

Supplementary data

Tuning the Composition and Structure of Amorphous Molybdenum Sulfide/Carbon Black Composites by Radiation Technique for Efficient Hydrogen Evolution

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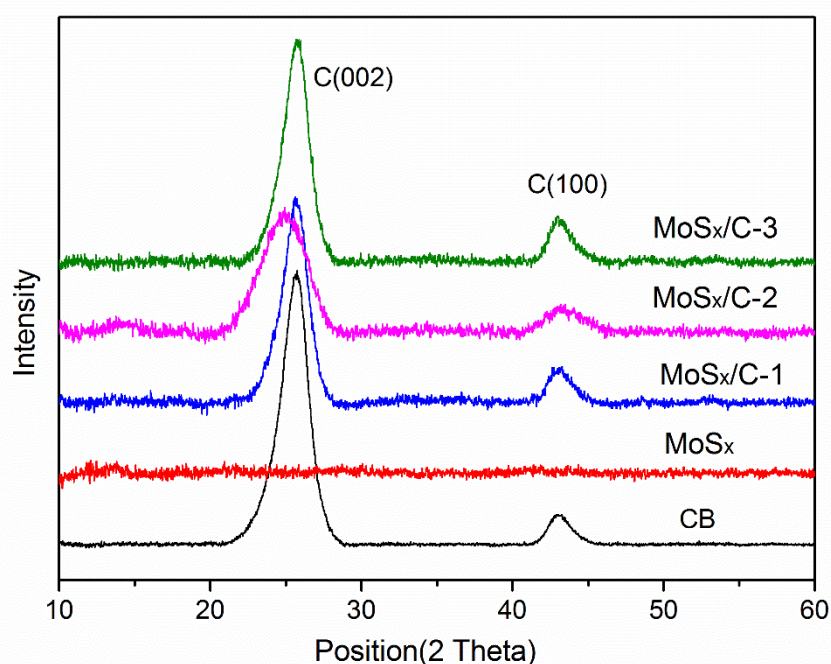


Figure S1: XRD patterns of CB, MoS_x and MoS_x/C nanocomposites.

Table S1: HER performance of different MoS_x-based catalysts

Catalysts	Structure	Onset η (mV)	η at $j = 10 \text{ mA cm}^{-2}$	References
MoS ₂	2H	100	251	13
MoS ₂ :Cu/rGO	2H-1T	/	182	14
MoS _x /rGO	Amorphous	/	157	10
MoS _x	Amorphous	/	210	16
MoS _x	Amorphous	/	200	17
MoS _x	Amorphous	~100	~180	32
MoS _x /C	Amorphous	40	76	This work

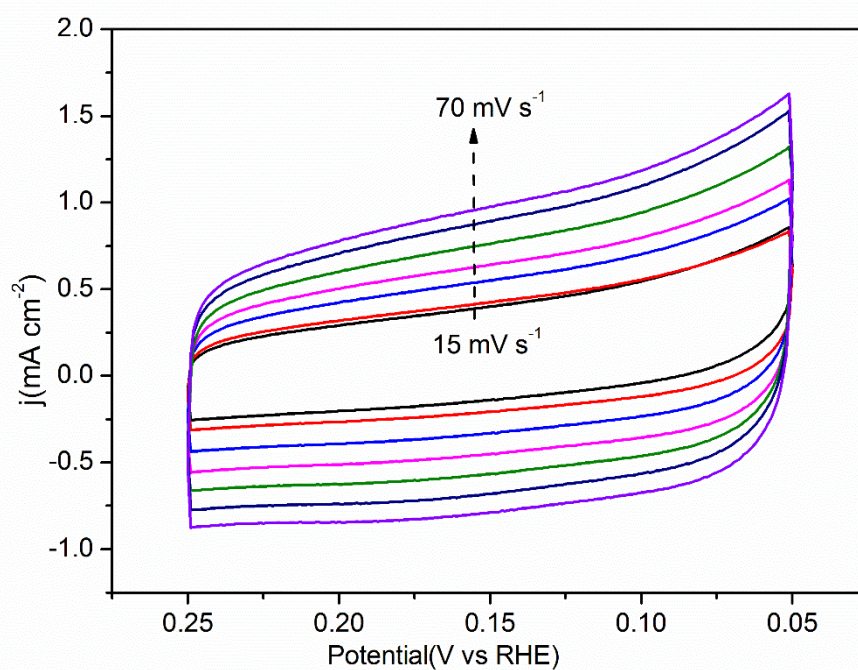


Figure S2: Cyclic voltammetry curves of MoS_x/C-2 at various scan rates (15, 20, 30, 40, 50, 60, 70 mV s⁻¹) in the region of 0.25–0.05 V versus RHE.

