Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supplementary Information

Alkoxide-intercalated NiFe-layered double hydroxides magnetic nanosheets as efficient water oxidation electrocatalyst

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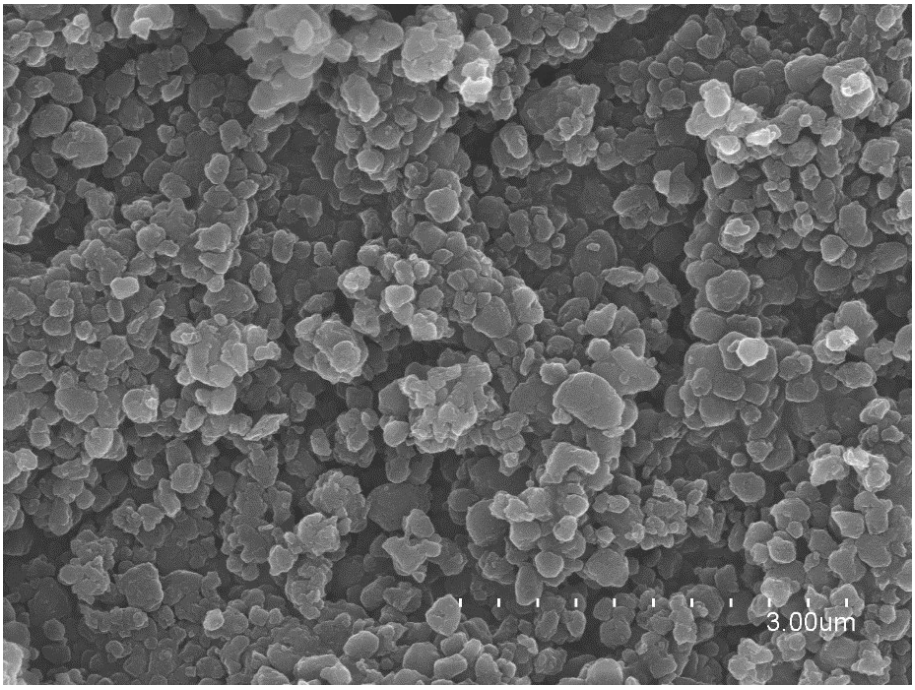
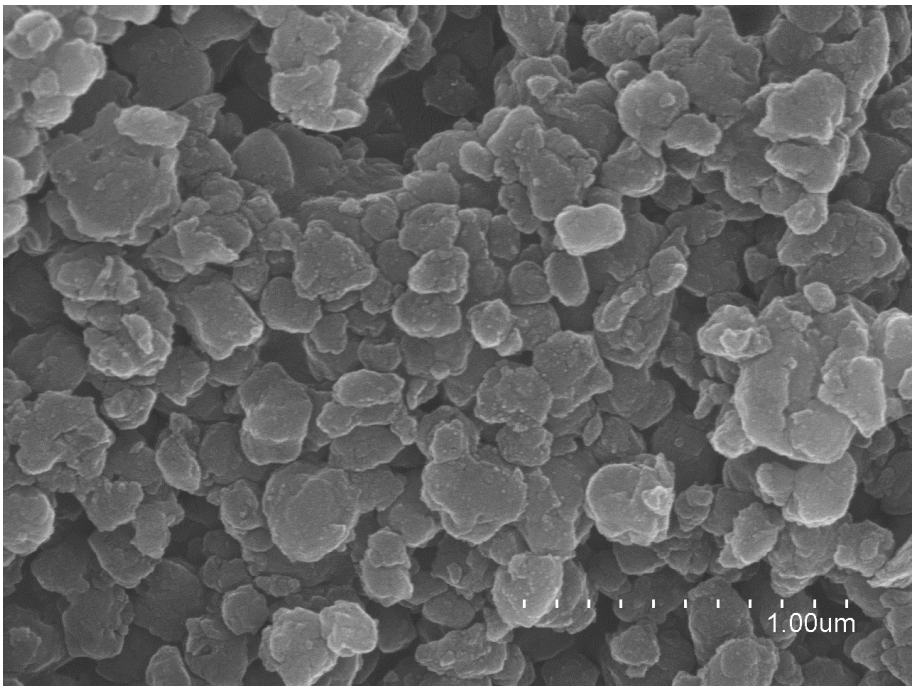
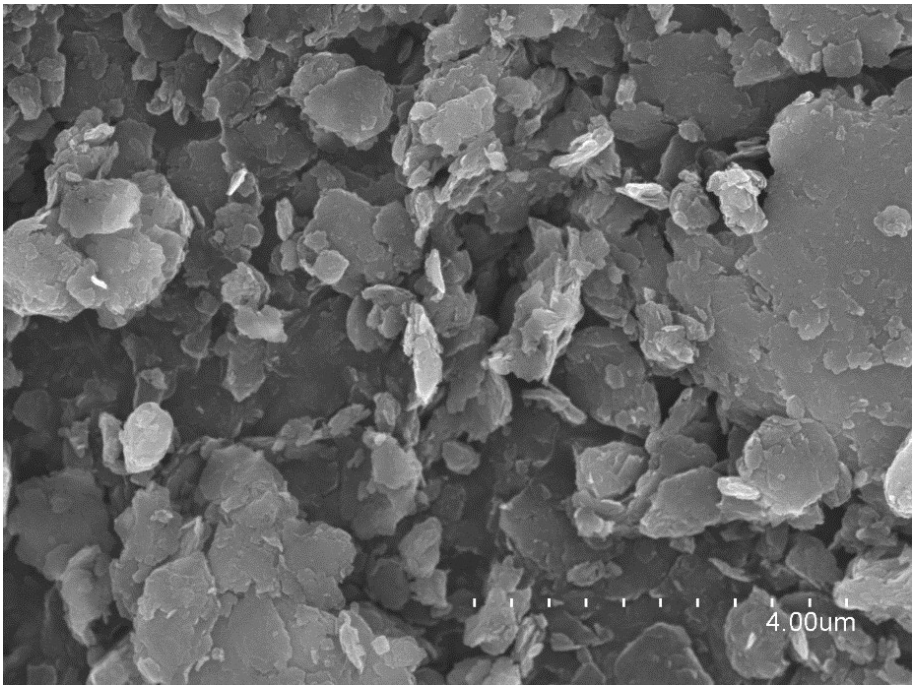
Contents

