XPS survey spectrum of 10-cycle ALD MnO_x/NiFe-LDH samples.

Table S1 Fitting parameters used to fit the Mn $2p^{3/2}$ peaks (Pk).

	Pk 1 (eV)	Pk 2 (eV)	Pk 3 (eV)	Pk 4 (eV)	Pk 5 (eV)	Pk 6 (eV)	FWHM (eV)
MnO_x	640.2	641.2	642.1	643.05	644.2	645.9	1.23
MnO_x/LDH before EC	640.2	641.2	642.1	643.05	644.2	645.9	1.23
MnO_x/LDH after EC	640.2	641.2	642.1	643.05	644.2	645.9	1.23

Table S2 Fitting parameters used to fit the Ni $2p^{3/2}$ and Fe $2p^{3/2}$ peaks (Pk).

	Pk Ni$2p^{3/2}$(eV)	Pk Fe$2p^{3/2}$(eV)
MnO_x/LDH	856.0	713.0
NiFe-LDH	856.8	715.0

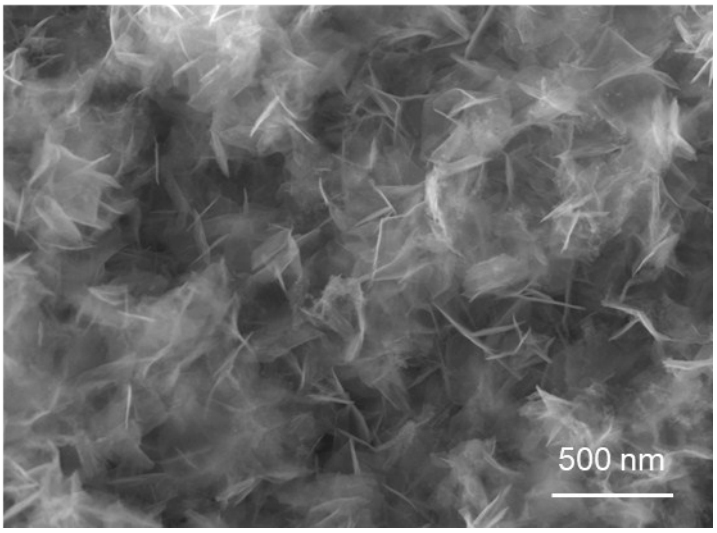


Fig. S5 SEM image of the 10-cycle ALD MnO_x/NiFe-LDH electrode after 10 h stability testing.

Table S3 ICP-MS results of the NiFe-LDH samples.

Sample	Ni	Fe	Mn
NiFe-LDH	0.441 mg	0.570 mg	NA
10 MnO_x/NiFe-LDH	0.462 mg	0.559 mg	0.067 mg
10 MnO_x/NiFe-LDH after stability test	0.431 mg	0.540 mg	0.053 mg

Table S4 The TOF values of the as-prepared samples calculated at 300 mV overpotentials.

Sample	TOF (s^{-1})
NiFe-LDH	0.0043
10 MnO_x/NiFe-LDH	0.0066