

**Multi-dimensional collaboration promotes the catalytic performance
of 1D MoO₃ nanorods decorated with 2D NiS nanosheets for efficient
water splitting**

LiuJun Jin, Hui Xu, Cheng Wang, Yong Wang *, Hongyuan Shang and Yukou Du *

*College of Chemistry, Chemical Engineering and Materials Science, Soochow
University, Suzhou 215123, PR China*

* Corresponding authors: Tel: 86-512-65880089, Fax: 86-512-65880089;

E-mail: yowang@suda.edu.cn (Y. Wang); duyk@suda.edu.cn (Y. Du)

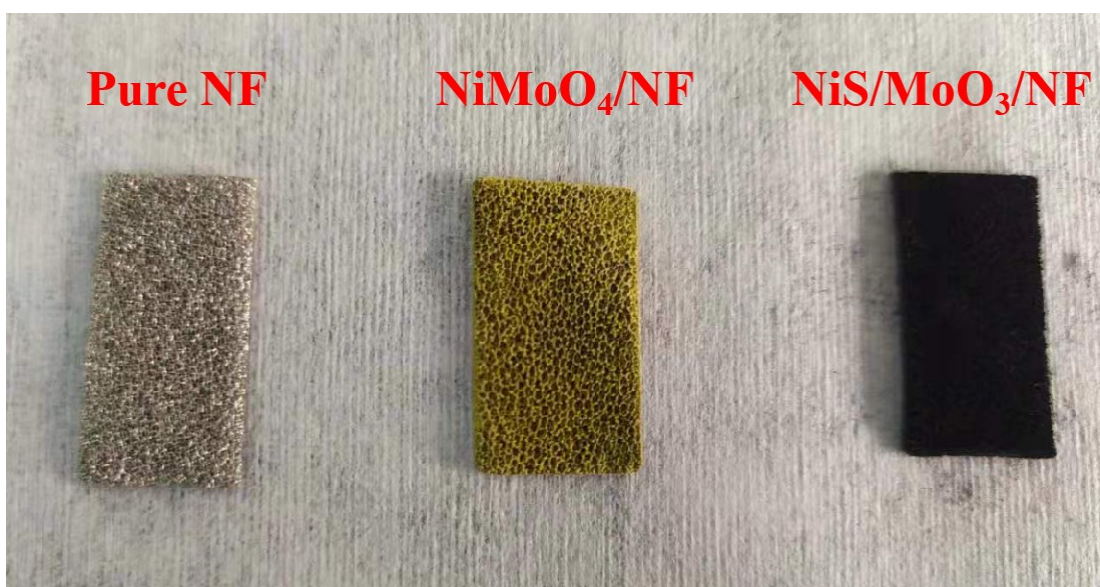


Fig. S1 Optical pictures of NF (gray), NiMoO₄/NF (yellow) and NiS/MoO₃/NF (black).