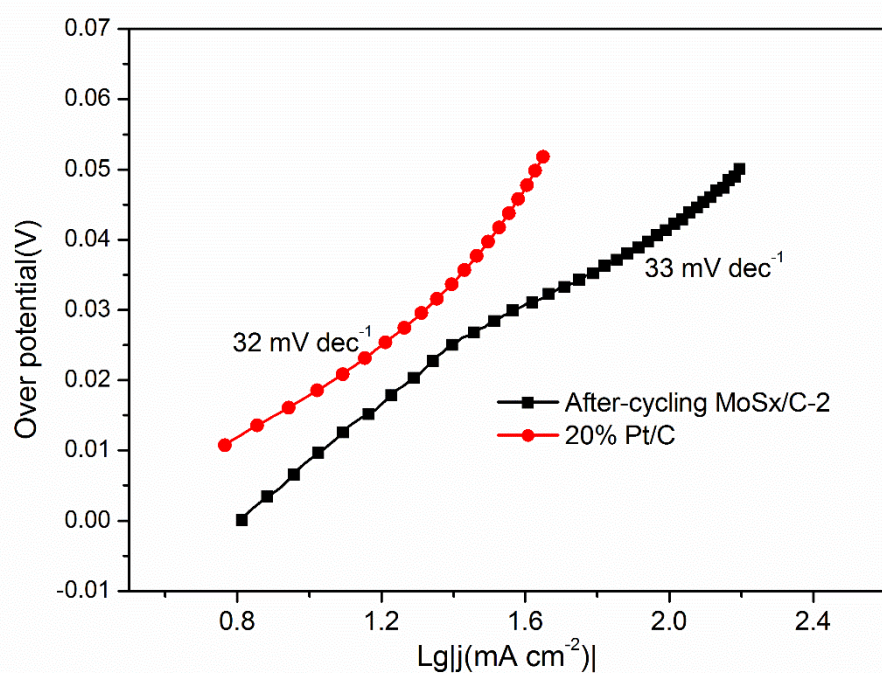


Figure S3: Tafel plots of after-cycling MoS_x/C-2 and 20% Pt/C (Pt foil as counter electrode and MoS_x/C-2 modified carbon paper as working electrode)

