

Supporting information

Sulfur Vacancy-rich O-doped 1T-MoS₂ Nanosheets for Exceptional Photocatalytic Nitrogen Fixation over CdS

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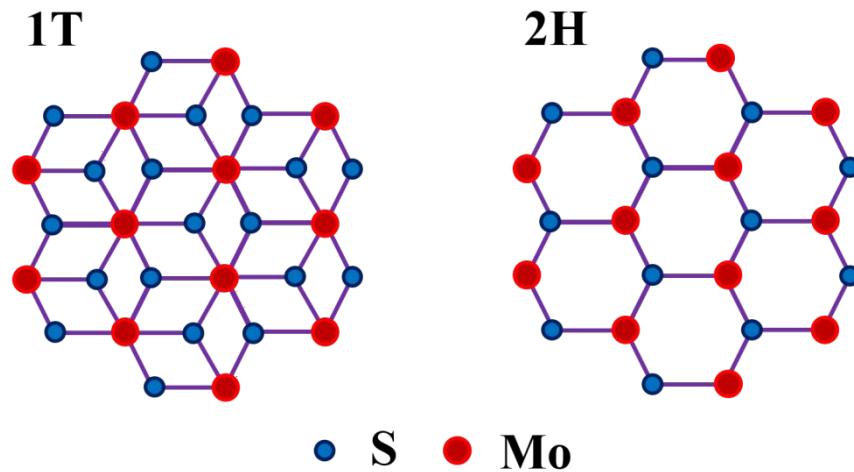


Figure S1. Crystal structures of the 2H and 1T phases of MoS_2 .

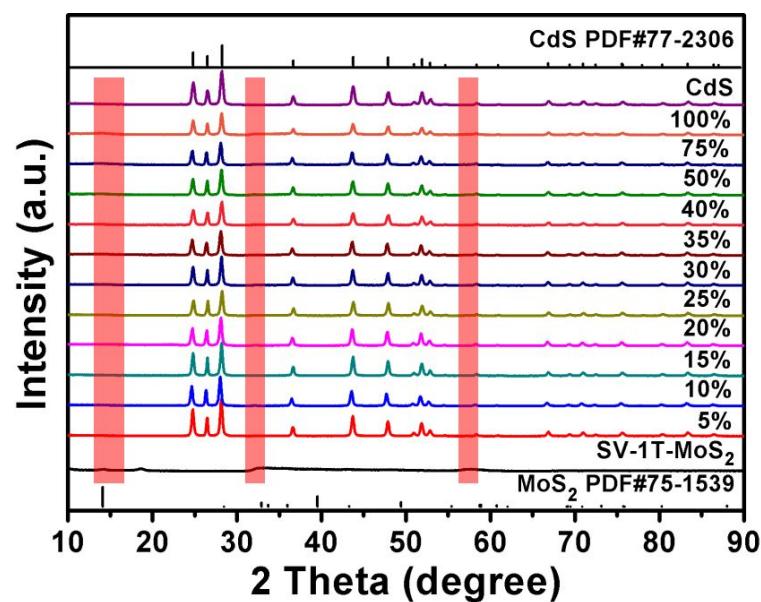


Figure S2. The XRD pattern of SV-1T-MoS₂-CdS composites containing different amounts of SV-1T-MoS₂ (0, 5, 10, 15, 20, 25, 30, 35, 40, 50, 75, and 100 wt%) and pure CdS nanorods.

