

Supporting Information

MoS₂-MoP Heterostructured Nanosheets Supported on Polymer-Derived Carbon for Hydrogen Evolution Reaction

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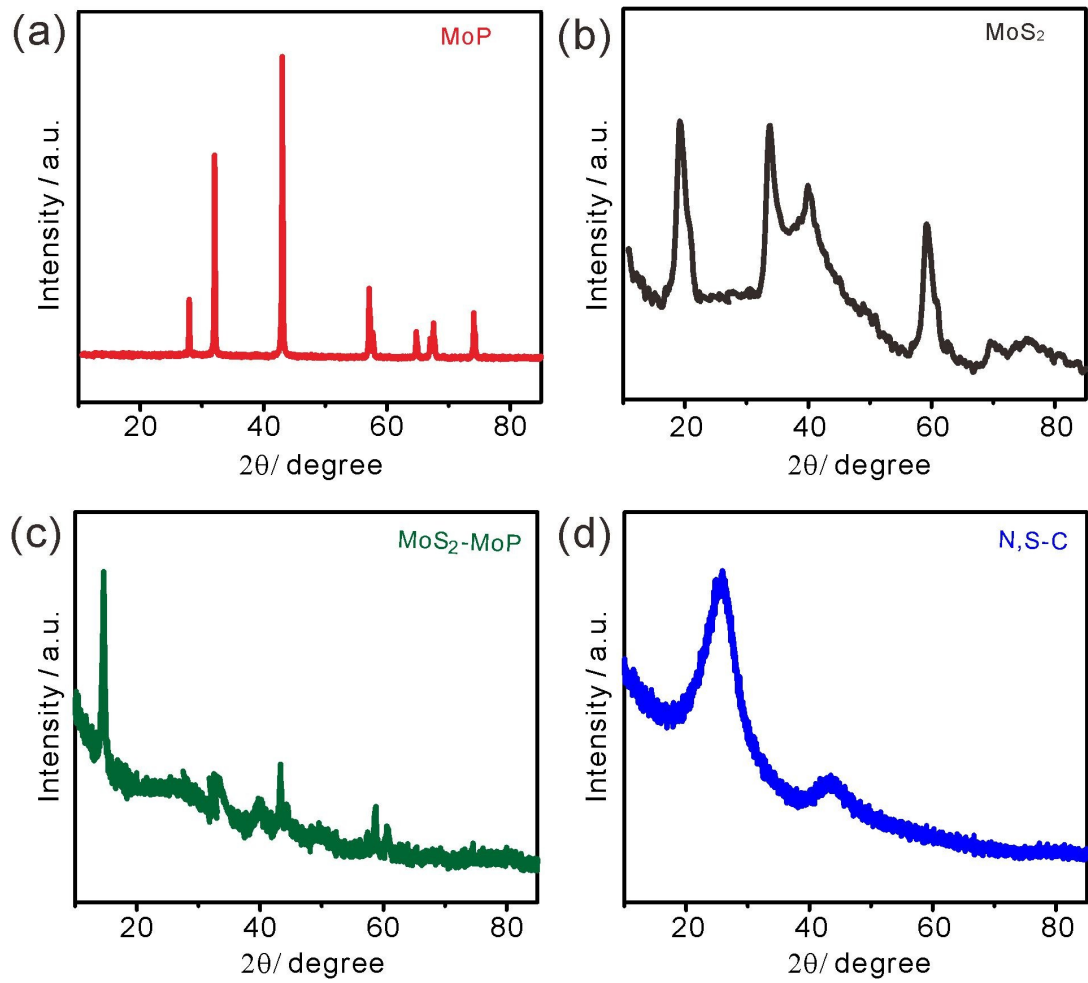


Fig. S1. XRD pattern of bulk MoP (a), MoS₂ (b), MoS₂-MoP (c) and NS-C (d).

