

Supporting Information

Layered SnSe Nano-plates with excellent in-plane anisotropic properties of Raman spectrum and photo-response

Xuan-Ze Li,^{ab} Jing Xia,^a Lei Wang,^{ab} Yi-Yi Gu,^{ab} Hua-Qiu Cheng,^{ab} and Xiang-Min Meng^{*a}

^a

Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, 100190, P. R. China

^b

University of Chinese Academy of Science, Beijing, 10049, P, R, China.

E-mail of corresponding author: mengxiangmin@mail.ipc.ac.cn.

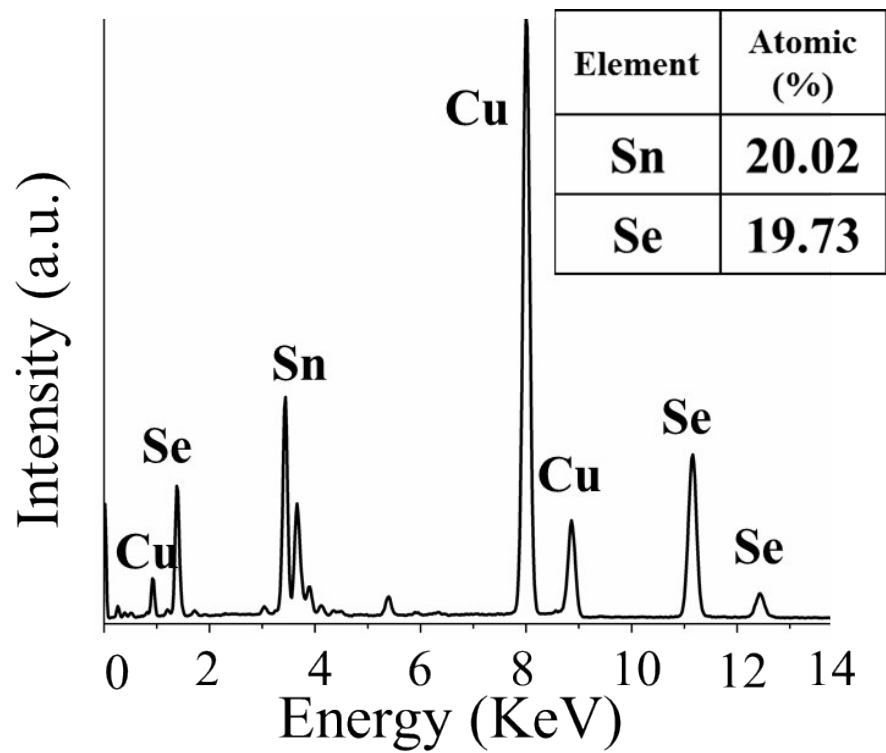


Fig. S1 EDS result of the SnSe nano-plate.

