Electronic Supplementary Material (ESI) for Materials Horizons.

Supporting Information

Direct Intercalation of MoS_2 and WS_2 Thin Films by Vacuum Filtration

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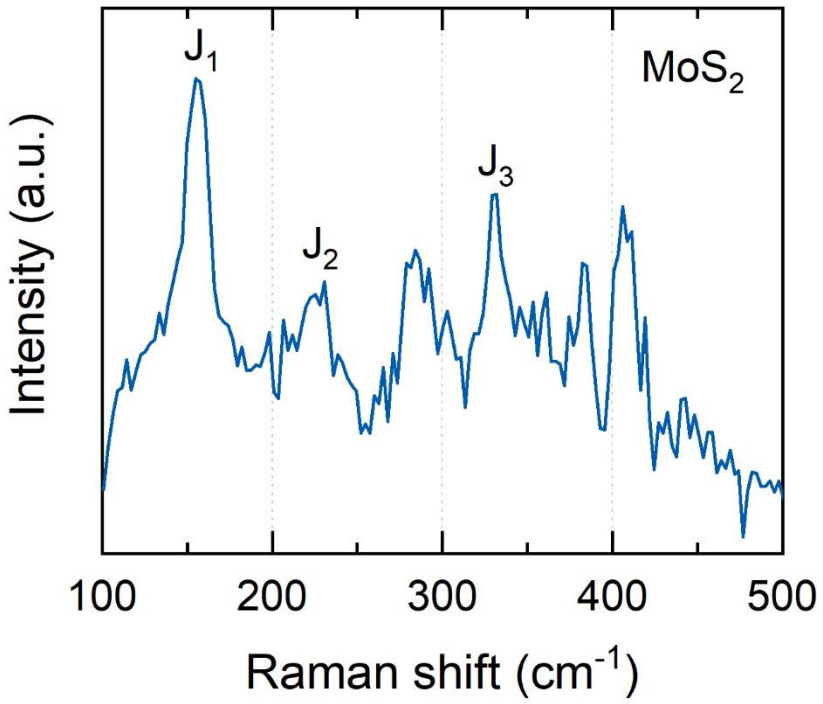

Figure S1. Raman spectrum of chemically exfoliated MoS_2. Signatures from 1T MoS_2 are labeled as J_1, J_2 and J_3 peaks at 156 cm^{-1}, 226 cm^{-1} and 333 cm^{-1}.[1,2]

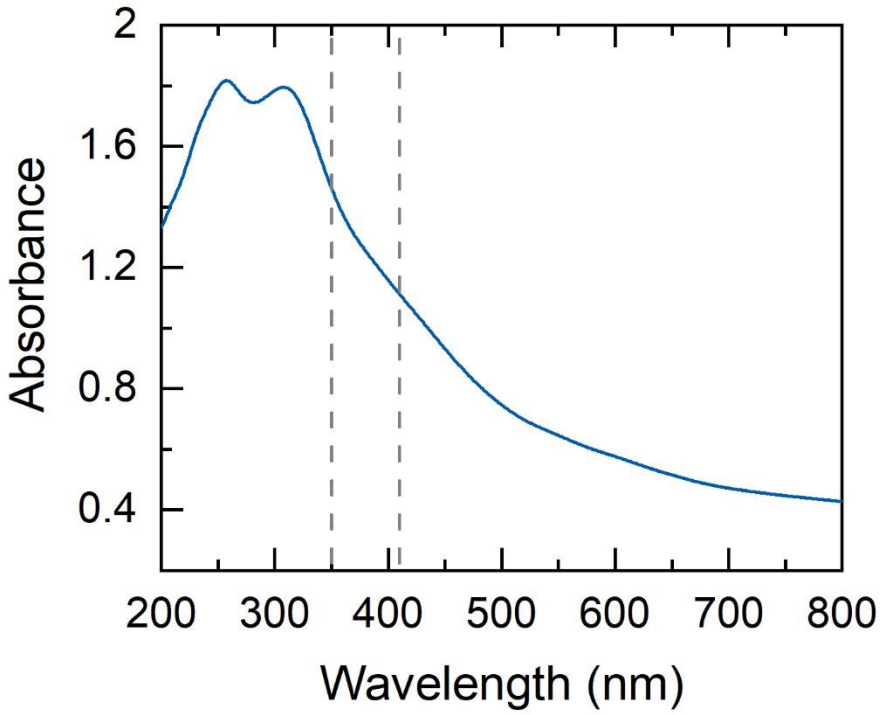

Figure S2 UV-Vis spectrum of chemically exfoliated MoS_2. The 70 % of 1T phase was determined by the extinction at 410 nm over 350 nm as well as the calibration curve in Ref 3.

