Supplementary material

for

Sulfur defects rich Mo-Ni_3S_2 QDs assisted by O-C=O chemical bonding for efficient electrocatalytic overall water splitting

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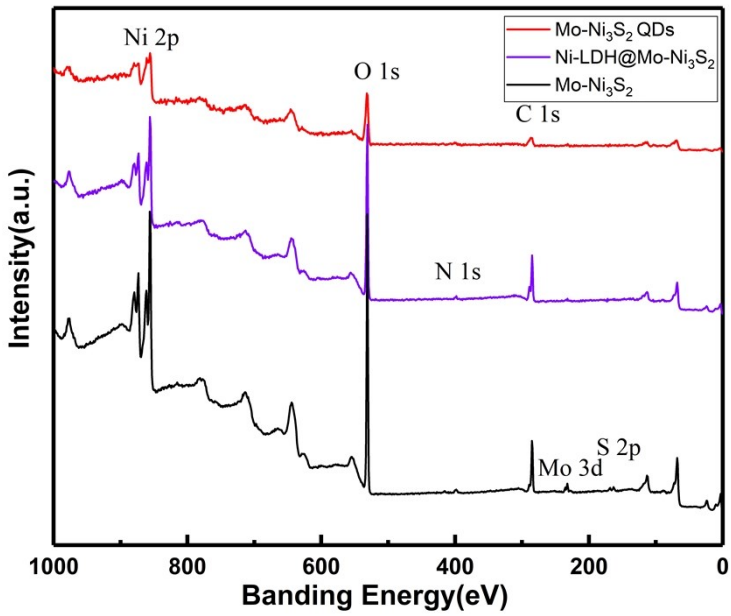

Figure S1. XPS patterns of Mo-Ni_3S_2, Ni-LDH@Mo-Ni_3S_2 and Mo-Ni_3S_2 QDs.