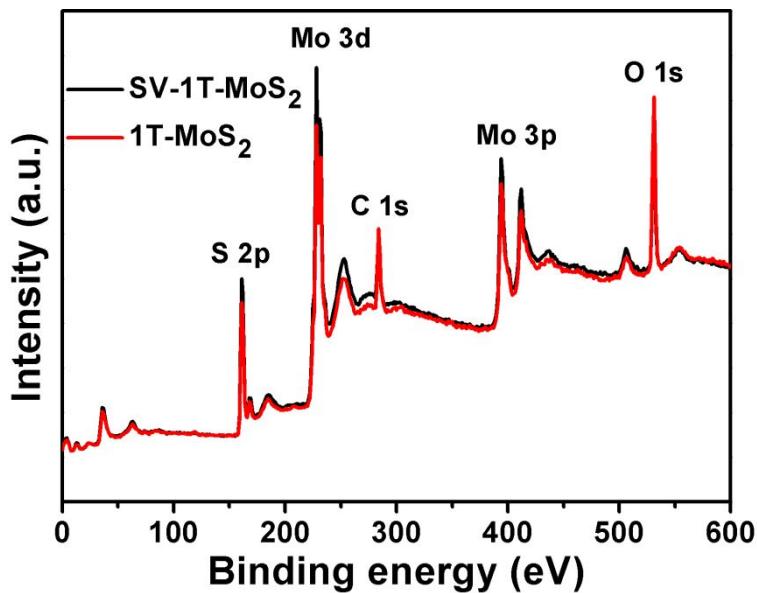


Figure S3. The survey XPS spectrum of SV-1T-MoS₂ and 1T-MoS₂.

Table S1. The content of 1T phase and 2H phase for SV-1T-MoS₂, 1T-MoS₂, 30 wt%

SV-1T-MoS₂-CdS.

Samples	Content of 1T (%)	Content of 2H (%)
SV-1T-MoS ₂	74.99	25.01
1T-MoS ₂	66.88	33.12
30 wt% SV-1T-MoS ₂ -CdS	71.72	28.28

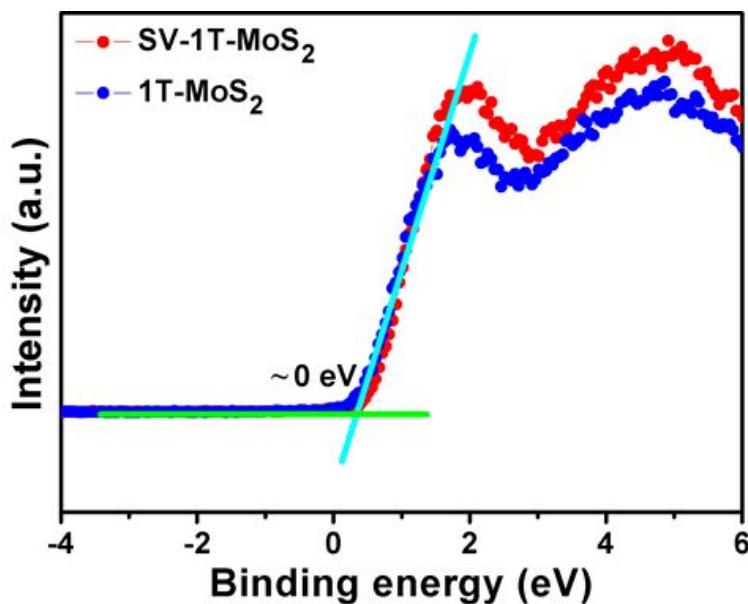


Figure S4. XPS valence band spectra of SV-1T-MoS₂ and 1T-MoS₂ (versus to The Fermi Level).

Table S2. Specific surface areas of different samples.

Samples	Specific surface area (m ² g ⁻¹)
SV-1T-MoS ₂	8.398
1T-MoS ₂	5.804
CdS nanorods	11.313
30 wt% SV-1T-MoS ₂ -CdS	16.676
30 wt% 1T-MoS ₂ -CdS	10.061

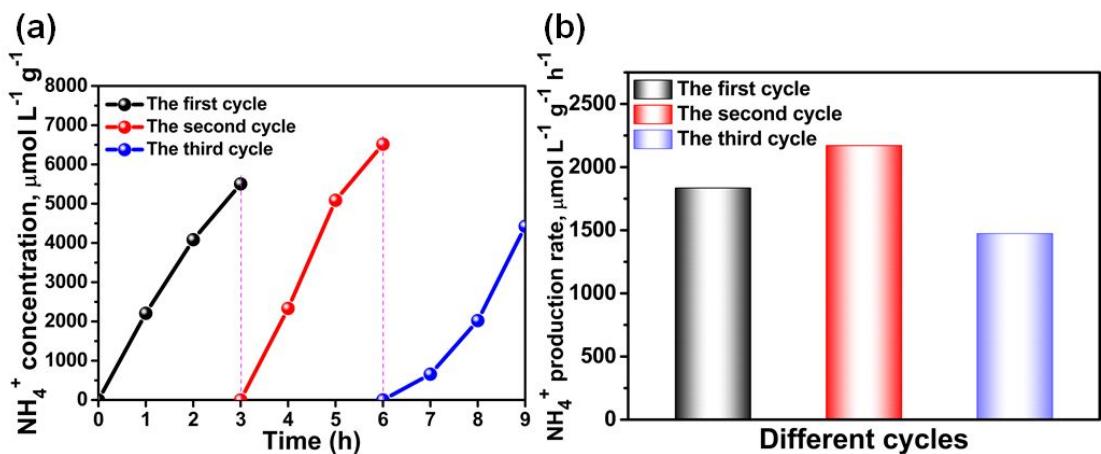


Figure S5. Time-dependent photocatalytic nitrogen fixation performance profile for 30 wt% SV-1T-MoS₂-CdS composites (a) NH_4^+ concentration and (b) the NH_4^+ production rate.