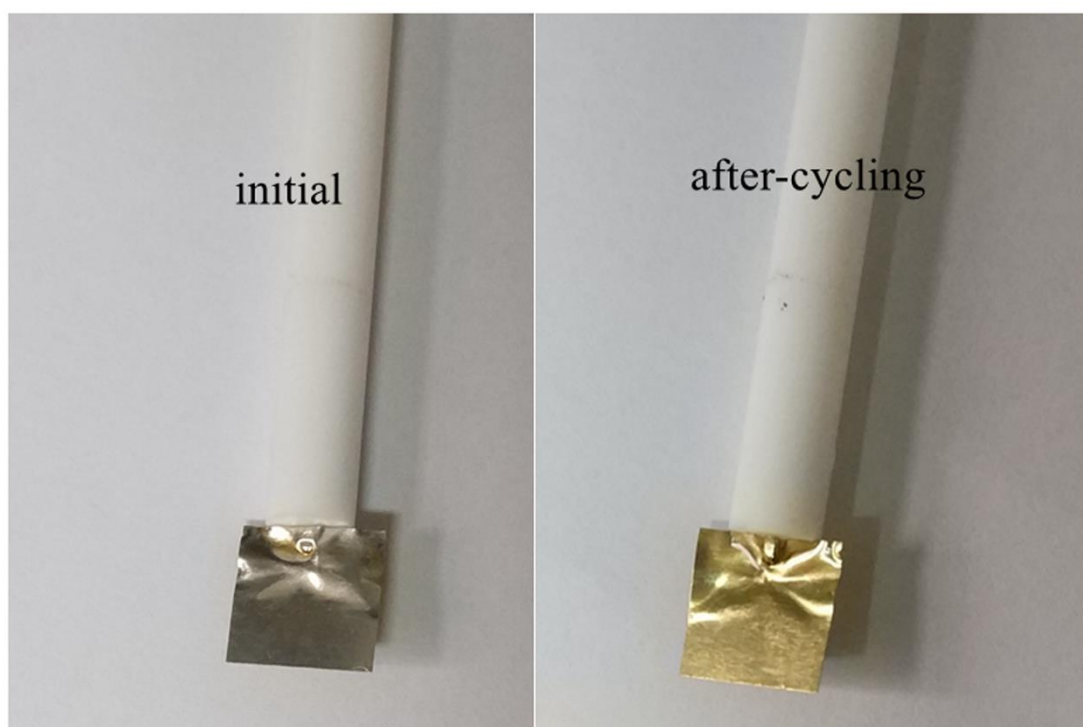


Figure S4: Photographs of Pt counter electrode of initial and after-cycling

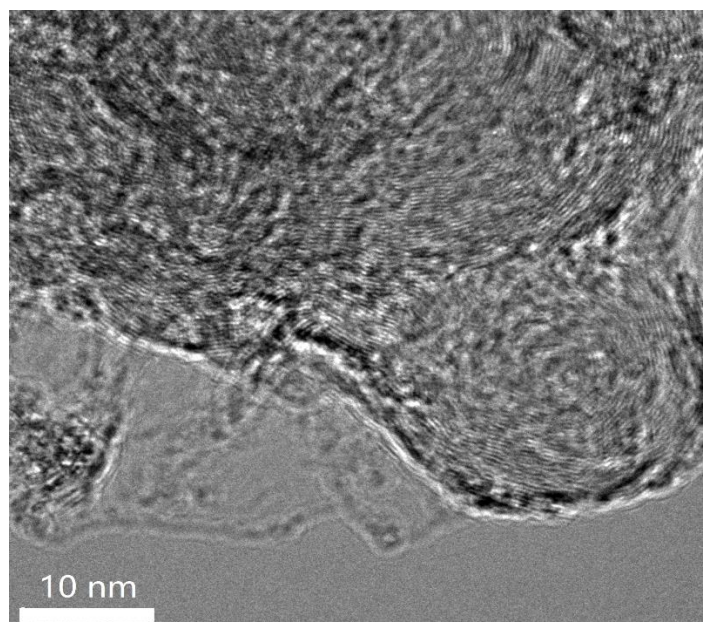


Figure S5: TEM image of after-cycling MoS_x/C-2(Graphite rod as counter electrode)

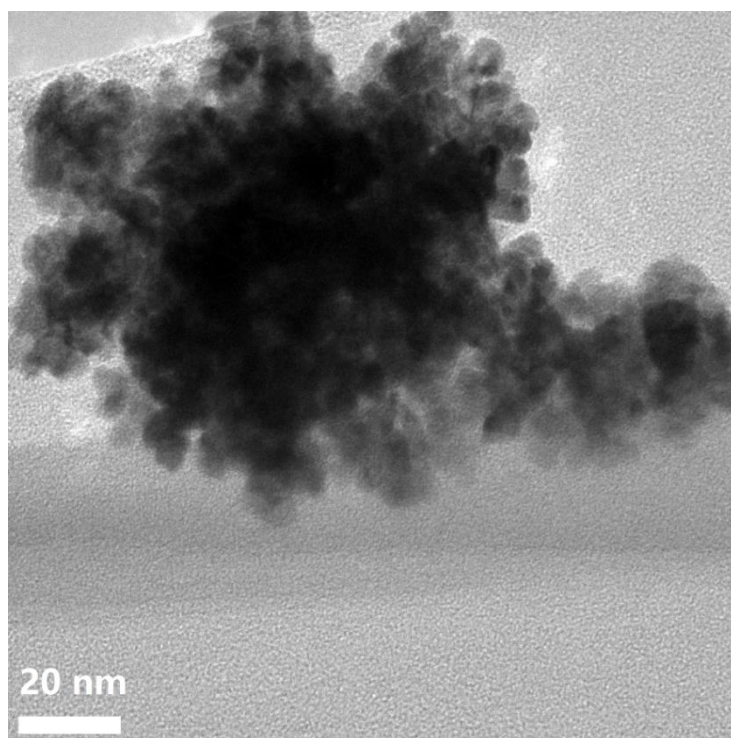


Figure S6: TEM image of Pt aggregation of after-cycling MoS_x/C-2

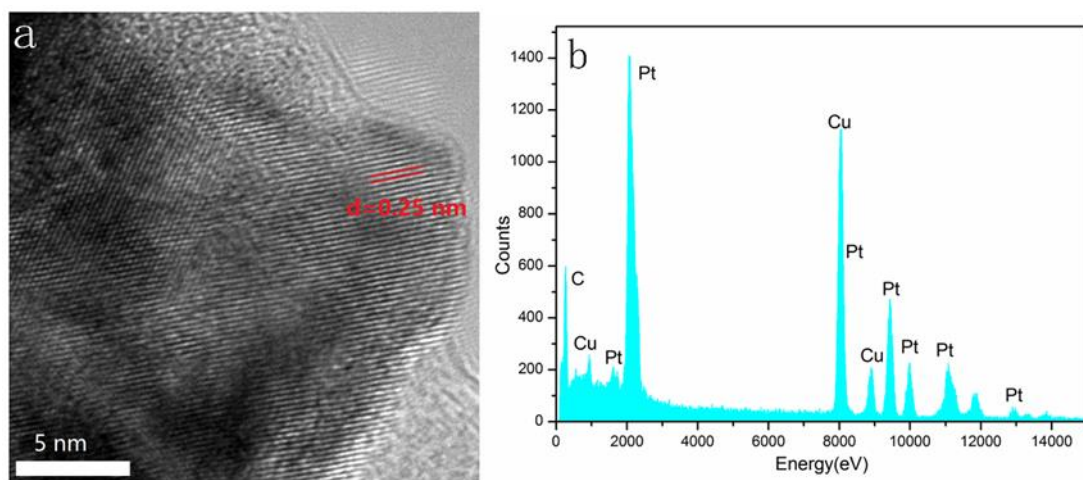


Figure S7: HRTEM image of after-cycling $\text{MoS}_x/\text{C}-2$ (a) and corresponding EDS spectrum (b).