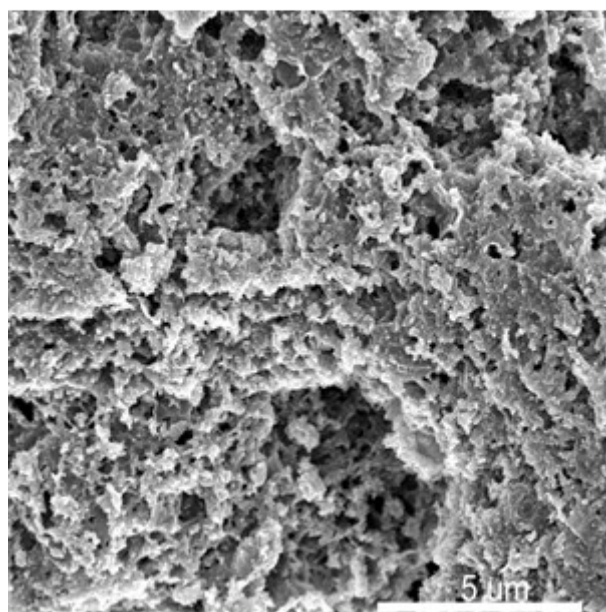


Fig. S2. SEM image of heteroatoms doped carbon supported MoS₂-MoP nanosheets.

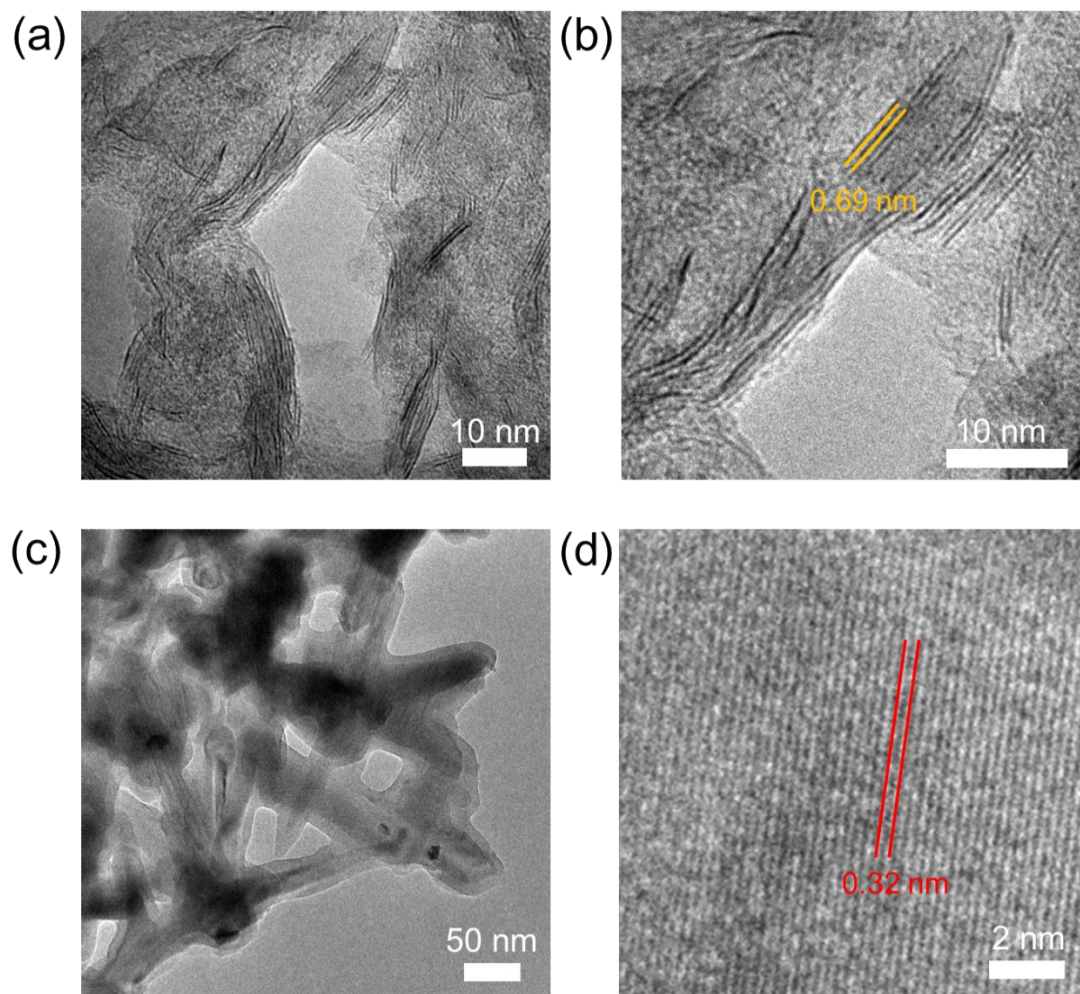


Fig. S3. TEM image of MoS₂/C (a, b) and MoP/C (c, d) and its corresponding HR-TEM images.