SI 1. FESEM image of the NiFe-A sample.

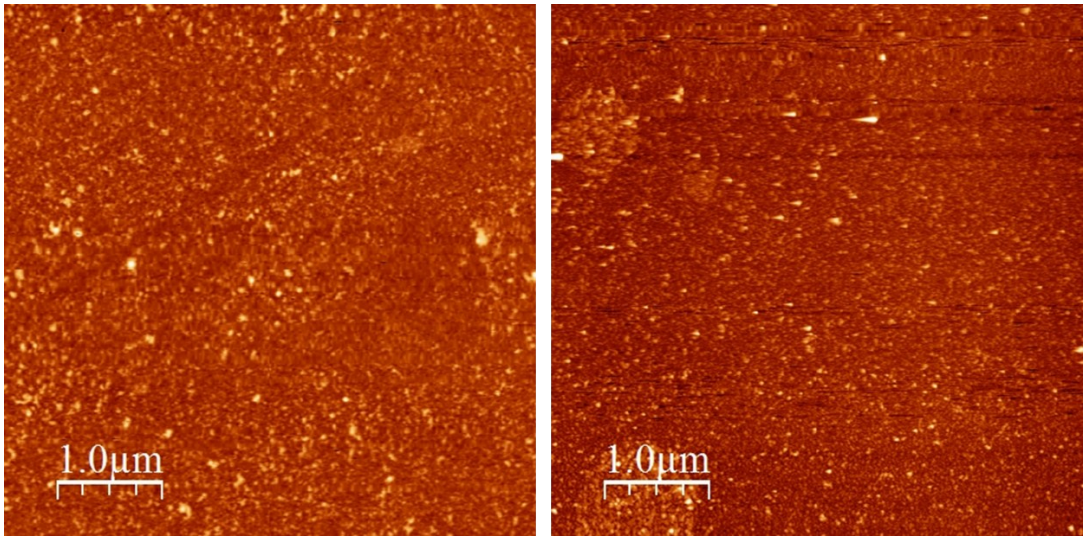




SI 2. FESEM image of the NiFe-HT sample.