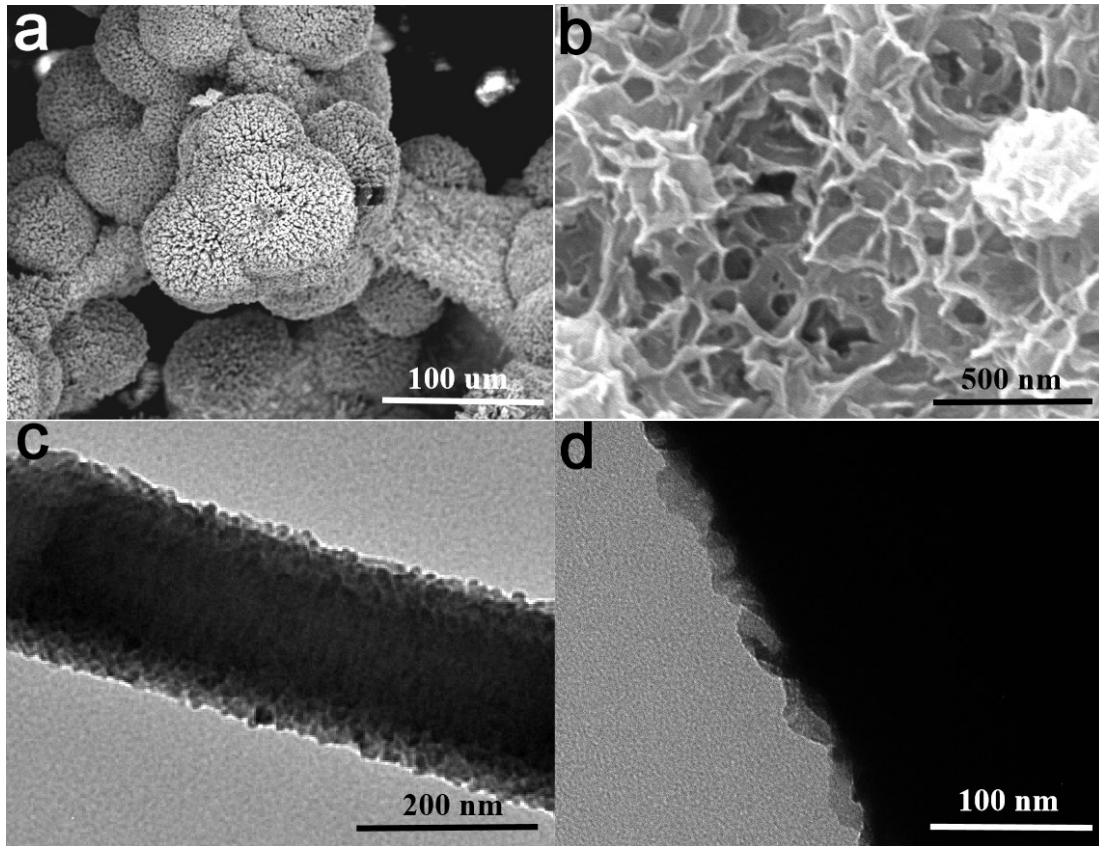


Fig. S2 More detailed SEM images (a, b) and TEM images (c, d) of NiS/MoO₃/NF with different magnifications.

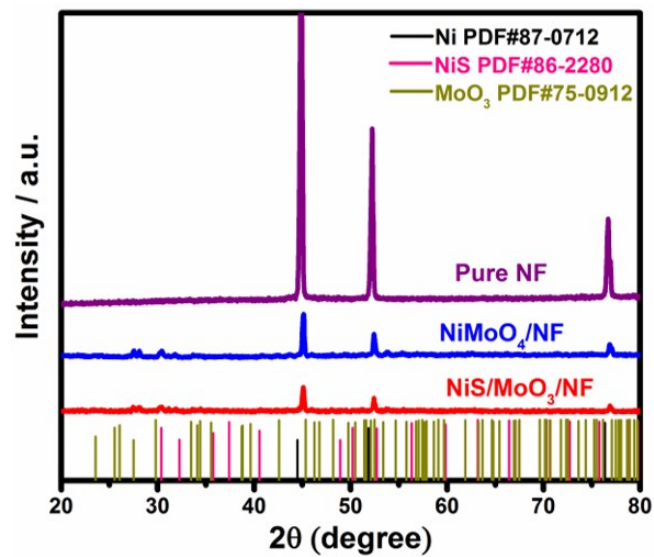


Fig. S3 XRD patterns of NiS/MoO₃/NF, NiMoO₄/NF and NF.

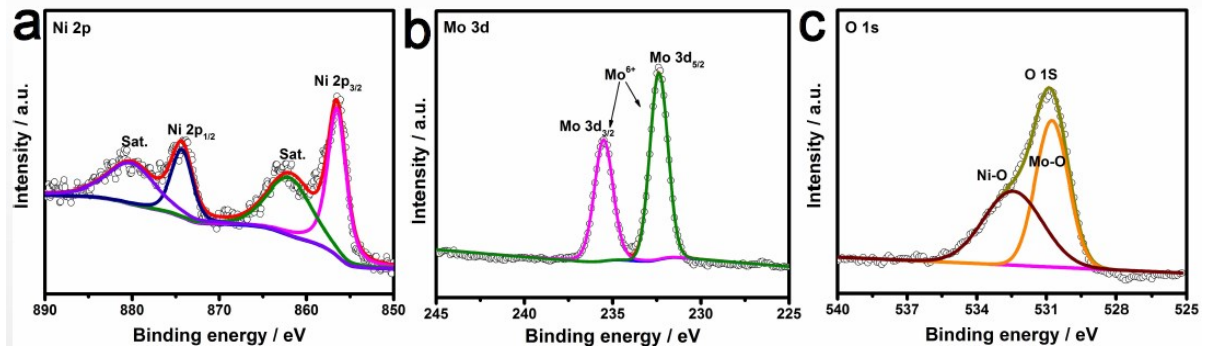


Fig. S4 High-resolution X-ray photoelectron spectra of Ni 2p (a), Mo 3d (b) and O 1s (c)

