

Figure S1. Ultraviolet photoelectron spectroscopy (UPS) data of N,S-GQDs.

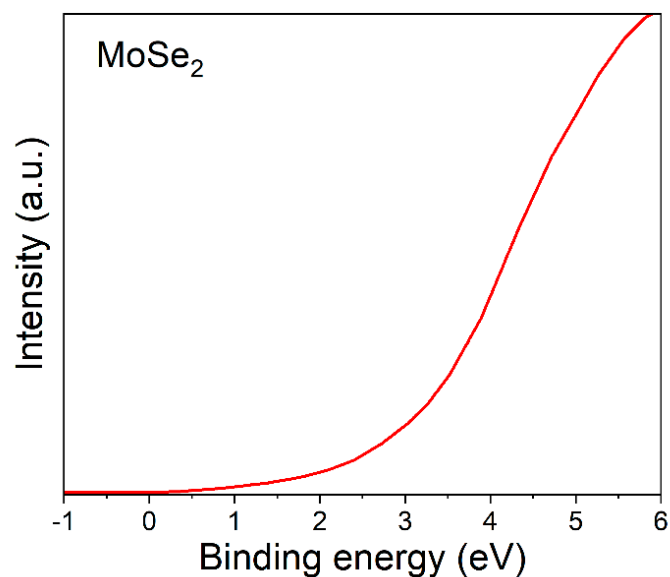


Figure S2. UPS spectra of MoSe₂.

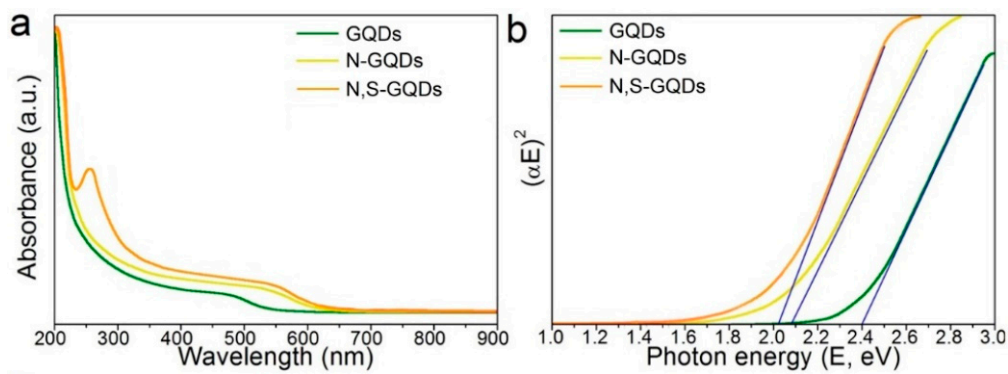


Figure S3. (a) UV-vis absorption spectra and (b) the $(\alpha E)^2$ versus photon energy

(E) plots (where α denotes the absorbance coefficient).

Table S1. Hydrogen generation comparison of different MoSe₂-based materials.

Catalysts	Light source	Activity	Overpotential	Tafel	Reference
100 W halogen					
1T-MoSe ₂	lamp	62 mmol h ⁻¹ g ⁻¹	— —	— —	[1]
100 W halogen					
2H-MoSe ₂	lamp	0.08 mmol h ⁻¹ g ⁻¹	— —	— —	[1]
Porous			150 mV at 10	80 mV	
MoSe ₂	— —	— —	mA cm ⁻²	dec ⁻¹	[2]
			162 mV at 10	61 mV	
MoSe ₂ /MoS ₂	— —	— —	mA cm ⁻²	dec ⁻¹	[3]
			275 mV at 10	80 mV	
MoSe ₂ /WSe ₂	— —	— —	mA cm ⁻²	dec ⁻¹	[4]
N,S-GQDs/	AM 1.5 Newport		153 mV at 10	57.3 mV	
MoSe ₂	xenon lamp	4.91 μ mol h ⁻¹ cm ⁻²	mA cm ⁻²	dec ⁻¹	This work