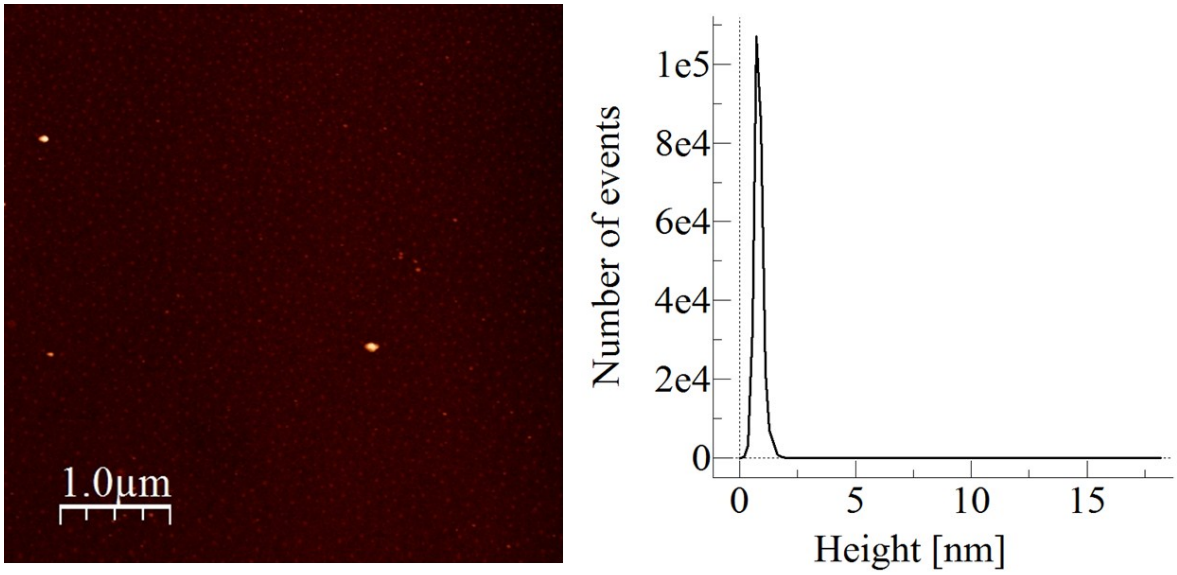


SI 3. AFM images highlighting the coverage of the NiFe-A sample.



As explained in the main text, the deposition procedure has been carried out with a mixture of formamide/BuOH and with a SiO_2-Si substrate previously activated with O_2 plasma.

