Supporting Information

Design of Self-Powered 2D Te/$PtSe_2$ Heterojunction for Room-Temperature NIR Detection

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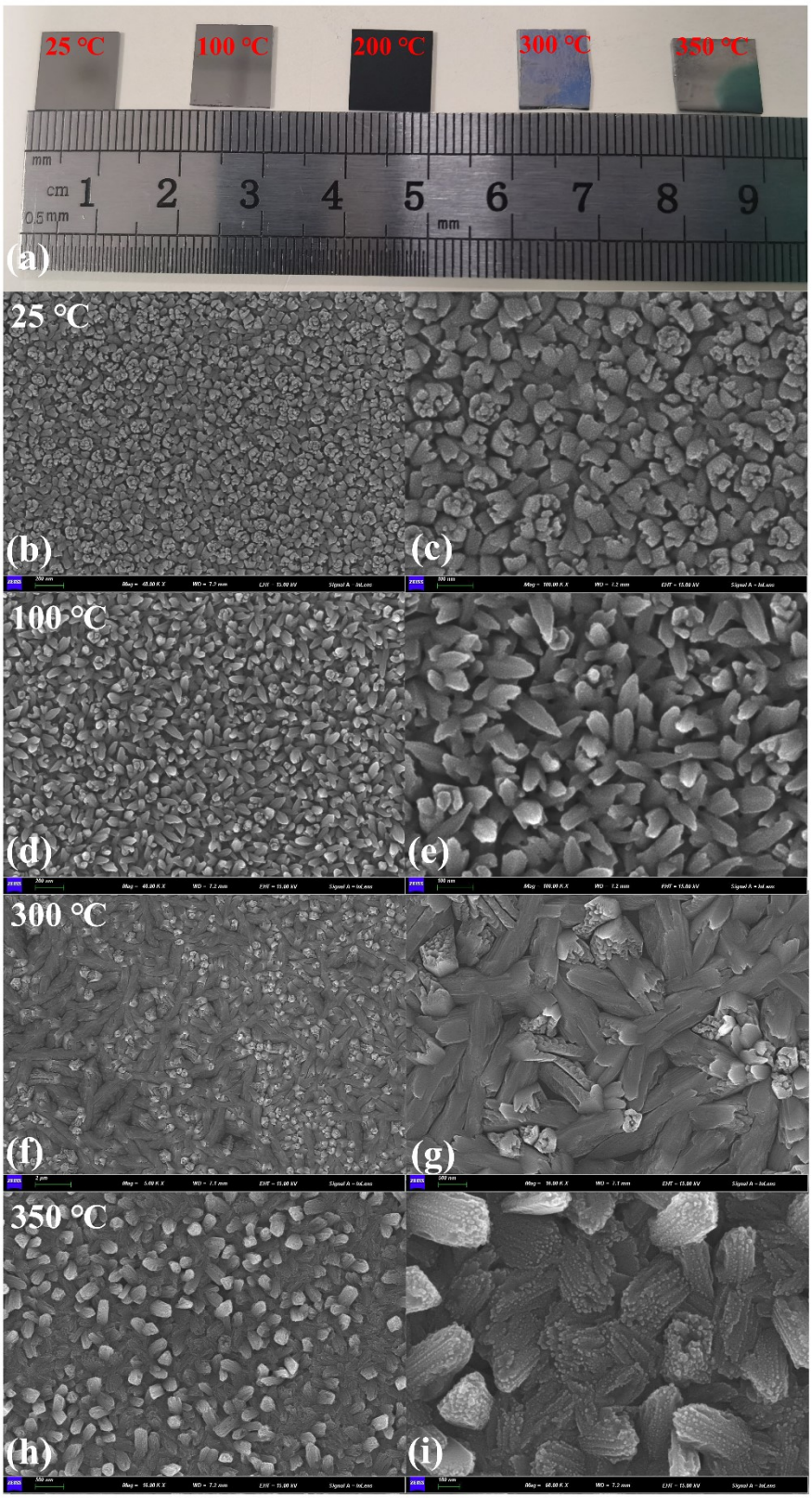

Fig. S1 (a) Photos and (b-i) SEM images of Te films grown at at different temperatures.