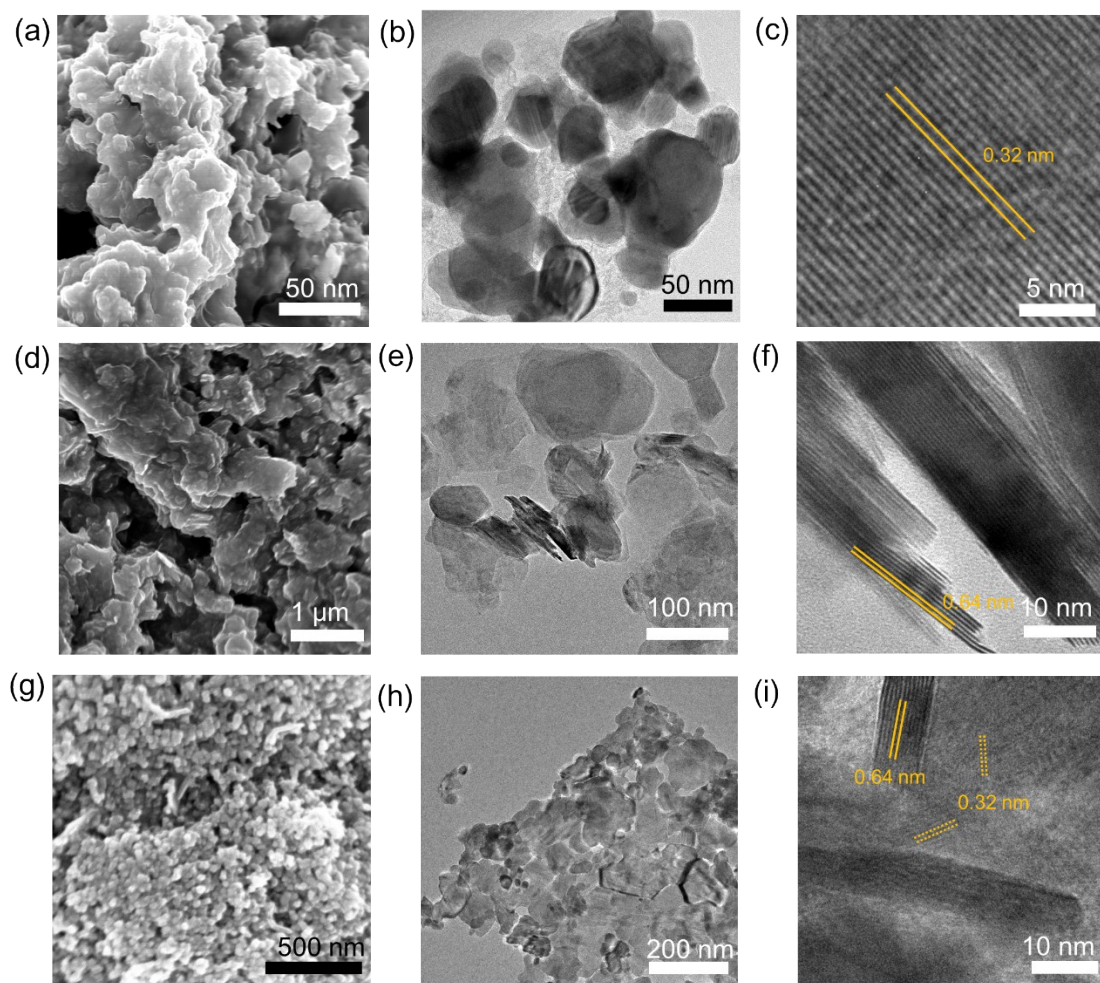


Fig. S4 SEM and TEM images of MoP (a-c), MoS₂ (d-f) and MoS₂-MoP (g-i).