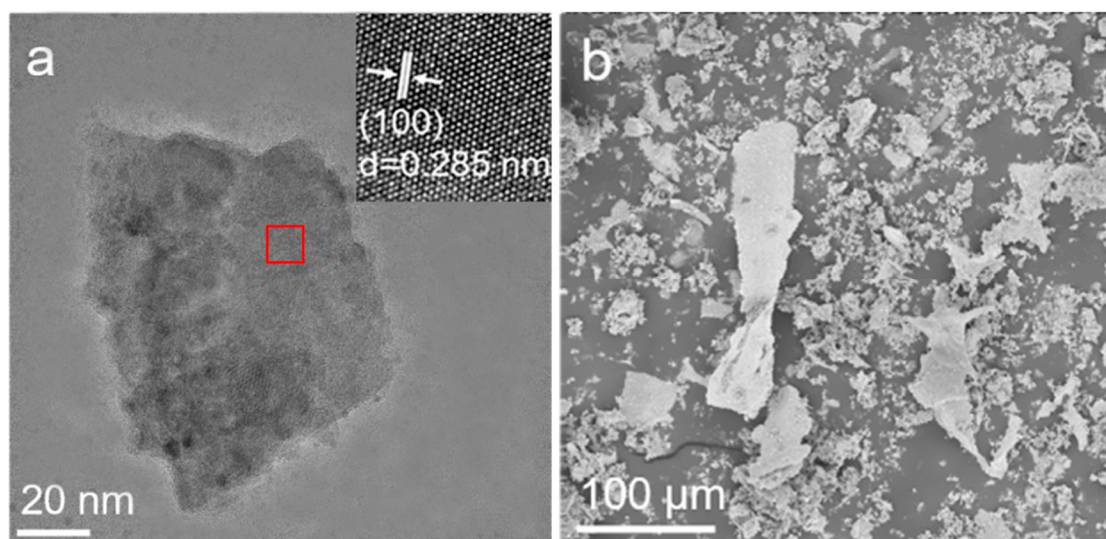


Figure S4. Morphology characterizations of N,S-GQDs/MoSe₂ heterojunction catalyst after PEC reaction. (a) TEM image with HRTEM as inset, (b) SEM image of sample nanosheets.

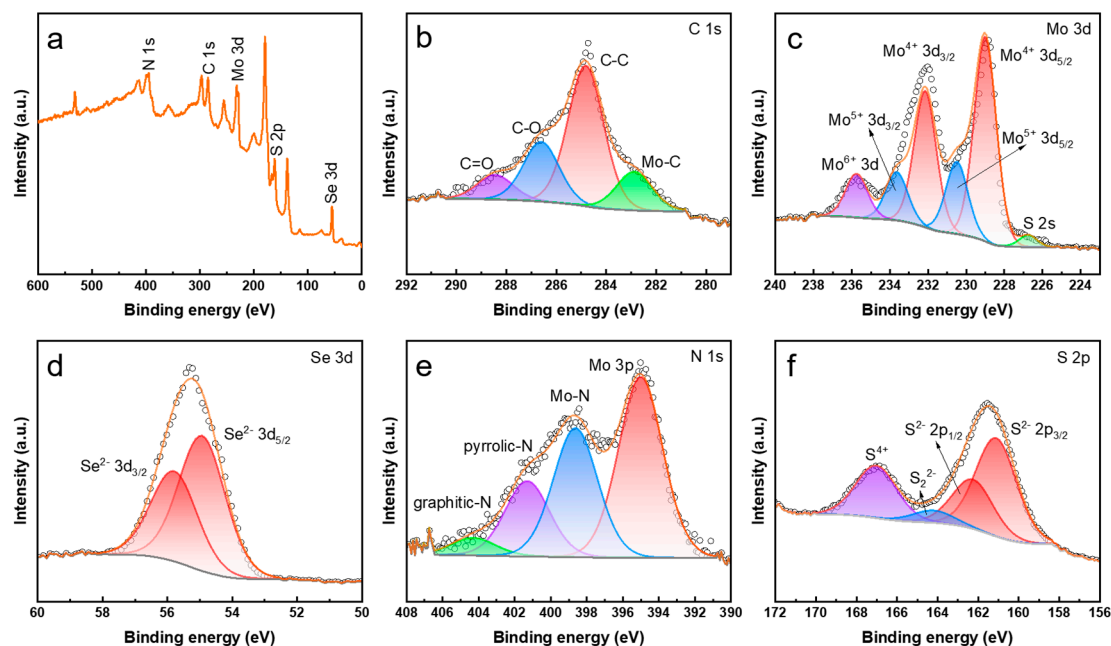


Figure S5. (a) Overall XPS, (b) C 1s, (c) Mo 3d, (d) Se 3d, (e) N 1s and (f) S 2p high resolution XPS patterns of the N,S-GQDs/MoSe₂ heterojunction catalyst after PEC reaction.

References

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