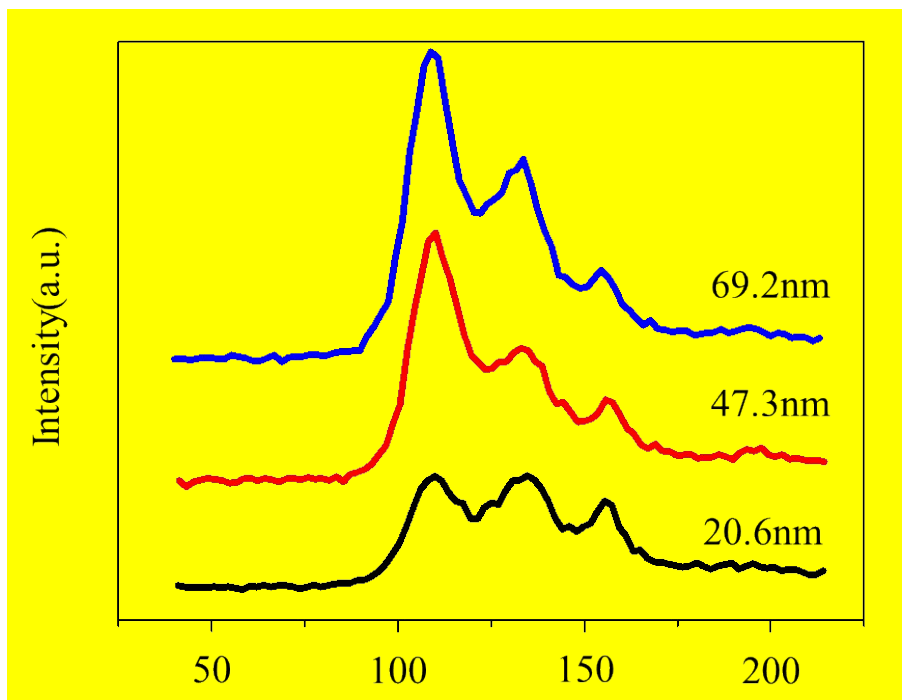


Fig. S2 Raman spectra of SnSe samples with different thickness

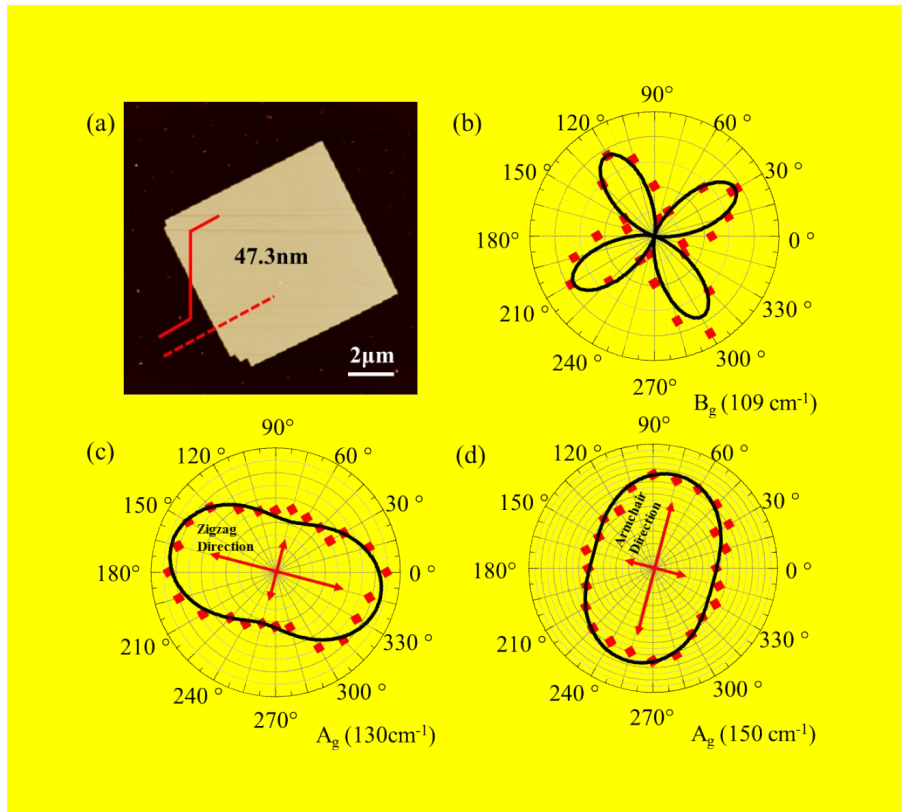


Fig. S3 (a) AFM image and height profile of a SnSe sample and (b) - (d) polarized Raman diagrams of different Raman peak with 532nm laser illumination under parallel configuration. Dots are experimental data and solid curves correspond to the best fit to experimental data. Armchair direction and zigzag direction are pointed in (c) and (d).