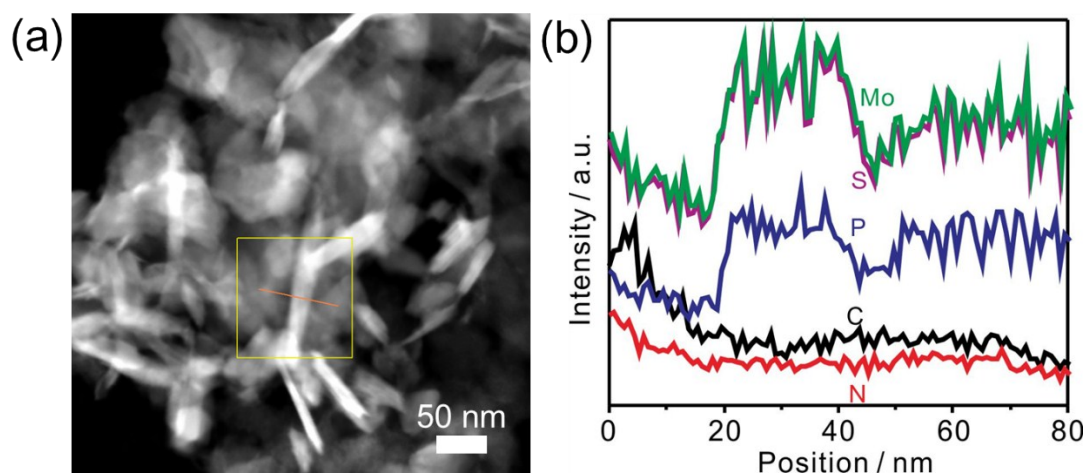


Figure S5 STEM images (a) and the line-scan EDX spectra for a cross section of MoS₂-MoP/C nanosheet in (b).

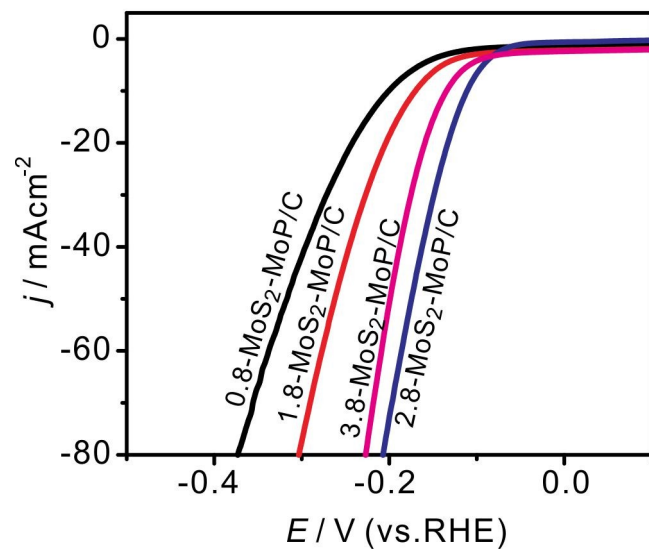


Fig. S6 Polarization curves of MoS₂-MoP/C with various amount of NaH₂PO₄.

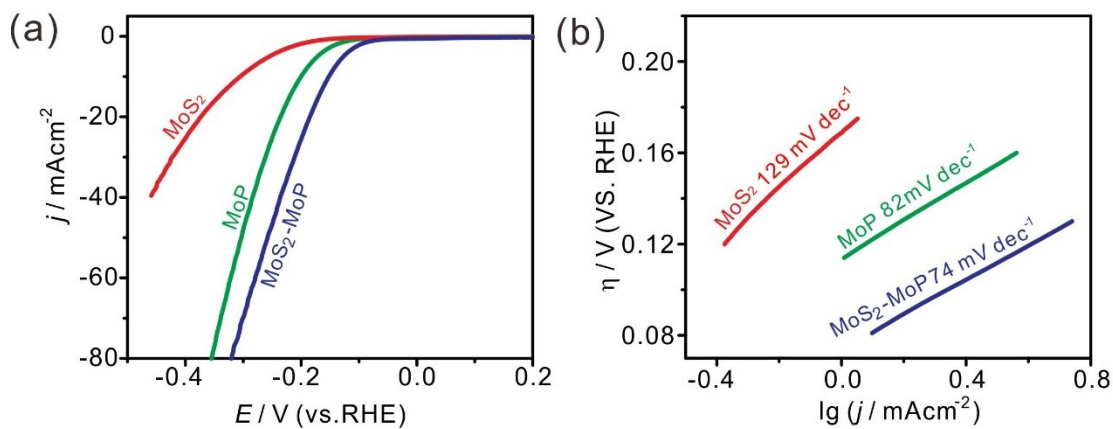


Fig. S7 Polarization curves (a) and corresponding Tafel slopes (b) of MoS₂-MoP, MoP and MoS₂ in 0.5 M H₂SO₄ solution at a scan rate of 5 mV s⁻¹.