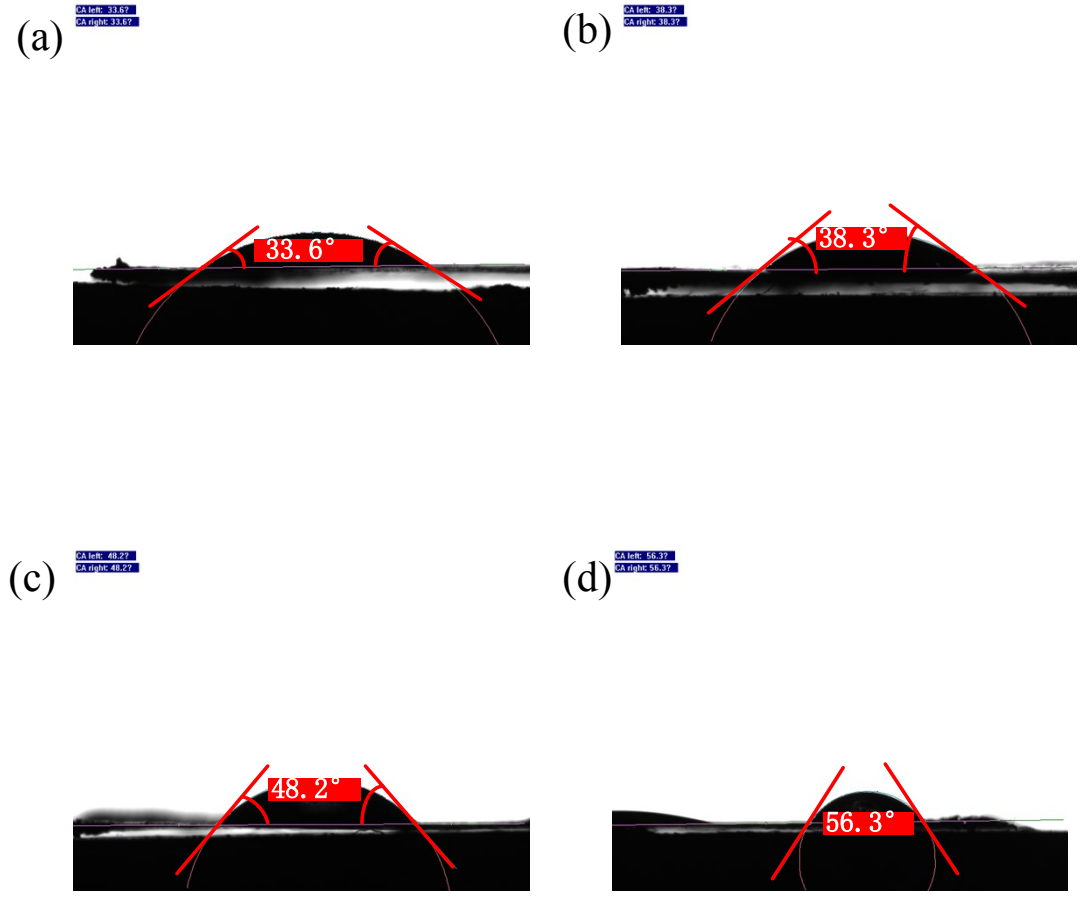

Figure S2. Contact angle measurements of (a)Mo-Ni_3S_2 QDs (b)Ni-LDH@Mo-Ni_3S_2, (c)Mo-Ni_3S_2 and (d) Ni-OFG.