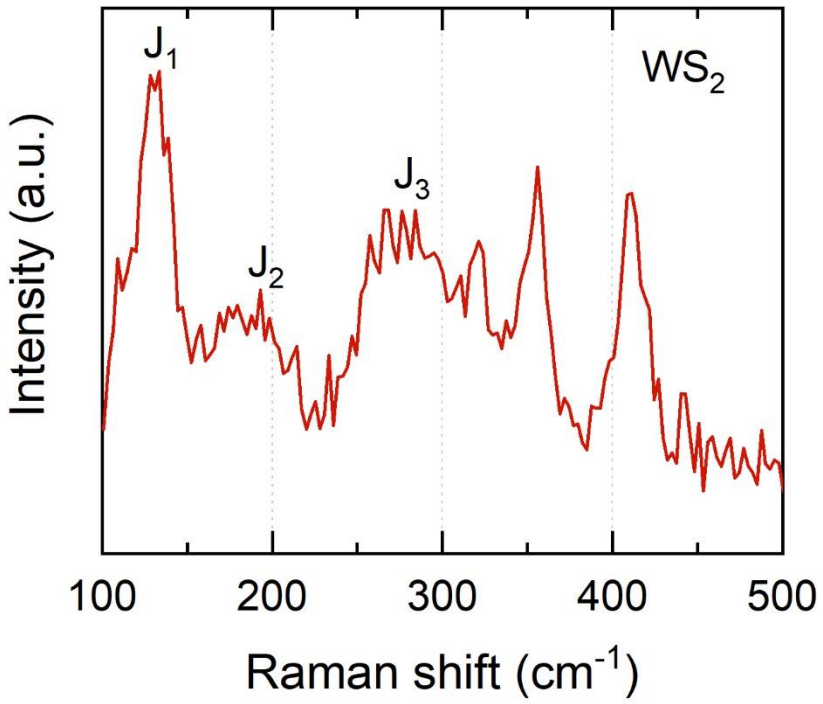

Figure S3 Raman spectrum of chemically exfoliated WS_2. Signatures from 1T WS_2 are labeled as J_1, J_2 and J_3.[4]

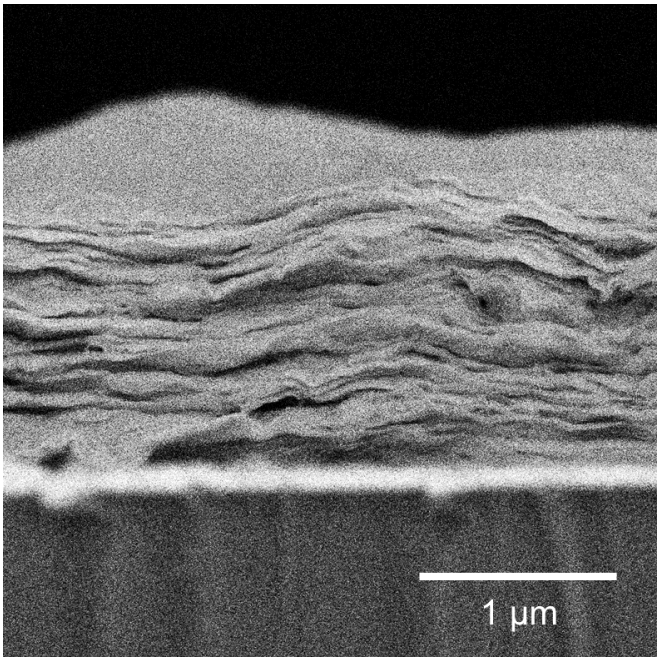

Figure S4 A SEM cross sectional image of a representative restacked WS_2 film.