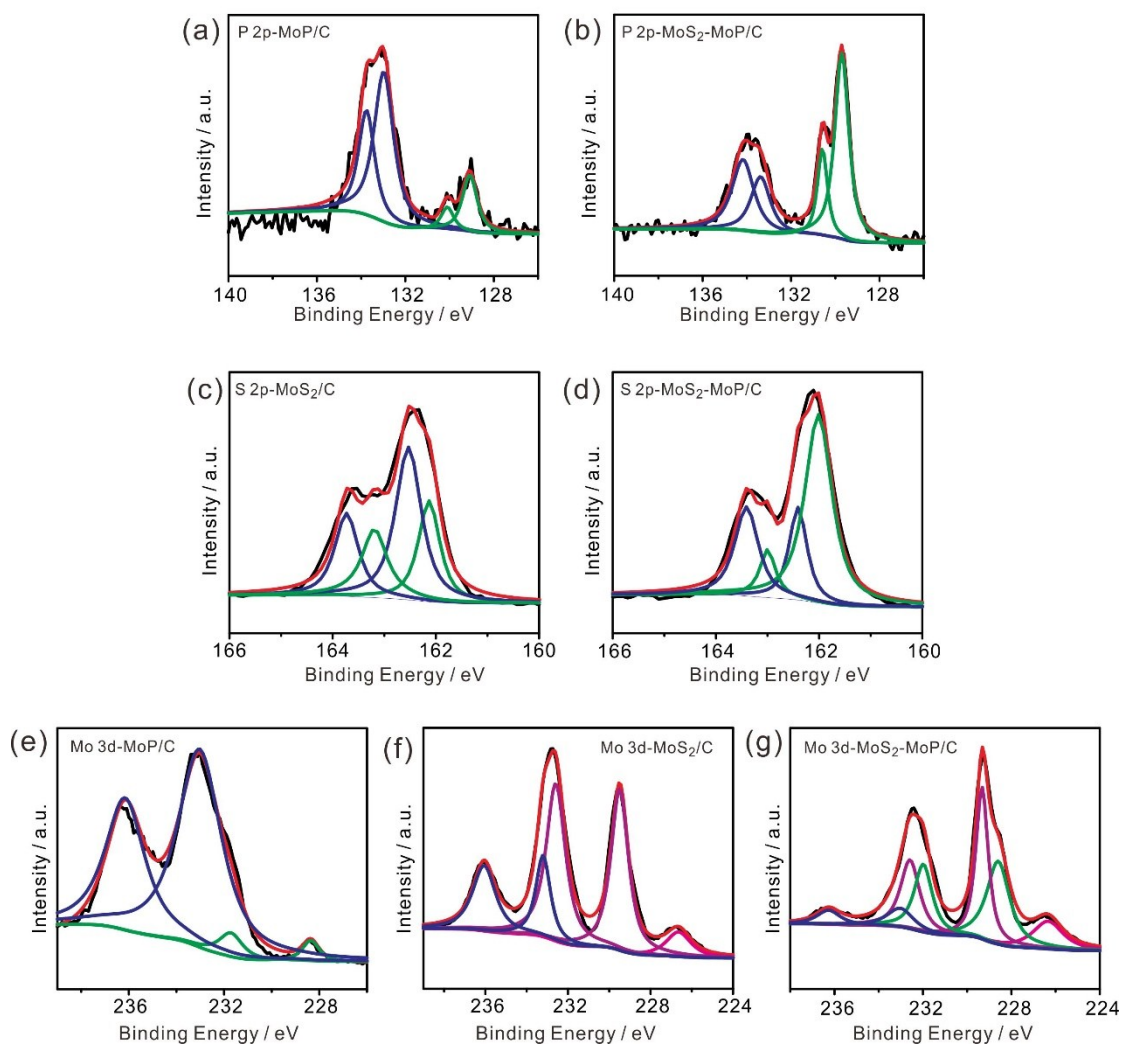


Fig. S8 High resolution of P 2p in MoP/C (a) and MoS₂-MoP/C (b). High resolution of S 2p in MoS₂/C (c) and MoS₂-MoP/C (d). High resolution of Mo 3d in MoP/C (e), MoS₂/C (f) and MoS₂-MoP/C (g).