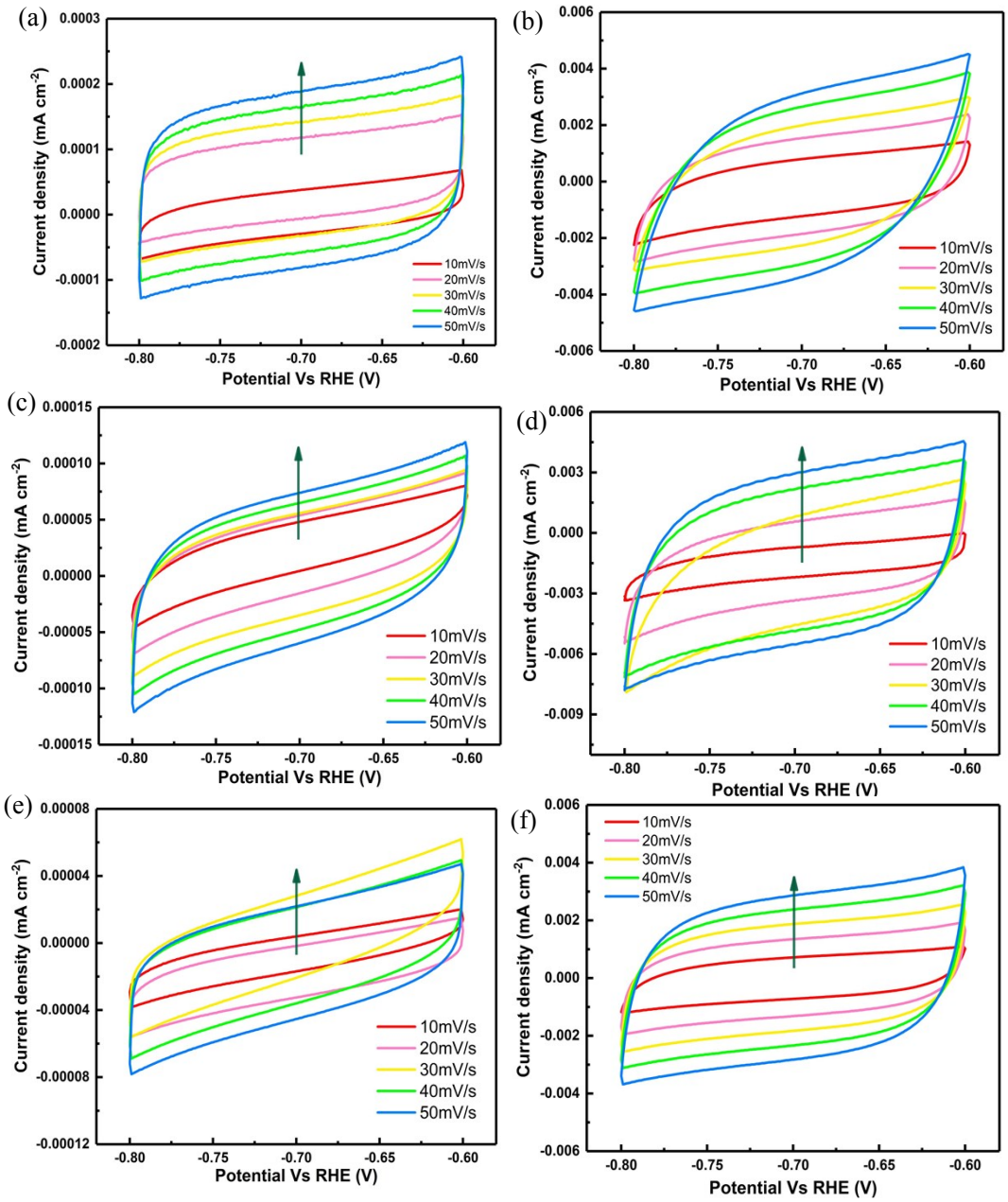

Figure S3. (a) CV curves of Ni_3S_2; (b) CV curves of Mo-Ni_3S_2; (c) CV curves of Ni-LDH; (d) CV curves of Ni-LDH@Mo-Ni_3S_2; (e) CV curves of Ni-OFG; (f) CV curves of Mo-Ni_3S_2 QDs.

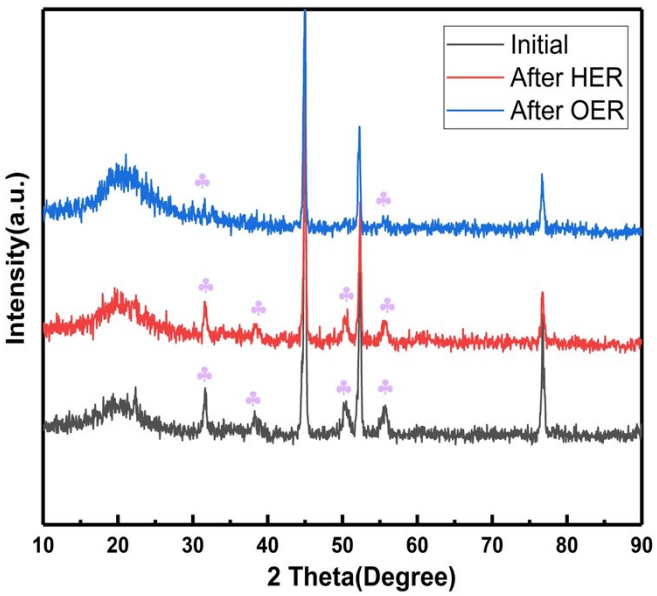

Figure S4. XRD patterns of Mo-Ni_3S_2 QDs (Initial, after stability test of HER and OER).

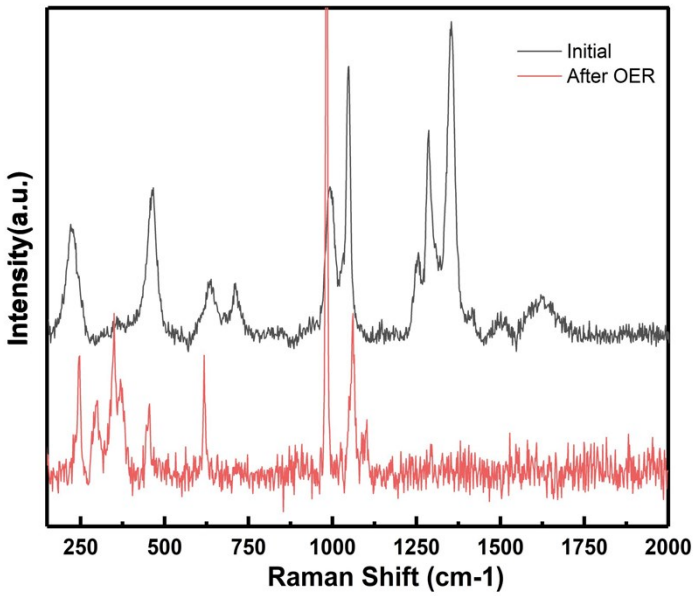

Figure S5. Raman spectra of Mo-Ni_3S_2 QDs (Initial and after stability test of OER).

