Electronic Supplementary Information

Review on the Raman spectroscopy of different types of layered materials

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Table S1 Character table for D_{6h} point group

	E	$2C_6$	$2C_3$	C_2	$3C'_2$	$3C''_2$	i	$2S_3$	$2S_6$	σ_h	$3\sigma_d$	$3\sigma_v$	Linear, rotations	Quadratic
A_{1g}	1	1	1	1	1	1	1	1	1	1	1	1		x^2+y^2, z^2
A_{2g}	1	1	1	1	-1	-1	1	1	1	1	-1	-1	R_z	
B_{1g}	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1		
B_{2g}	1	-1	1	-1	-1	1	1	-1	1	-1	-1	1		
E_{1g}	2	1	-1	-2	0	0	2	1	-1	-2	0	0	(R_x, R_y)	(xz, yz)
E_{2g}	2	-1	-1	2	0	0	2	-1	-1	2	0	0		(x^2-y^2, xy)
A_{1u}	1	1	1	1	1	1	-1	-1	-1	-1	-1	-1		
A_{2u}	1	1	1	1	-1	-1	-1	-1	-1	-1	1	1	z	
B_{1u}	1	-1	1	-1	1	-1	-1	1	-1	1	-1	1		
B_{2u}	1	-1	1	-1	-1	1	-1	1	-1	1	1	-1		
E_{1u}	2	1	-1	-2	0	0	-2	-1	1	2	0	0	(x, y)	
E_{2u}	2	-1	-1	2	0	0	-2	1	1	-2	0	0		

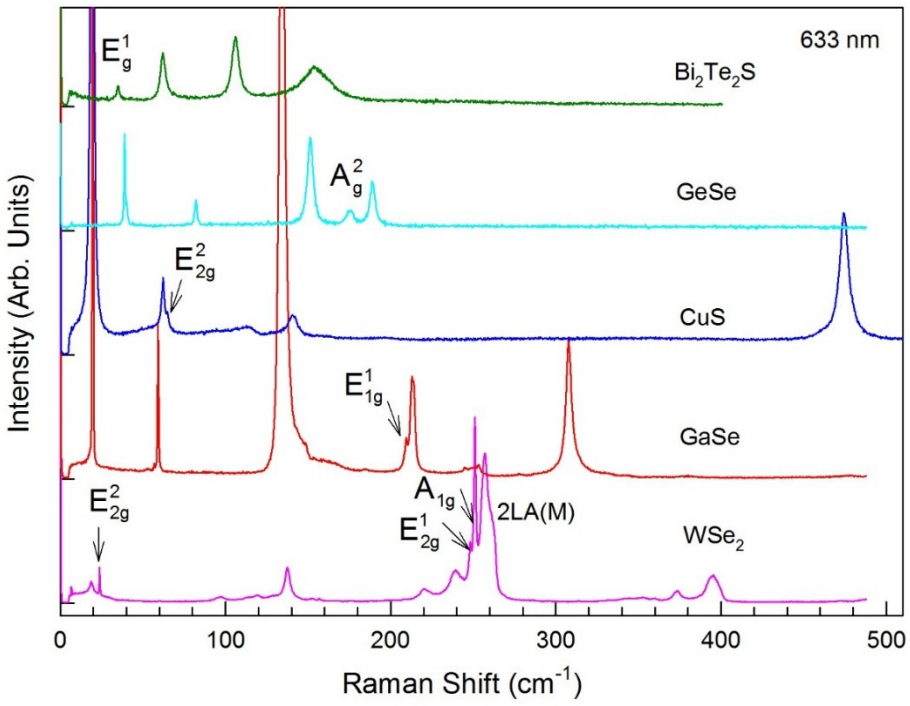

Fig. S1 Raman spectra of WSe_2, GaSe, CuS, GeSe and Bi_2Te_2S under 633 nm. The modes (251 cm^{-1} (A_{1g}) for WSe_2, 209.3 cm^{-1} ($E^1{}_{1g}$) for GaSe, 65.0 cm-1 ($E^2{}_{2g}$) for CuS, 175 cm-1 ($A^2{}_g$) for GeSe and 34.9 cm^{-1} (E^1g) for Bi_2Te_2S) which are absent under 532-nm excitation had been detected under 633-nm excitation.

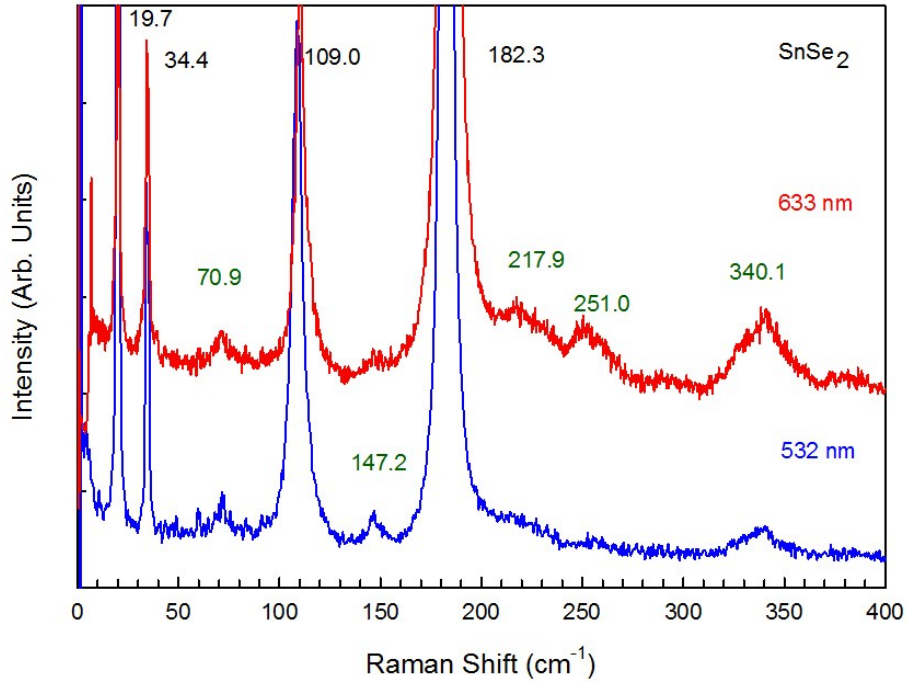

Fig. S2 Raman spectra of bulk SnSe2 under 532-nm and 633-nm excitations. These weak modes are marked in green.