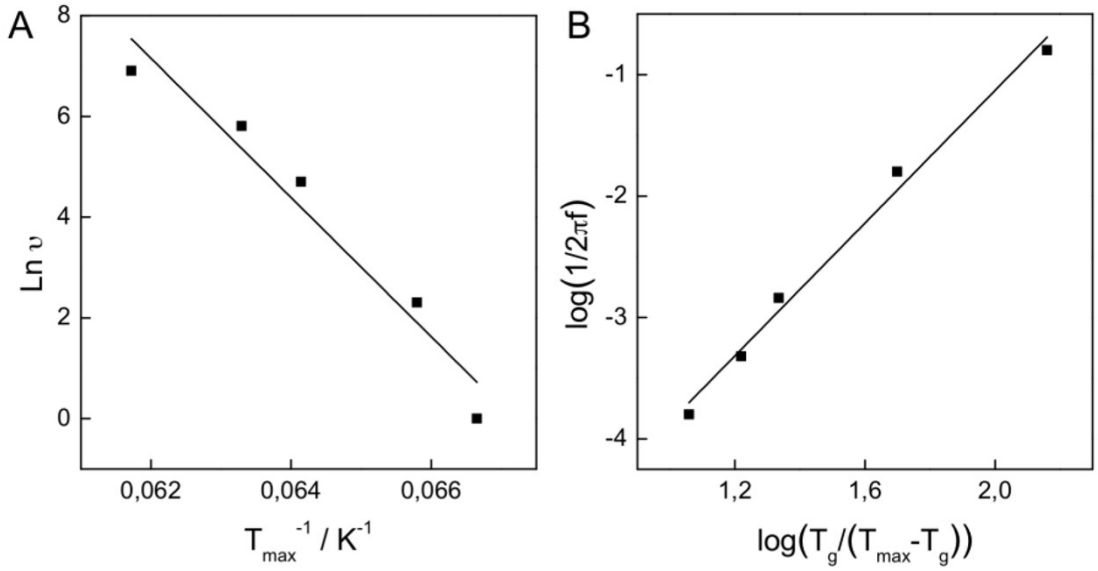
SI 4. AFM characterization of a SiO_2-Si substrate (blank).



RMS value = 0.15 nm.