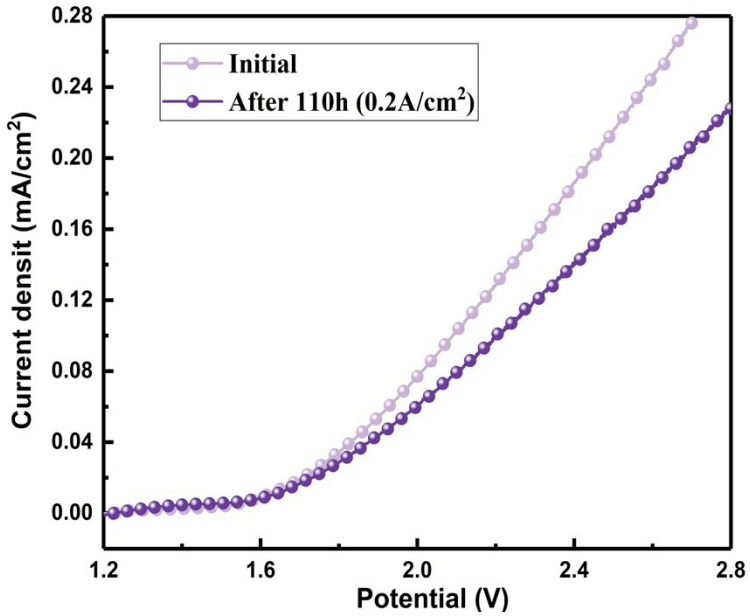

Figure S6. LSV pattern of Mo-Ni_3S_2 QDs (Initial and after stability test of overall water splitting).

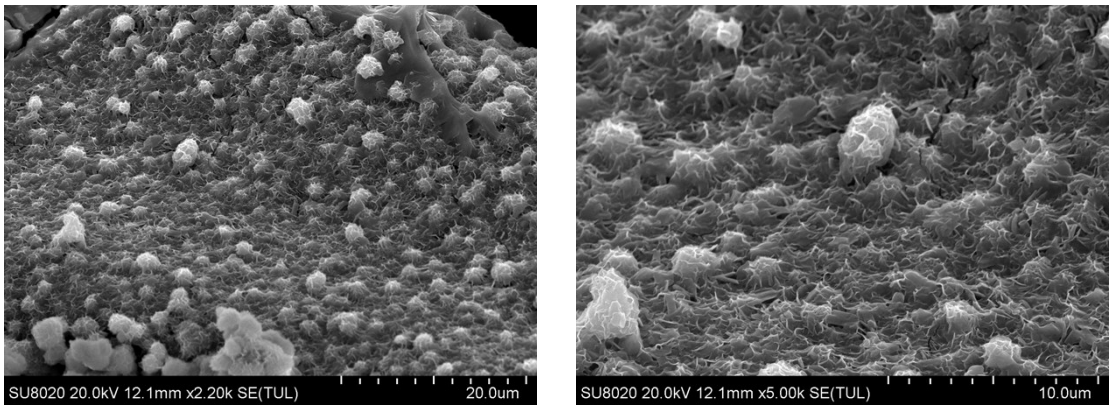

Figure S7. SEM images of Mo-Ni_3S_2 QDs after stability test of HER.

