Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting Information for Anisotropic Rashba splitting in Pt-based Janus monolayers PtXY (X,Y = S, Se, or Te)

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Table S1. Comparison of the Rashba parameter of Janus PtXY monolayers with well-known Rashba materials.

Material	Type	α (eV・Å)	Type of Splitting	Reference
MoS_2/Bi (111)	Heterostructure	1.05	Rashba	[1]
Pb Thin Film	Metal Thin Film	0.04	Rashba	[2]
$PtBi_2$	Bulk	4.36	Rashba + Dresselhaus	[3]
MoSSe	ML Janus TMD	$2.0x10^{-3}$-1.2	Rashba	[3-5]
WSSe	ML Janus TMD	<1.0	Rashba	[3],[4],[6]
PtSSe	ML Janus TMD	1.65^{*}, $1.33^{\dagger}$	Rashba + Dresselhaus	This Work
PtSTe	ML Janus TMD	1.10^{*}, $1.24^{\dagger}$	Rashba + Dresselhaus	
PtSeTe	ML Janus TMD	0.44^{*}, $0.75^{\dagger}$	Rashba + Dresselhaus	

*α at M-Γ direction, †α at M-K direction

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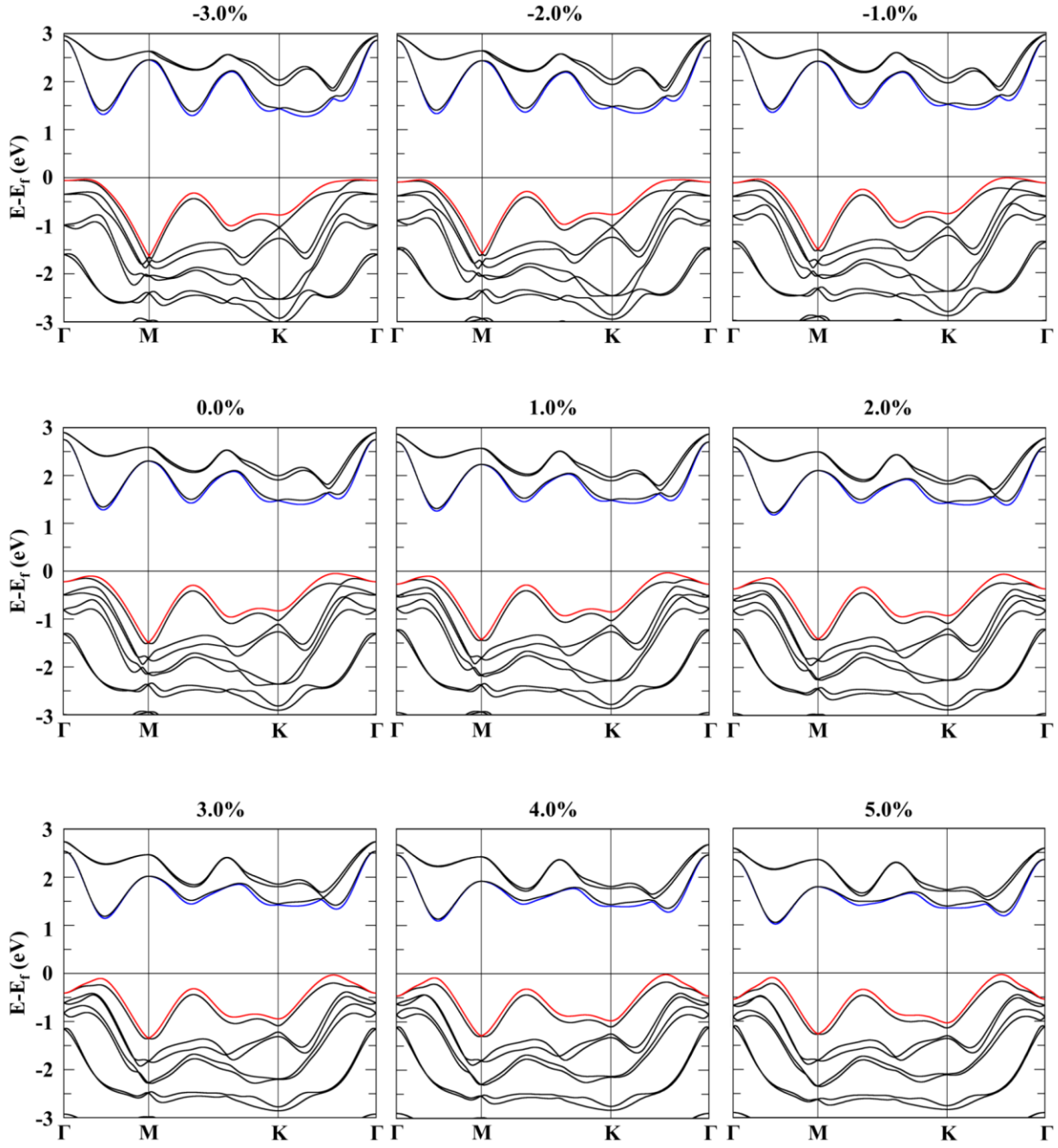