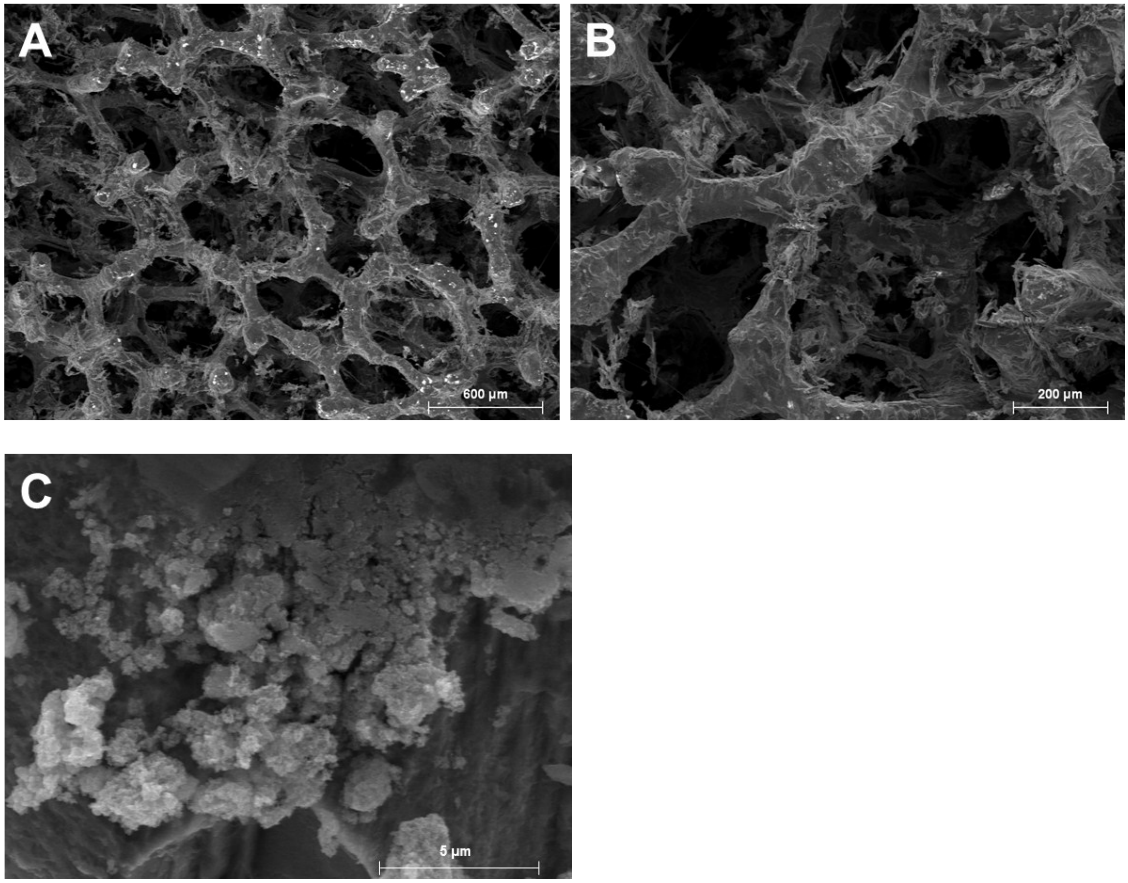
Average height = 0.90 nm

SI 5. Arrhenius plot and 3D scaling law model of the spin dynamics for the NiFe-HT sample.



(A) Arrhenius fitting of the χ''_M signal for the NiFe-HT sample. (B) Frequency dependence of χ''_M fitted with the 3D scaling low model $\tau = \tau_0 \cdot \left[T_g/(T_g/T_{max} - T_g)\right]^{z\nu}$.

SI 6. SEM images of the NiFe-A-NiFoam sample.



SI 7. Electrochemical measurements

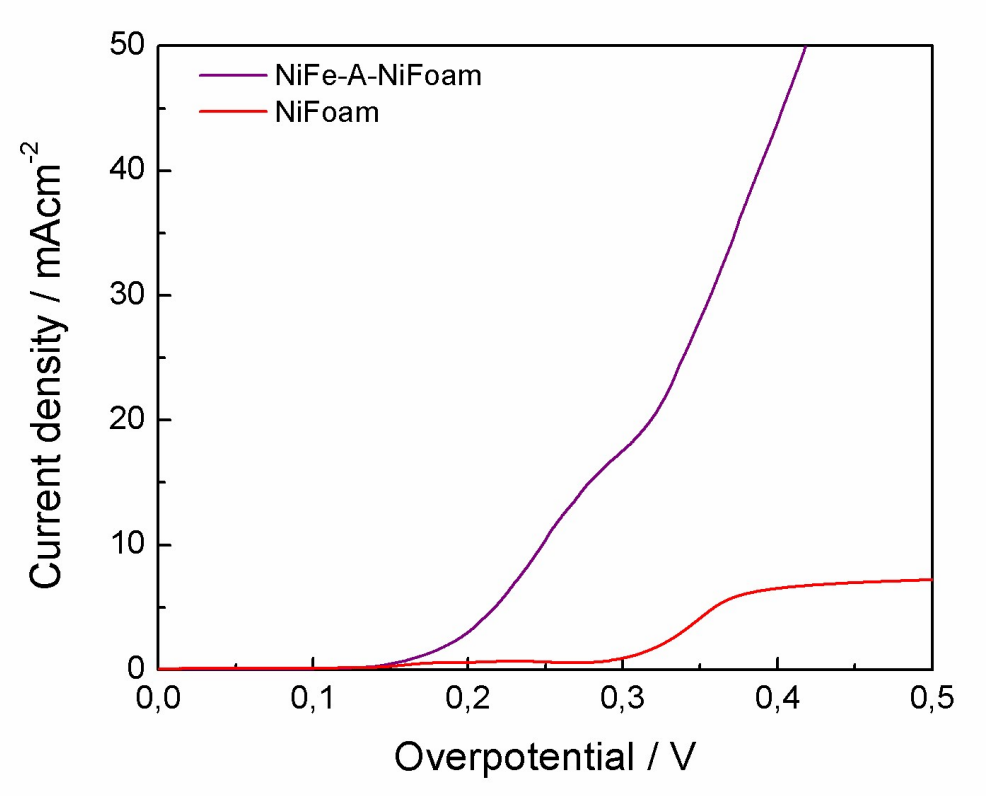


Figure SI 7.1. Blank experiment showing the LSV of the pristine Ni-foam versus the NiFe-A-NiFoam sample.