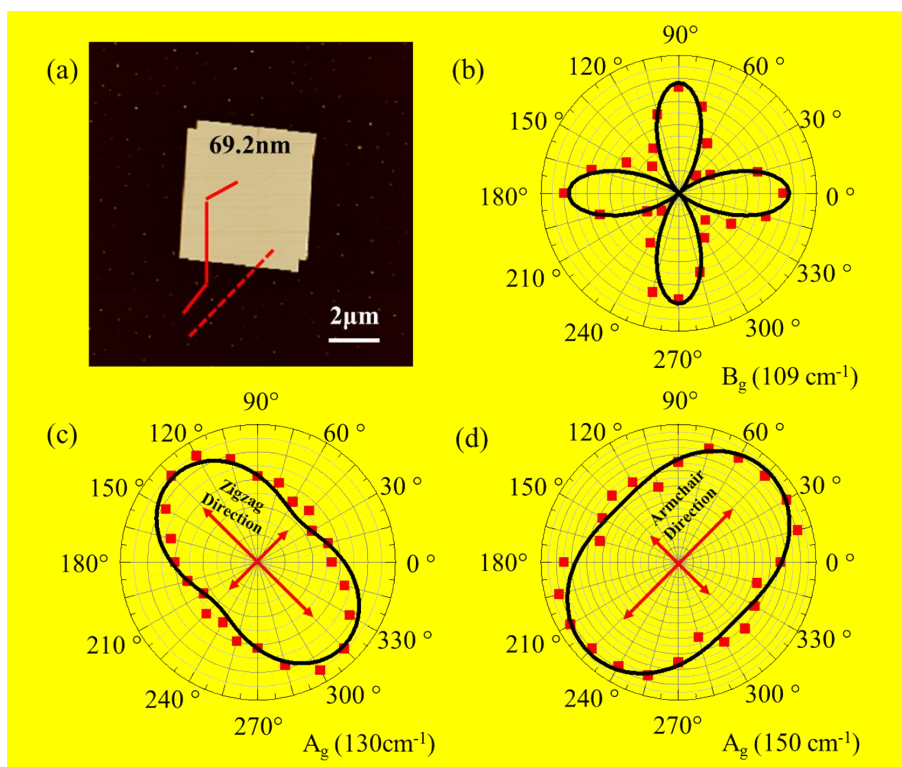


Fig. S4 (a) AFM image and height profile of a SnSe sample and (b) - (d) polarized Raman diagrams of different Raman peak with 532nm laser illumination under parallel configuration. Dots are experimental data and solid curves correspond to the best fit to experimental data. Armchair direction and zigzag direction are pointed in (c) and (d).

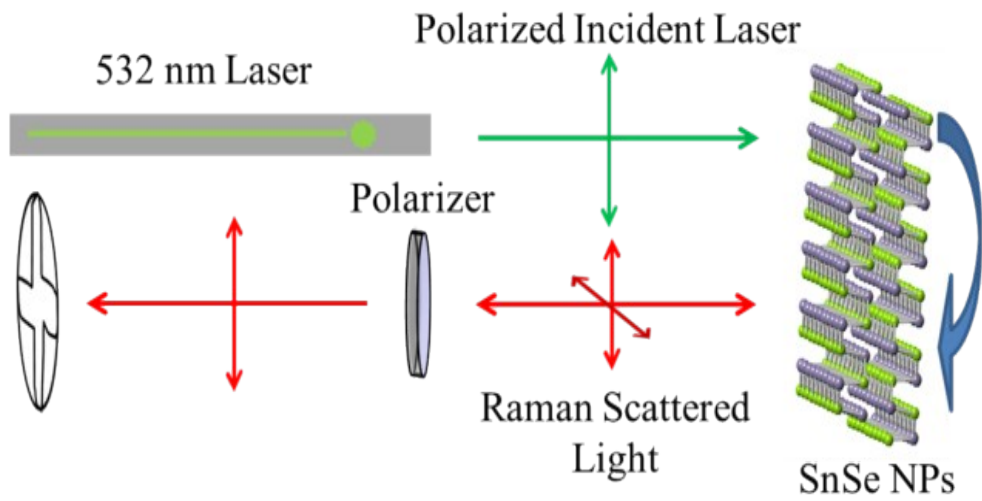


Fig. S5 The schematic of polarized Raman system.