Figure S1. Band structures under spin-orbit coupling (SOC) of monolayer Janus PtSSe under varying strain from -3.0% to 5.0%. The red and blue colored bands correspond to the valence band maximum (VBM) and conduction band minimum (CBM).

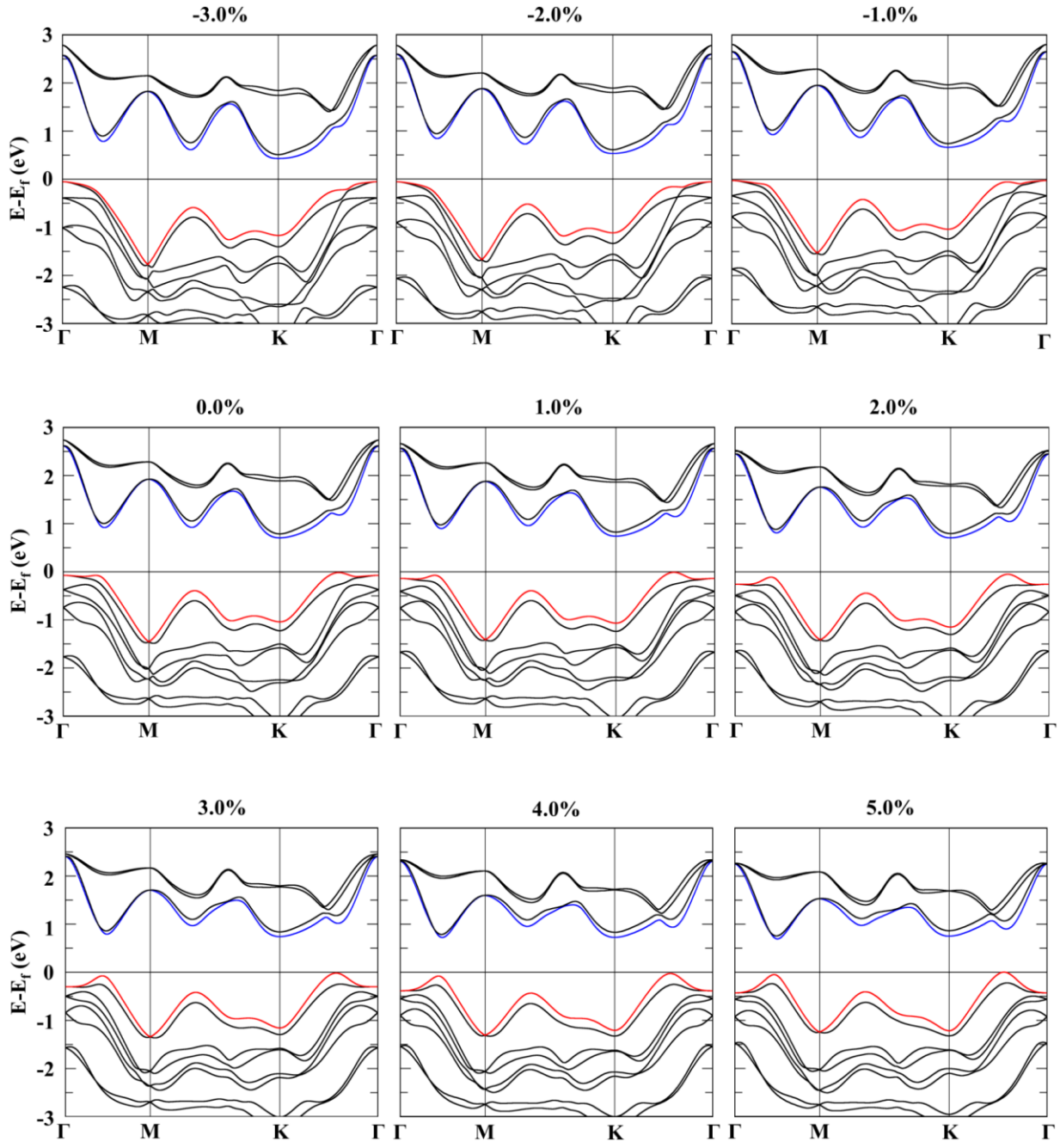

Figure S2. Band structures under SOC of monolayer Janus PtSTe under varying strain from -3.0% to 5.0%. The red and blue colored bands correspond to the VBM and CBM.