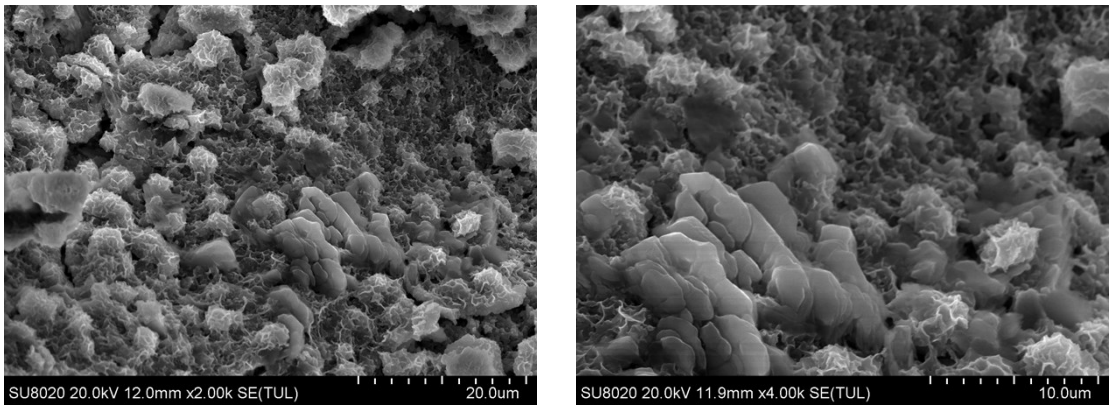

Figure S8. SEM images of Mo-Ni_3S_2 QDs after stability test of OER.

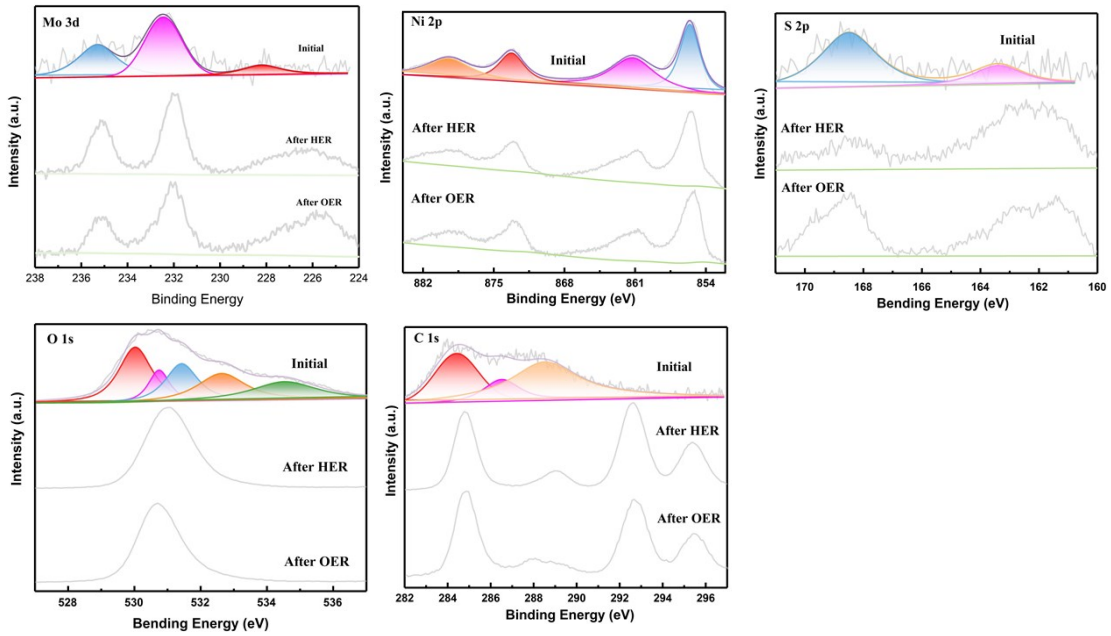

Figure S9. XPS of Mo-Ni_3S_2 QDs after stability test.