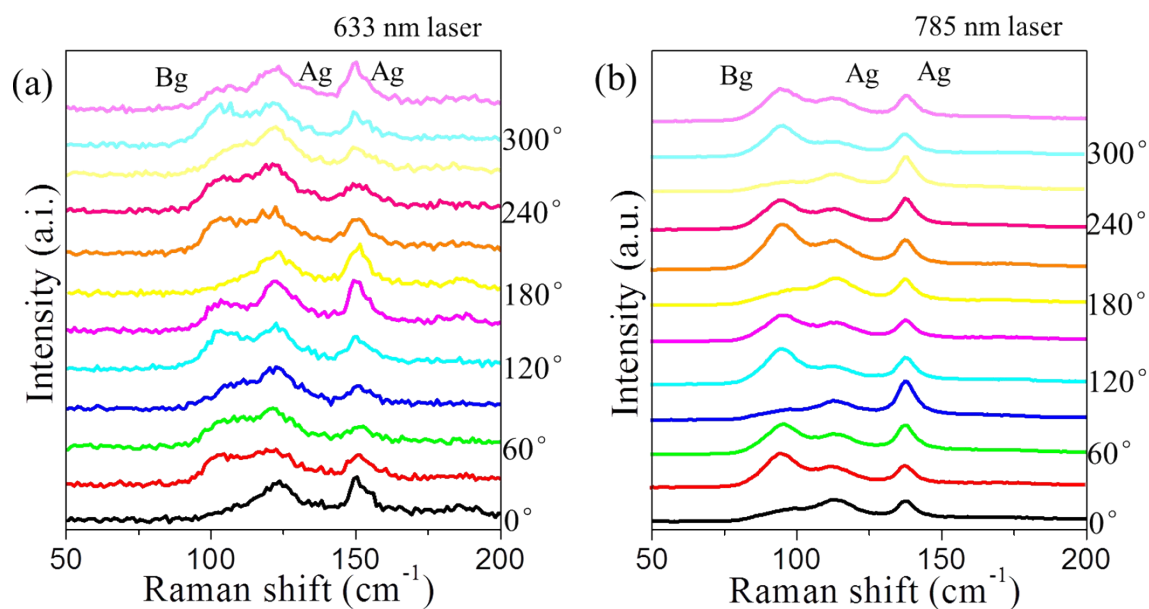


Fig. S6 Raman spectra of SeSe samples with the function of rotation angle from 0° to 180° with 633nm laser and 785nm laser under parallel polarization configuration.