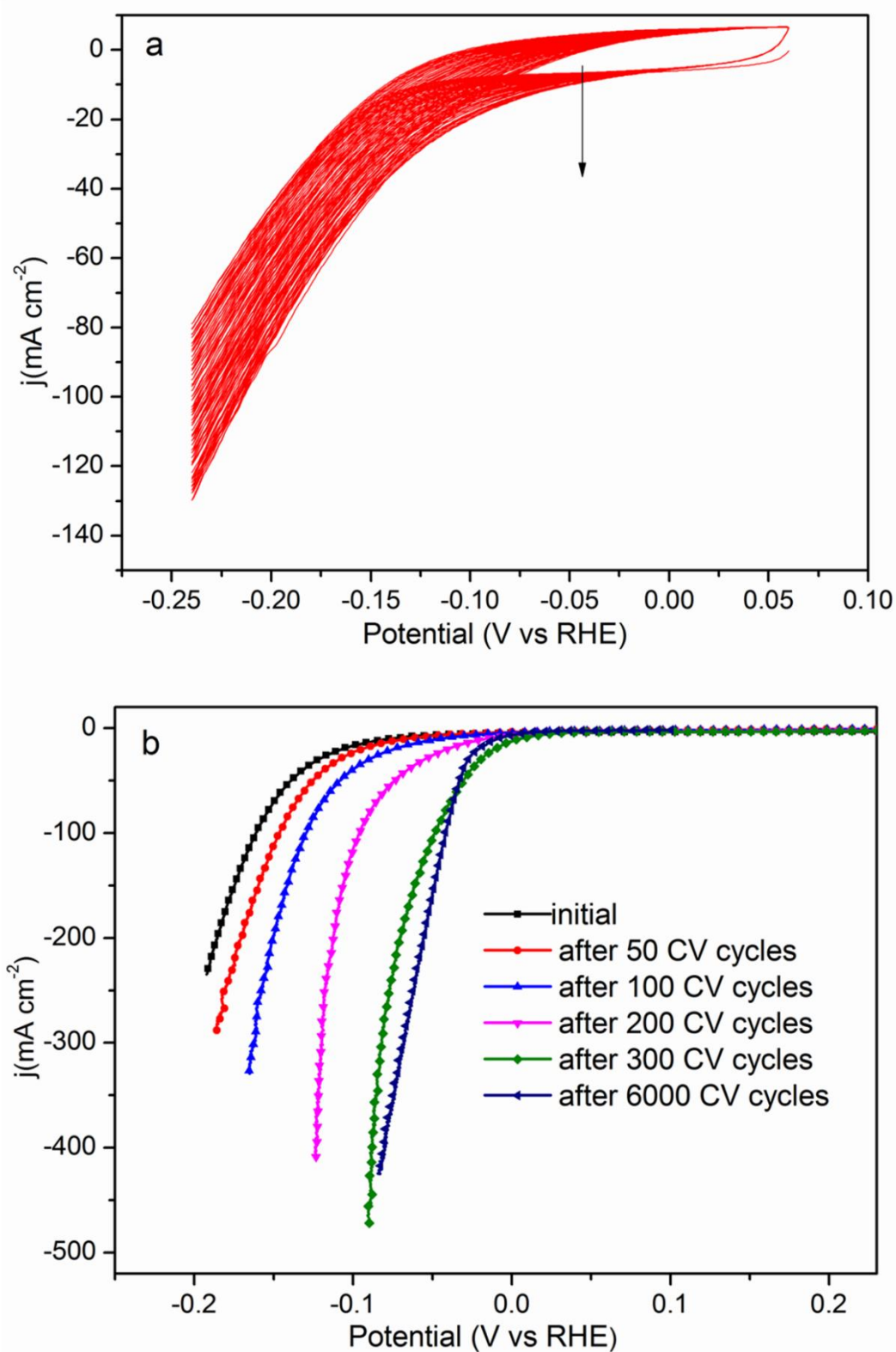


Figure S8: CV and LSV tests of MoS_x/C-2. (a) First 50 CV tests of MoS_x/C-2(scan rate:50 mV s⁻¹); (b) LSV tests of MoS_x/C-2 after different CV cycles.