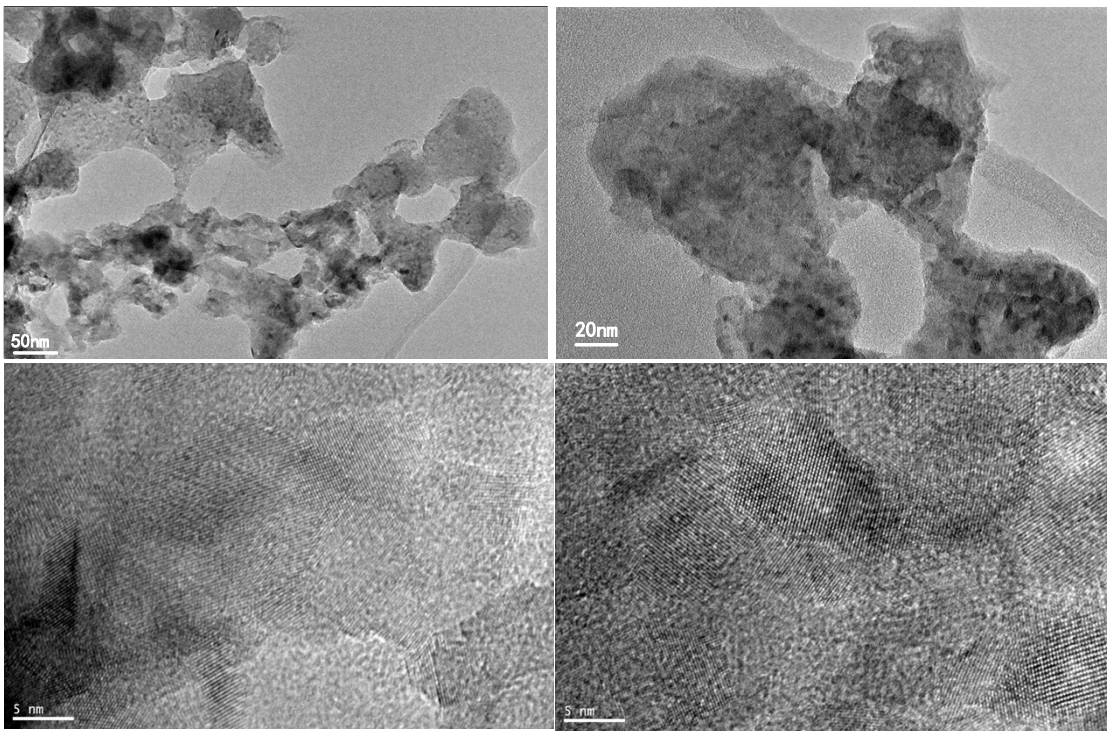

Figure S10. TEM images of Ni-OFG.

Table S1. Comparison of electrochemical performance for Mo-Ni_3S_2 QDs with other non-noble metal bifunctional electrocatalysts for water splitting (1.0 M KOH solution)

Catalysts	HER activity			OER activity		OWS activity		C_{dl}	*References*
	μ10 (mV)	**μ50 (mV)**	**Tafel slope (mV dec^{-1})**	**μ10 (mV)**	**Tafel slope (mV dec^{-1})**	**μ10 (V)**	**μ50 (V)**		
Mo-Ni_3S_2 QDs	**115**	**166**	**67**	**222**	**26.9**	**1.53**	**1.76**	**44.94**	**This work**
meso-$FeMoS_2$/$CoMo_2S_4$	122	180	90	290	65	1.62	1.77	50	1
Ni_3S_2@Ni	82	167	73.8	310	80.1	1.61	1.81	2.55	2
Ni_3S_2@NGCLs/NF	134	190	84	271	99	1.55	1.77	28.3	3
MoS_2 QDs/NiO NSs	186	290	42.4	280 (50)	36.3	1.61	1.8	3.6	4
Co_3O_4@Mo-Co_3S_4-Ni_3S_2/NF-0.15	116	195	44	295 (50)	98	1.62	1.85	21	5
Ni QD@NC@rGO	133	240	64	265	65	1.56	1.72	10.5	6
Ni_3Se_2/MoSex	82	100	86.6	270	31.1	1.57	1.81	57.8	7
NiO/NiS_2	116	200	90.2	264	76.6	1.61	1.75	13.5	8

Reference

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