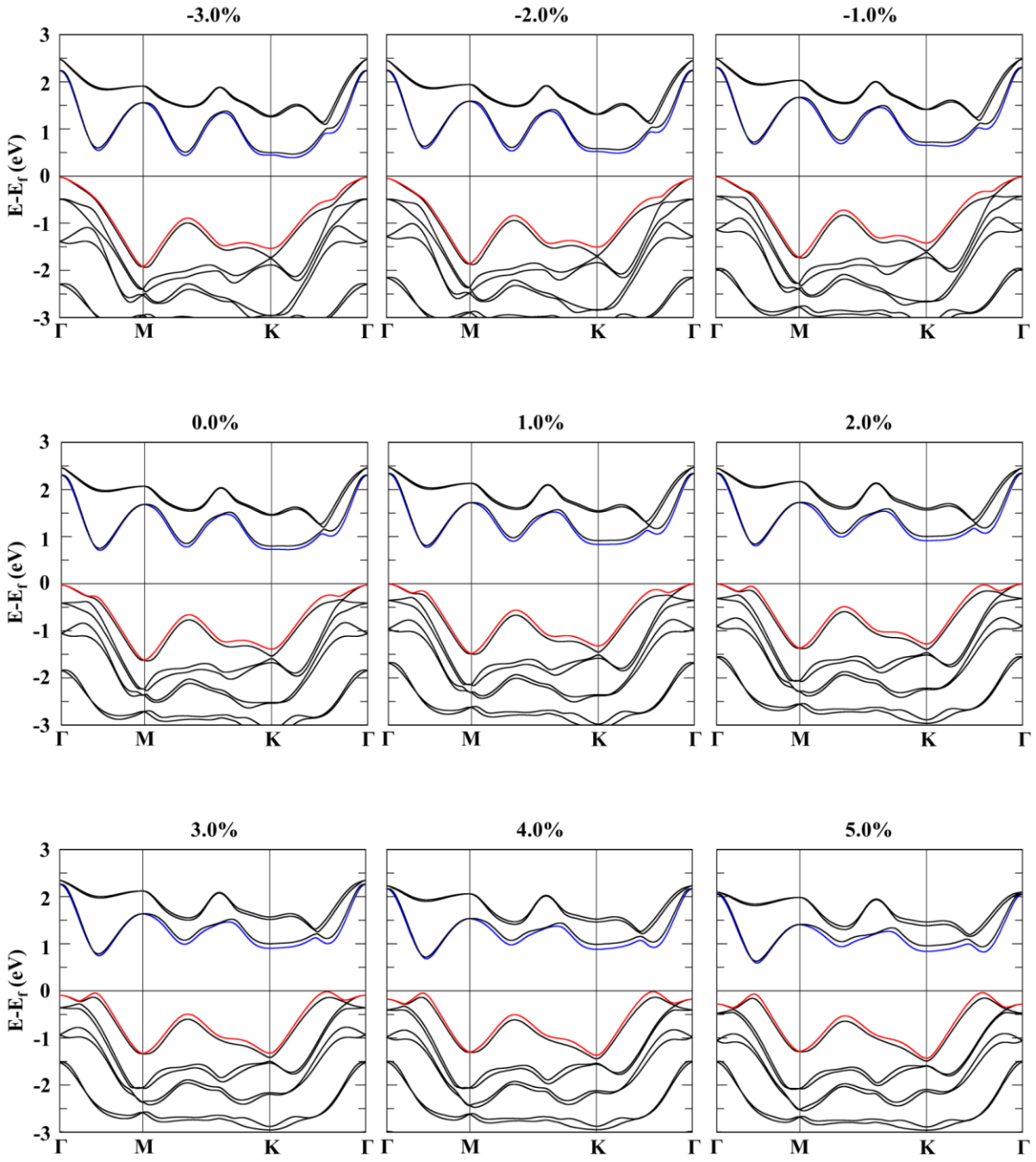

Figure S3. Band structures under SOC of monolayer Janus PtSeTe under varying strain from -3.0% to 5.0%. The red and blue colored bands correspond to the VBM and CBM.