Table S1 Lattice constant of metallocene intercalated MoS_2 and WS_2.

Sample	Lattice constant (Å)
Restacked MoS_2	~ 6.2
Cp_2Fe-MoS_2	~ 11.8
$(MeCp)_2Fe$-MoS_2	~ 11.8
$(Me_5Cp)_2Fe$ -MoS_2	~ 13.3
Restacked WS_2	~ 6.2
Cp_2Fe-WS_2	~ 11.8
$(MeCp)_2Fe$-WS_2	~ 11.7
$(Me_5Cp)_2Fe$-WS_2	~ 13.4

Table S2 Compositions of the phenazine intercalated MoS_2 and WS_2 from CHN elemental analysis. Calculated mass percentages are shown in the brackets.

	Mass percentage			Approximate
Sample	**C**	**H**	**N**	**formula**
Phenazine-MoS_2	9.154	0.76	1.326	$(C_{12}H_8N_2)_{0.085}(C_7H_8)_{0.051}MoS_2$
	(9.183)	(0.609)	(1.322)	
Phenazine -WS_2	5.467	0.654	0.745	$(C_{12}H_8N_2)_{0.071}(C_7H_8)_{0.051}WS_2$
	(5.470)	(0.371)	(0.749)	

Table S3 Compositions of the *p*-benzoquinone intercalated MoS_2 and WS_2 from CHN elemental analysis. Calculated mass percentages are shown in the brackets.

	Mass percentage			Approximate
Sample	**C**	**H**	**N**	**formula**
Quinone-MoS_2	6.151	0.614	0.091	$(C_6H_4O_2)_{0.090}(C_7H_8)_{0.051}MoS_2$
	(6.174)	(0.444)	(0)	
Quinone -WS_2	4.56	0.38	0.04	$(C_6H_4O_2)_{0.108}(C_7H_8)_{0.051}WS_2$
	(4.567)	(0.320)	(0)	

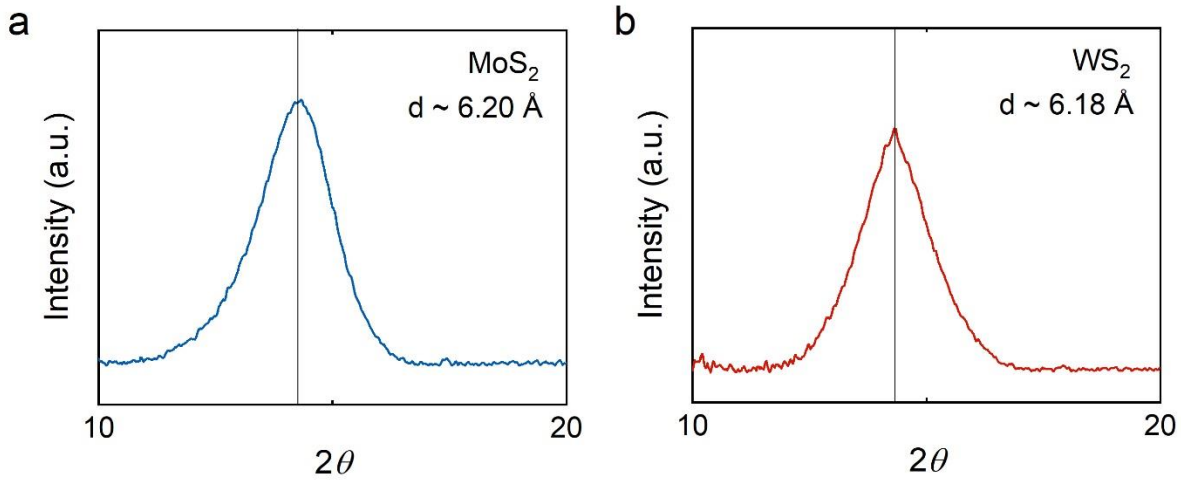

Figure S5. XRD of the toluene treated (a) MoS_2 and (b) WS_2.

References

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