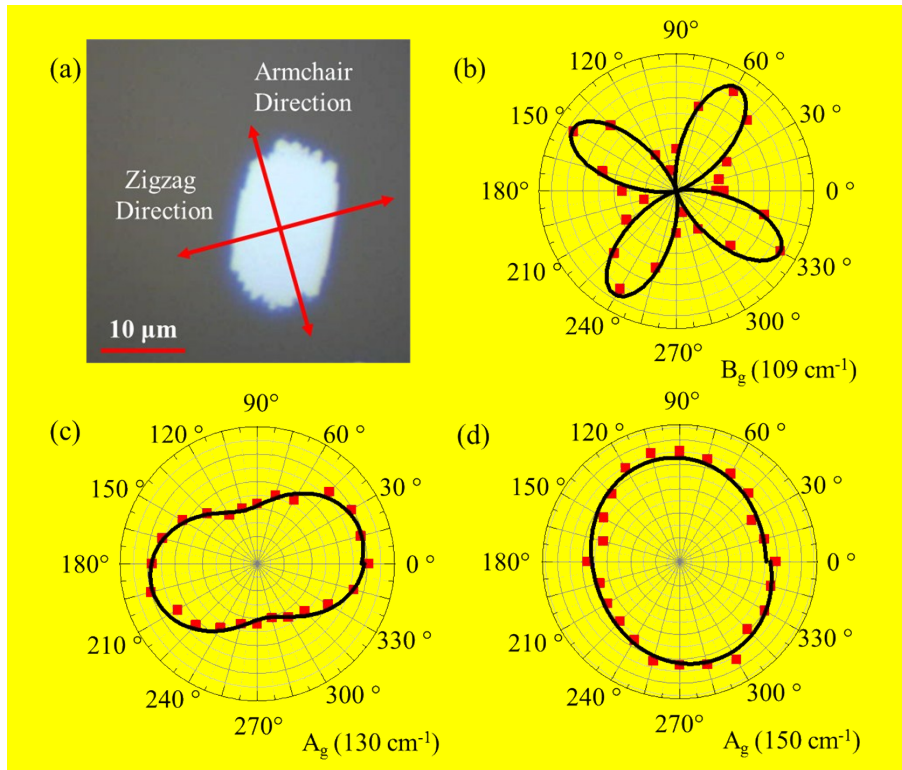


Fig. S7 (a) Optical image of an approximate rectangle SnSe nano-plate and (b) - (d) polarized Raman diagrams of different Raman peak with 532nm laser illumination under parallel configuration. Dots are experimental data and solid curves correspond to the best fit to experimental data.

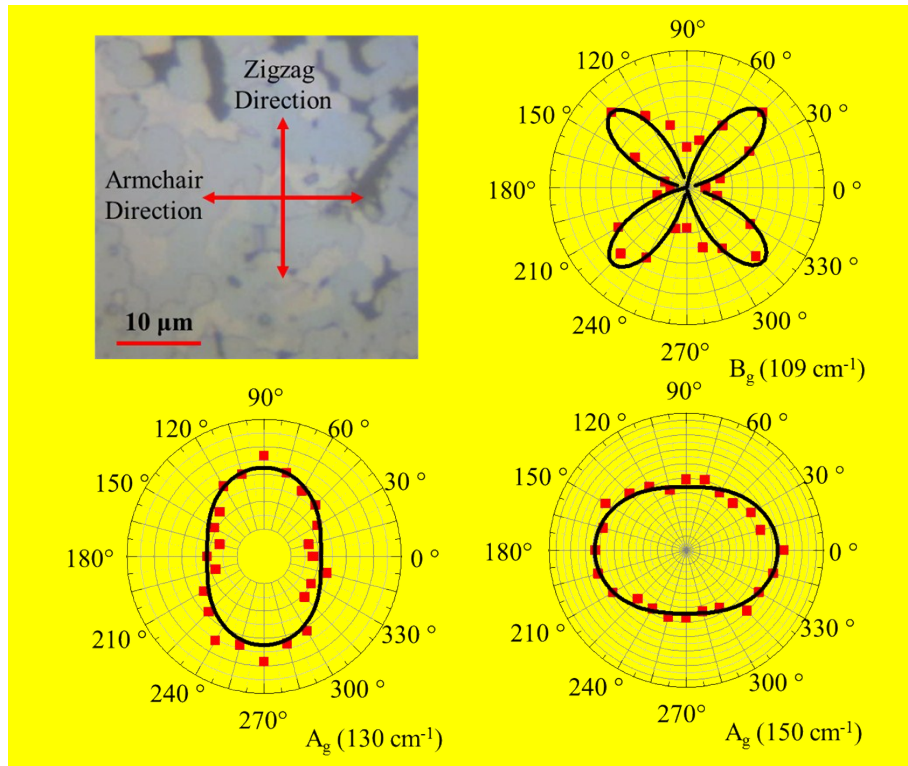


Fig. S8 (a) Optical image of SnSe thin film and (b) - (d) polarized Raman diagrams of different Raman peak with 532nm laser illumination under parallel configuration. Dots are experimental data and solid curves correspond to the best fit to experimental data.