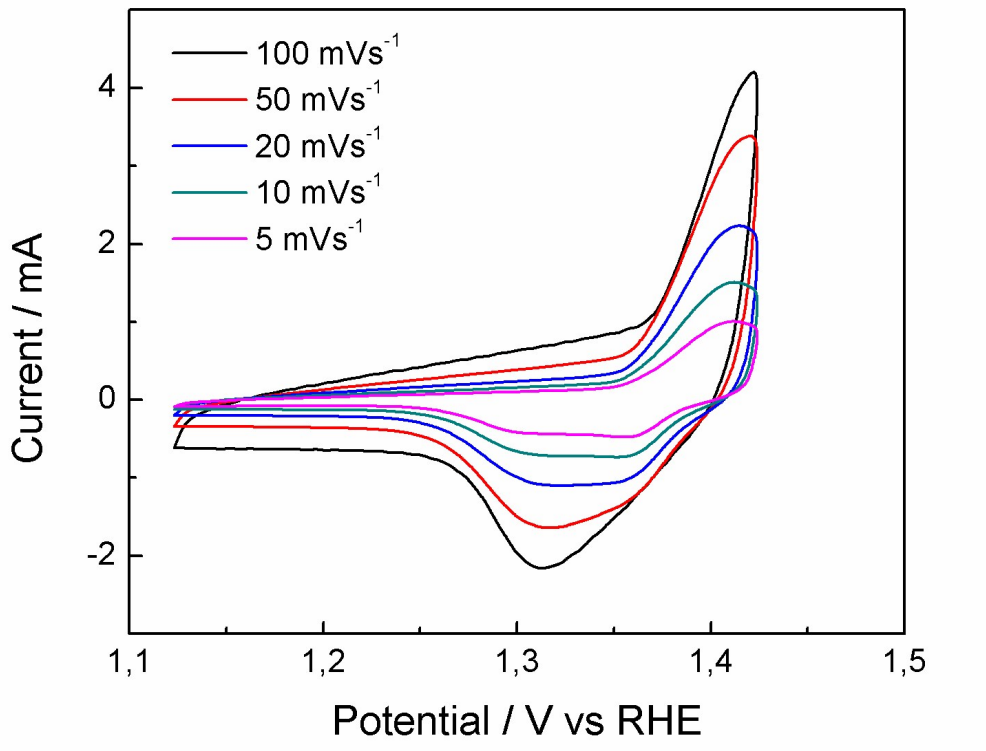


Figure SI 7.2. CV of NiFe-A-NiFoam at different scan rates.