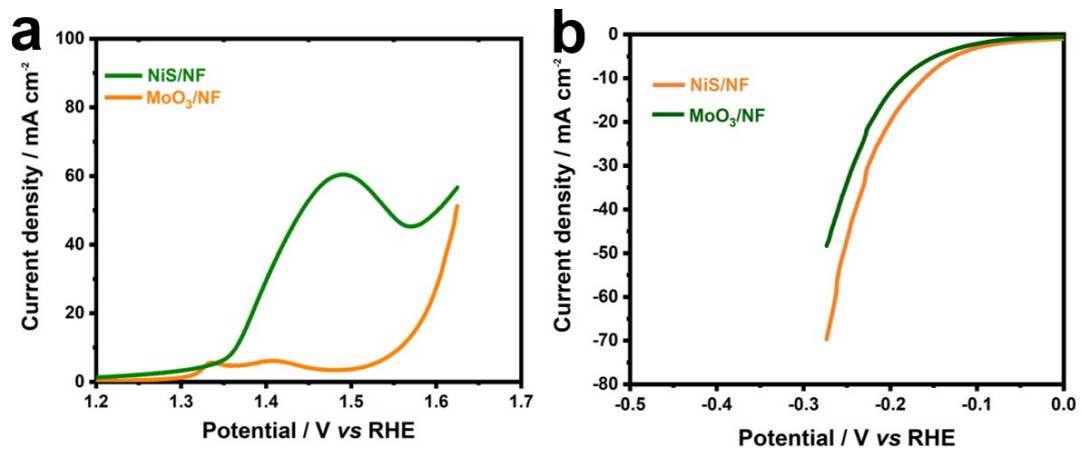


Fig. S5 The linear sweep voltammetry (LSV) curves of NiS/NF and MoO₃/NF for OER (a) and HER (b) in the alkaline electrolyte of 1.0 M KOH at a scan rate of 5 mV s⁻¹.