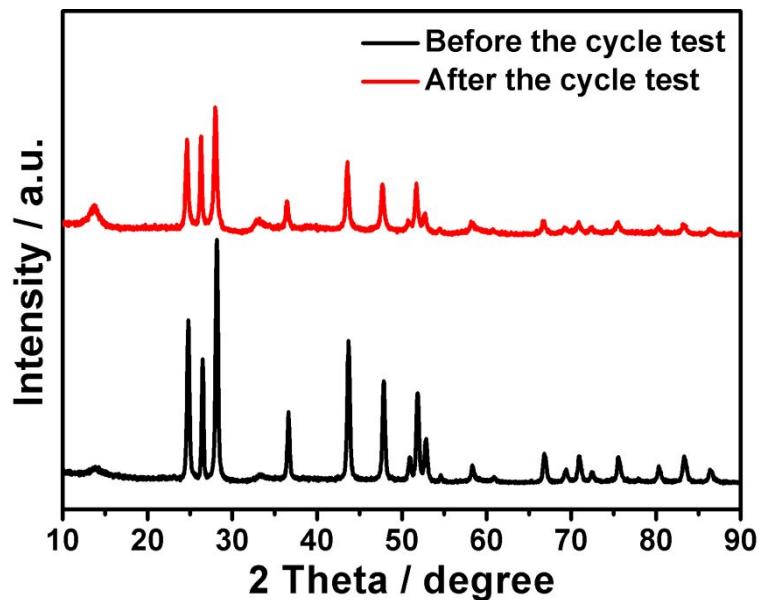


Figure S6. The XRD pattern of 30 wt% SV-1T-MoS₂-CdS composites before and after the cycle test.

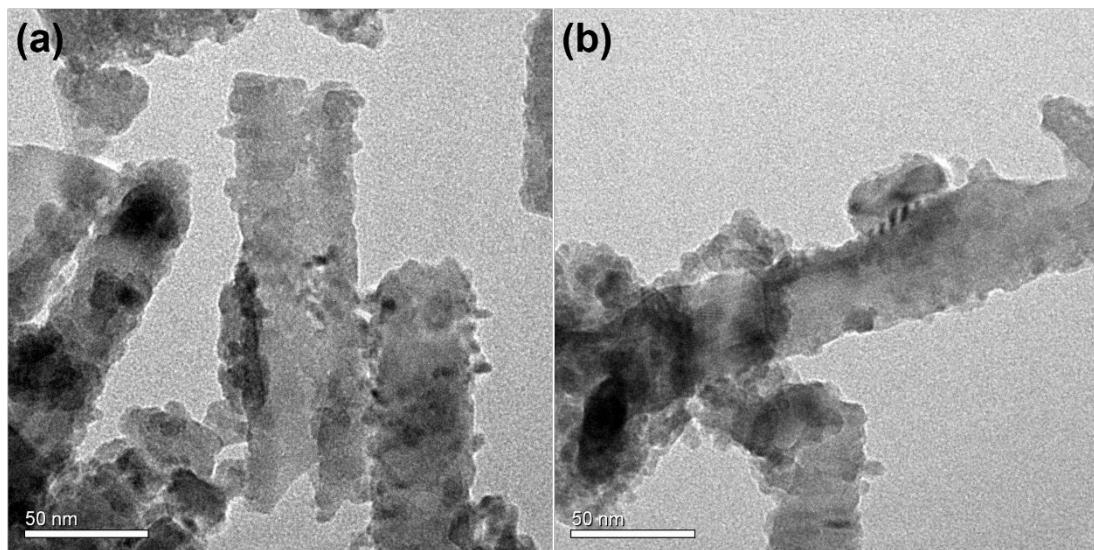


Figure S7. The TEM image of 30 wt% SV-1T-MoS₂-CdS composites (a) before and (b) after the cycle test.