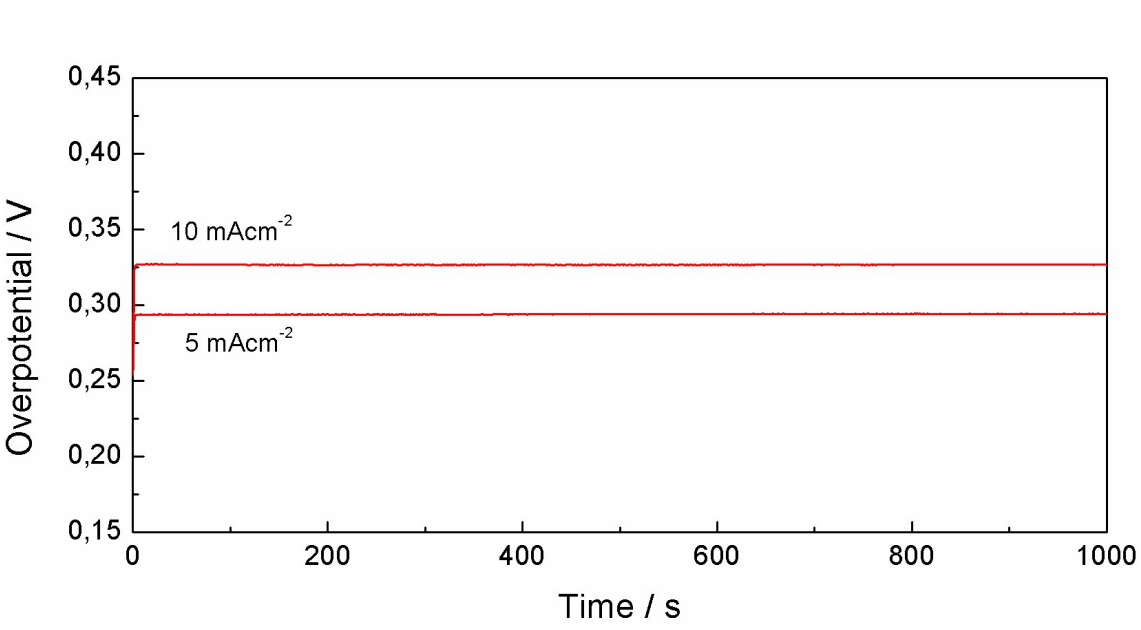


Figure SI 7.3. Potentiostatic stability testing of NiFe-A-NiFoam under a certain current density.

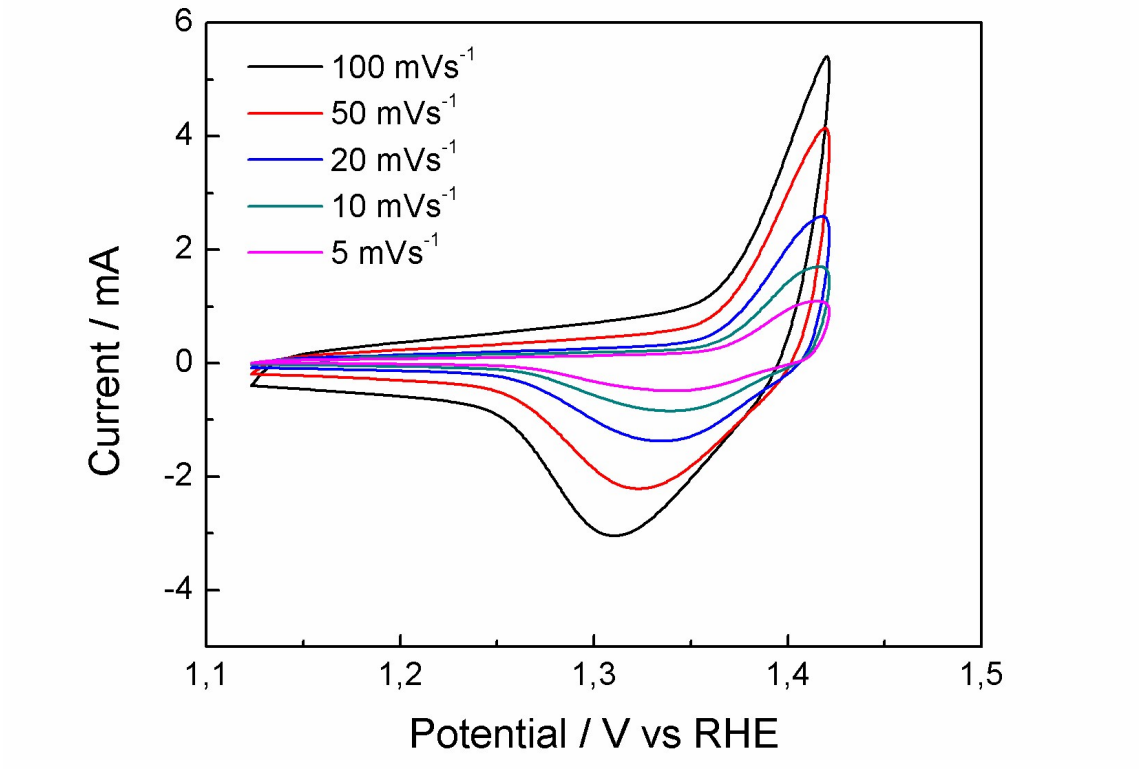


Figure SI 7.4. CV of NiFe-HT at different scan rates.