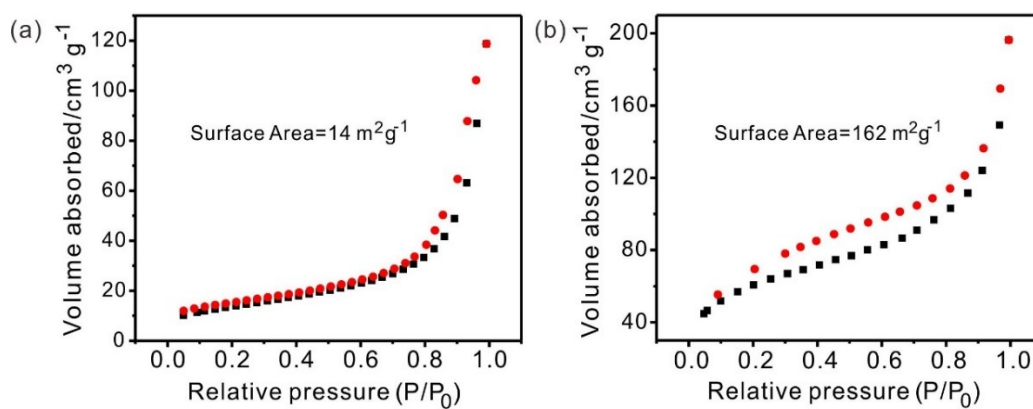


Fig. S9 Nitrogen adsorption/desorption isotherms of MoS₂-MoP (a) and MoS₂-MoP/C

(b).

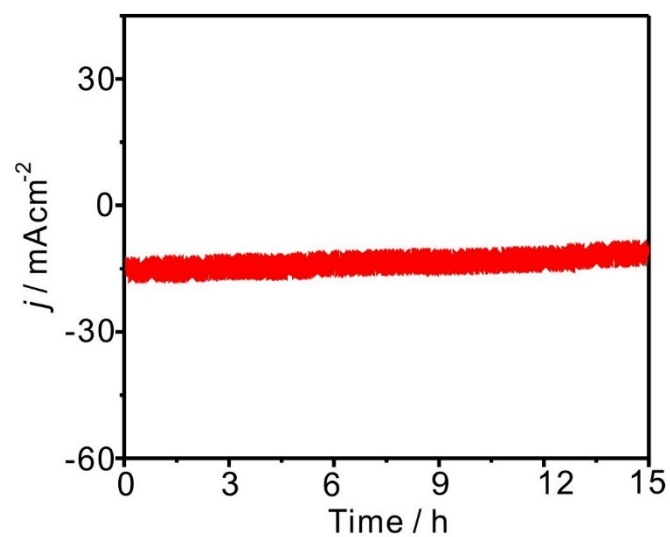


Fig. S10 Stability test of MoS₂-MoP/C in 0.5 M H₂SO₄ at an overpotential of 124 mV.

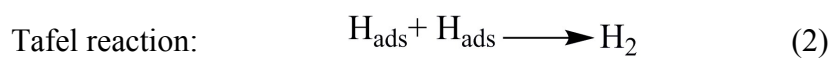
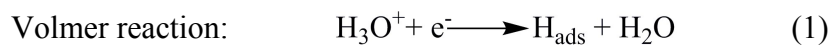


Table S1. Comparison of the HER performance of some reported catalysts.

Samples	$\eta_{j=10 \text{ mA cm}^{-2}}$ (V vs.RHE)	Tafel slopes (mV dec ⁻¹)	Loading ($\mu\text{g cm}^{-2}$)
MoS ₂ ⊥ RGO[1]	0.172	43	204
MoS ₂ nanoparticles/RGO[2]	0.155	41	285
MoS ₂ nanosheets/RGO[3]	0.18	41	200
MoS ₂ nanosheets/RGO[4]	~0.21	46	220
MoS ₂ QDs[5]	0.3	59	-
MoS ₂ @S-C [6]	0.16	72	-
MoS ₂ NFs/rGO [7]	~0.32	95	116
MoP [8]	0.14	54	860
MoP [9]	0.25	60	71
MoP/S [10]	0.12	50	1000
MoP [11]	0.13	54	360
MoP/Carbon [12]	0.2	56	360
Amorphous MoP [13]	0.11	-	1000
MoS ₂ -MoP/C(This work)	0.102	58	420

References

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