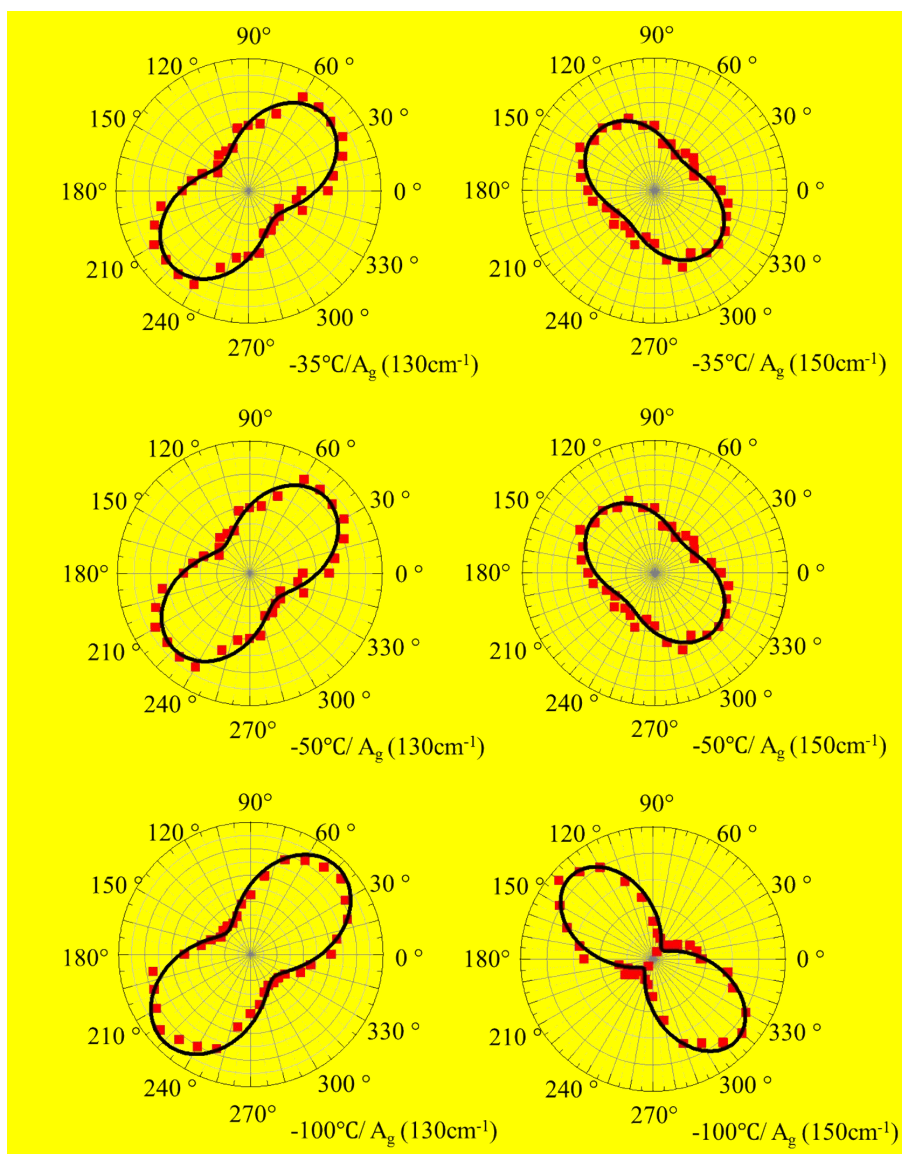


Fig. S9 Polarized Raman diagrams with different measure temperature (-35°C, -50°C and -100°C) via 532nm laser illumination under parallel configuration (a) - (f). Dots are experimental data and solid curves correspond to the best fit to experimental data.