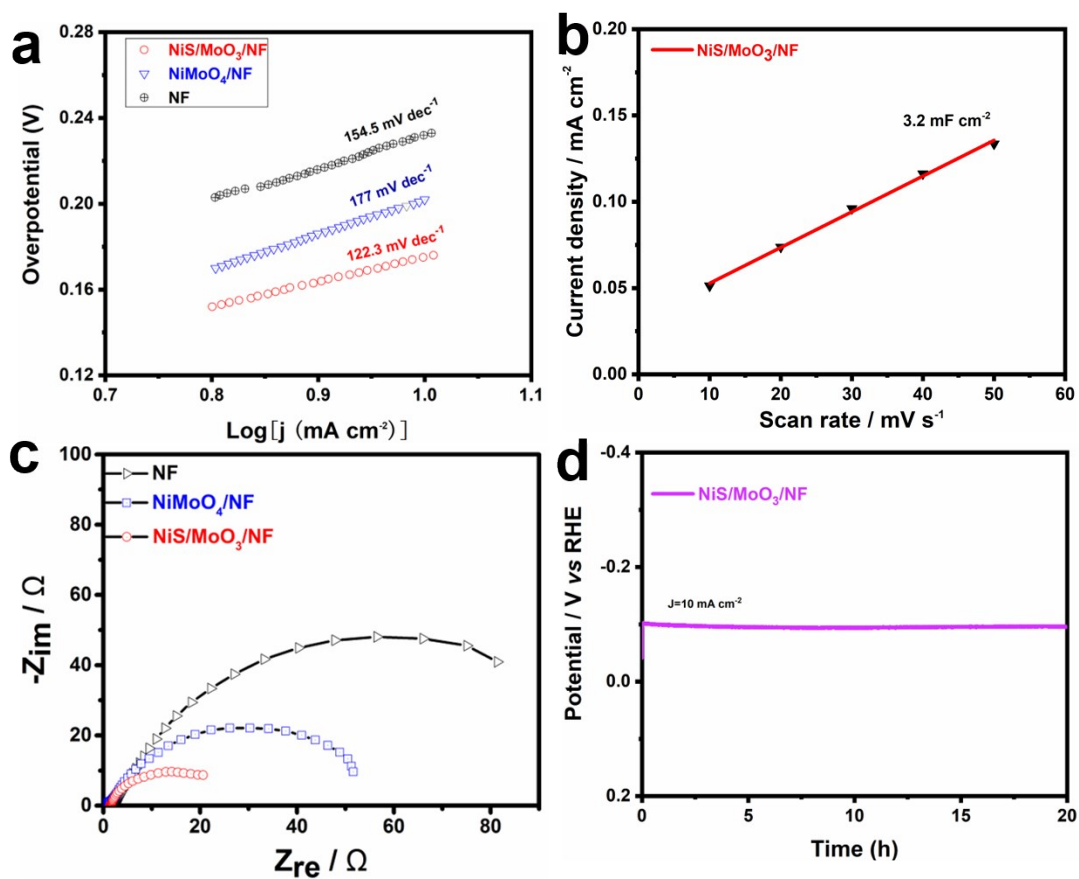


Fig. S6 (a) Tafel plots of as-prepared catalysts. (b) Capacitance current as a function of scan rate. (c) Electrochemical impedance spectroscopy plots. (d) Chronopotentiometry response of NiS/MoO₃/NF for HER at constant current density of 10 mA cm⁻²

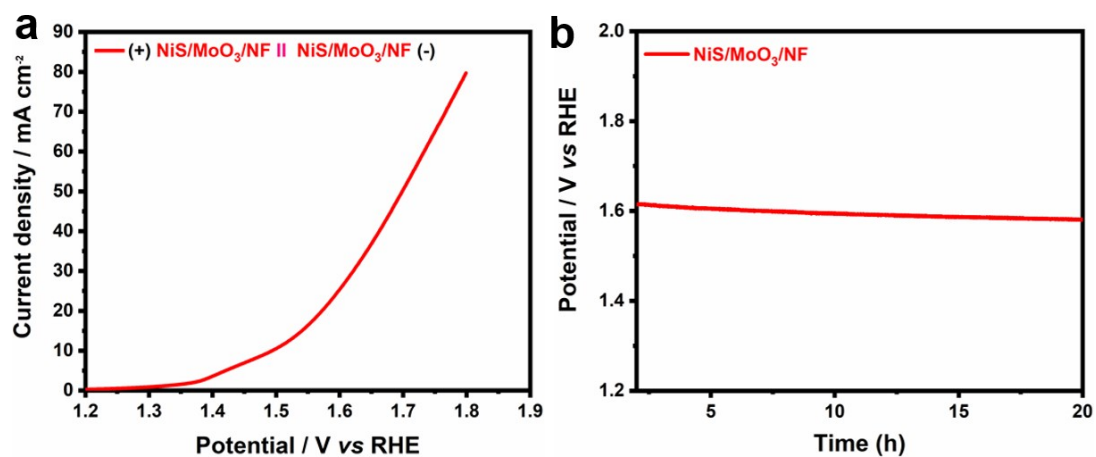


Fig. S7 (a) LSV polarization curve of NiS/MoO₃/NF towards direct water splitting, (b) Chronopotentiometry curve of NiS/MoO₃/NF at a current density of 10 mA cm⁻².

Table S1 Comparison of the OER performance of NiS/MoO₃/NF with previous reported non-precious OER electrocatalysts in basic electrolyte.

electrocatalysts	η_{10}/η_{50} (mV)	Tafel slope (mV dec ⁻¹)	electrolyte	Reference
NiS/MoO ₃ /NF	221	70.9	1.0 M KOH	This work
Ni ₃ S ₂ /NF	260	-	1.0 M KOH	1
Ni _x Co _{2x} (OH) _{6x} @Ni	305	78	1.0 M KOH	2
FeOOH/CeO ₂ HLNTs- NF	230	92.3	1.0 M KOH	3
Mo-Ni ₃ S ₂ /Ni _x P _y	238	60.6	1.0 M KOH	4
CoCr LDH nanosheets	340	81	1.0 M KOH	5
NiS/NF	335	89	1.0 M KOH	6

Table S2 Comparison of the cell voltage for overall water splitting of NiS/MoO₃/NF with previous reported non-precious electrocatalysts at 10 mA cm⁻² water splitting current density in basic electrolyte.

electrocatalysts	Cell voltage (V)	electrolyte	Reference
NiS/MoO ₃ /NF	1.566	1.0 M KOH	This work
Ni ₃ S ₂ /NF	1.64	1.0 M KOH	6
Ni ₃ Se ₂ nanoforest/NF	1.61	1.0 M KOH	7
Ni _{2.5} Co _{0.5} Fe/NF	1.62	1.0 M KOH	8
Ni _x P _y -325	1.57	1.0 M KOH	8
Ni/NiP	1.61	1.0 M KOH	9
Ni-P foam	1.64	1.0 M KOH	10

Reference

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