

Electronic Supplementary Information

Vanadium-doping in interlayer-expanded MoS₂ nanosheets for efficient electrocatalytic hydrogen evolution reaction

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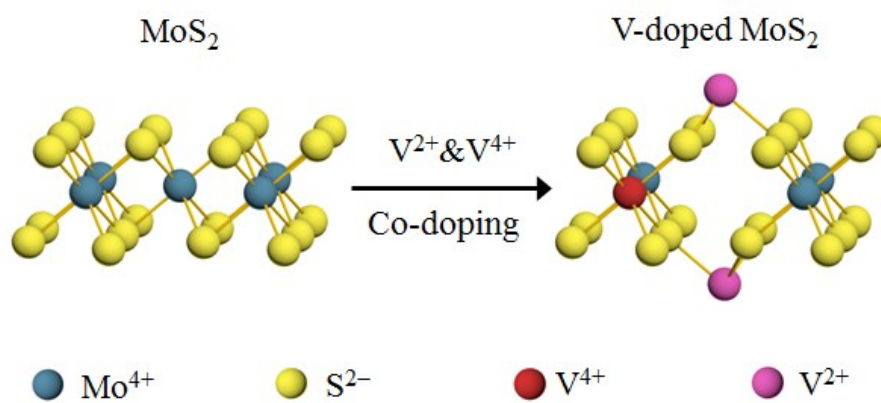


Fig. S1 Schematic illustration for the V-doped MoS_2 .

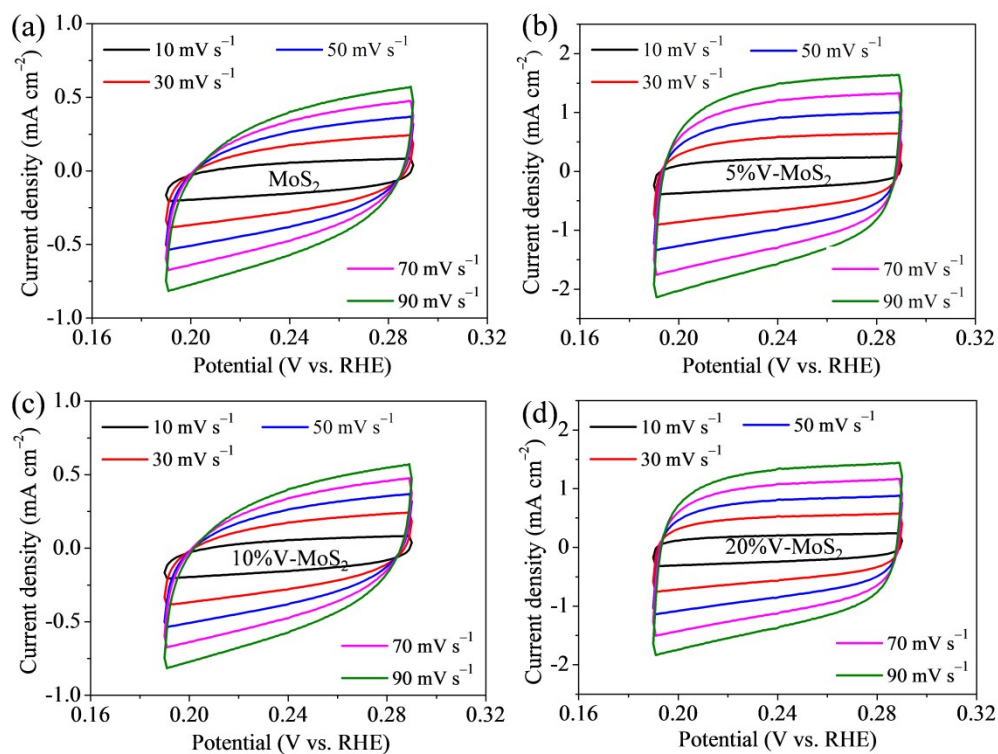


Fig. S2 CV curves of the various catalysts: (i) MoS₂, (ii) 5%V-MoS₂, (iii) 10%V-MoS₂ and (iv) 20%V-MoS₂.

Table S1 Recent advances of HER performance of MoS₂-based catalysts.

Electrocatalysts	Overpotential at 10 mV cm ⁻² (mV)	Tafel slope (mV dec ⁻¹)	Counter electrodes	Electrolyte	References
V-doped and interlayer-expanded and MoS ₂ nanosheets	146	48	graphite rod	0.5M H ₂ SO ₄	This work
MoS ₂ nanosheets grown on VS ₂ nanoflowers	177	54.9	Pt wire	0.5M H ₂ SO ₄	ACS Appl. Mater. Interfaces, 2017, 9, 42139-42148
Lamellar heterostructure of MoS ₂ nanodots on VS ₂ nanosheets	291	58.1	graphite rod	0.5M H ₂ SO ₄	ACS Sustainable Chem. Eng., 2018, 6, 15471-15479
Hybrid of MoS ₂ microflowers on VS ₂ microflakes	199.6	95.2	NA	0.5M H ₂ SO ₄	ACS Appl. Energy Mater., 2019, 2, 5799-5808
Flower-like assembly of V-doped MoS ₂ nanosheets	194	59	Pt wire	0.5M H ₂ SO ₄	Applied Catalysis B: Environmental, 2019, 254, 432-442.
V _{0.09} Mo _{0.91} S ₂ ultrathin nanosheets	240	69	graphite rod	1.0M H ₂ SO ₄	Nanoscale, 2014, 6, 8359-8367
Re-doped MoS ₂ nanosheets	169	56	Pt wire	0.5M H ₂ SO ₄	Adv. Mater., 2018, 30, 1803477
Ni-Co co-doped MoS ₂ nanoboxes	155	51	Pt disc	0.5M H ₂ SO ₄	Adv. Mater., 2016, 28, 9006-9011
Ni-doped MoS ₂ nanosheets	173	69	glassy carbon plate	0.5M H ₂ SO ₄	Nanoscale, 2019, 11, 7123-7128
Se-doped MoS ₂ nanosheets	~275	55	Pt foil	0.5M H ₂ SO ₄	Chem. Commun., 2015, 51, 15997-16000
P-doped MoS ₂ nanosheets	43	34	graphite rod	0.5M H ₂ SO ₄	ACS Energy Lett., 2017, 2, 745-752
N-doped MoS ₂ nanosheets	168	40.5	carbon rod	0.5M H ₂ SO ₄	J. Power Sources, 2017, 356, 133-139