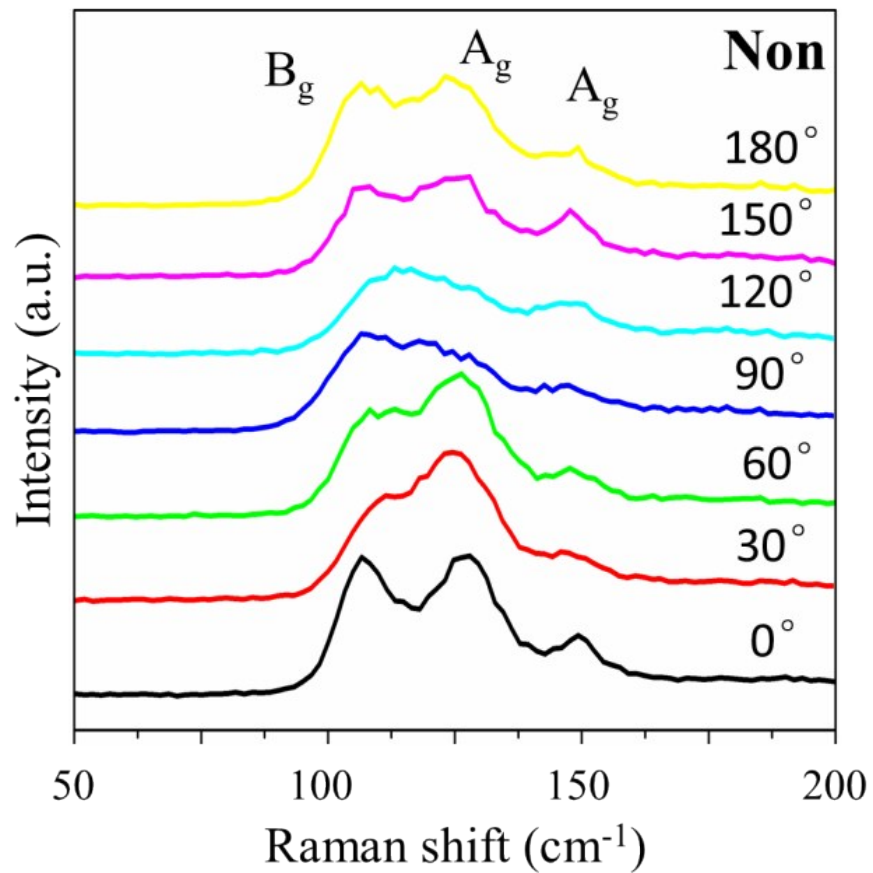


Fig. S10 Raman spectra of SeSe Samples with difference rotating angle from 0° to 180° with 532nm laser under non-polarization configuration.