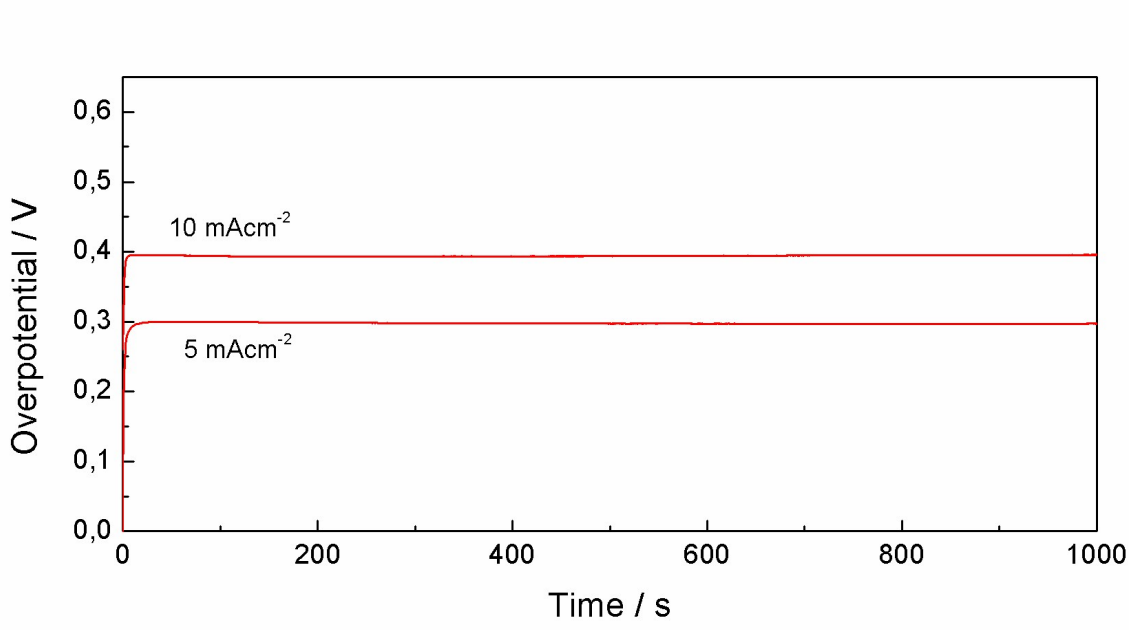


Figure SI 7.5. CV Potentiostatic stability testing of NiFe-HT under a certain current density.

SI 8. Comparison of catalytic performance of NiFe-LDHs.

Supplementary Table 2: Comparison of our NiFe-LDHs and others reported.

	Onset	Overpotential with a 5 mVs^{-1} CV (V)			Current at 0,3V OP ($mAcm^{-2}$)	TOF (s^{-1})	Tafel Slope (mV per decade)
	(vs RHE)	5 $mAcm^{-2}$	10 $mAcm^{-2}$	30 $mAcm^{-2}$			
NiFe-HT	1,530	0,294	0,327	0,417	9,490	0,007	55,5
NiFe-A	1,534	0,315	0,344	0,419	3,140	0,010	52,0
NiFe-A-NiFoam	1,509	0,217	0,249	0,356	17,800	-	53,7
IrO_2	1,561	0,288	0,317	0,380	7,360	0,009	96,6
NiFe-LDH [1]	-	-	0,347	-	2,070	0,050	67,0
NiFe-LDH [2]	-	-	0,310	-	-	~ 0,010	76,0
NiFe-LDH [3]	~ 1,55	-	0,240	-	-	0,004	65,0

[1] Fang Song, Xile Hu; Nature Comunications, 2014, 5:4477

[2] Wei Ma, Renzhi Ma, Chengxiang Wang, Jianbo Liang, Xiaohe Liu, Kechao Zhou, and Takayoshi Sasaki; ACS Nano, 2015, 9 (2), pp 1977–1984

[3] Z. Lu, L. Qian, Y. Tian, Y. Li, X. Sun and X. Duan, Chem. Commun., 2016, 52, 908-911