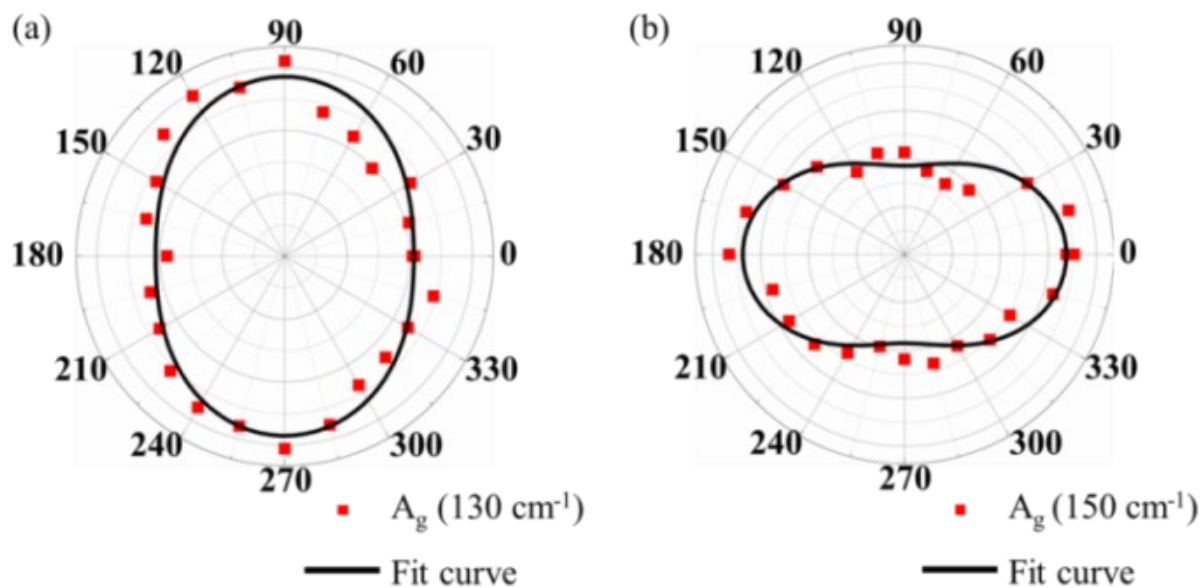


Fig. S11 Polarization Raman diagrams of SnSe nano-plate with 532nm laser under non-polarization configuration. Dots are experimental data and solid curves are accordant to the best fit to experimental data.

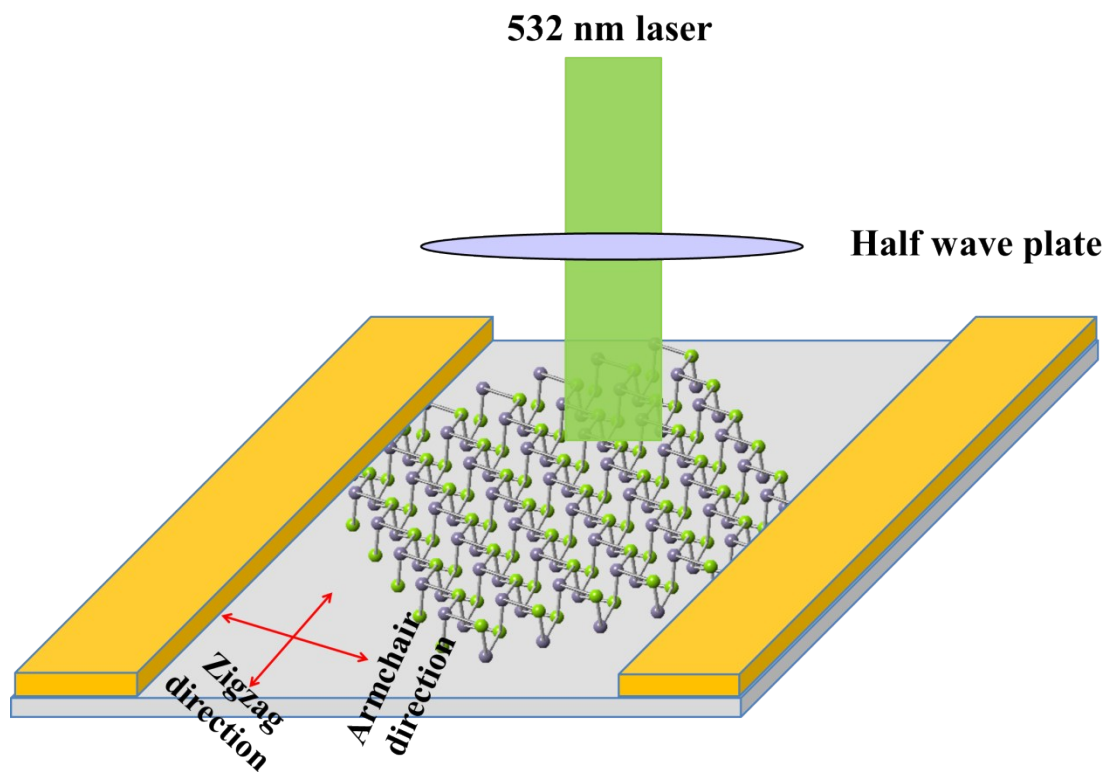


Fig. S12 Schematic diagram of photodetector based on SnSe nanoplates and 532nm laser used for illumination.