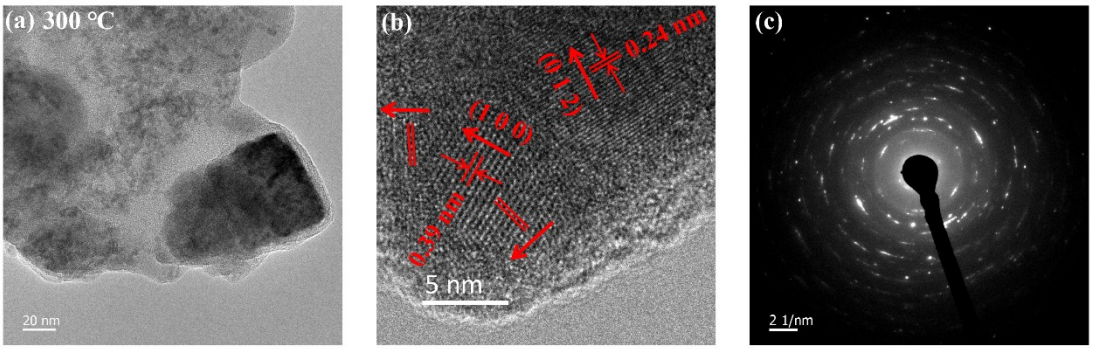

Fig. S2 (a) Low and (b) high resolution TEM images, (c) the SAED pattern of Te film grown at 300°C.

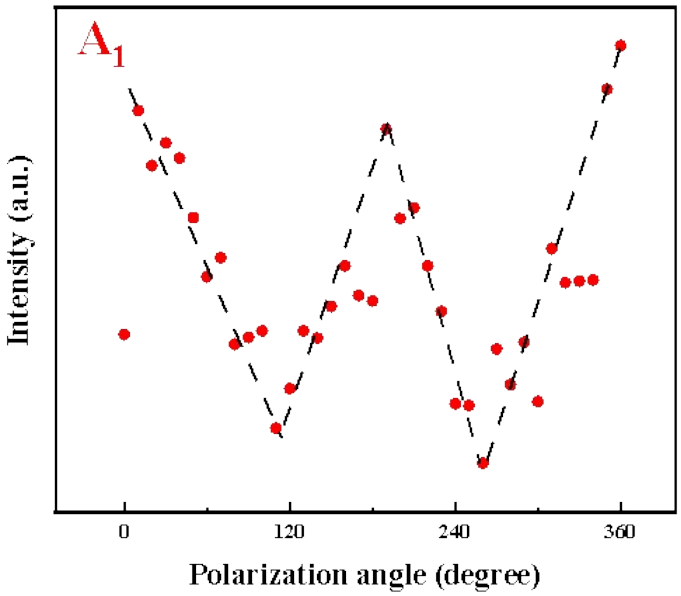

Fig. S3 Polarization angle-dependent intensities for Raman peak of A_1 of the Te film.

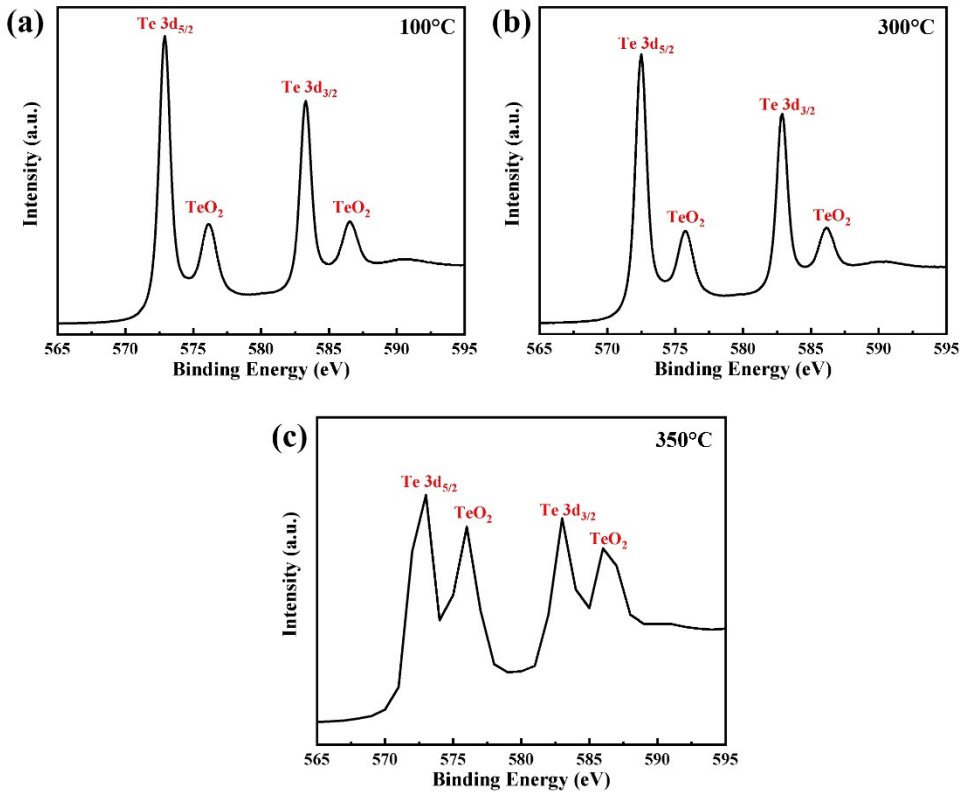

Fig. S4 XPS spectra of Te grown at (a) 100°C, (b) 300°C and 350°C.

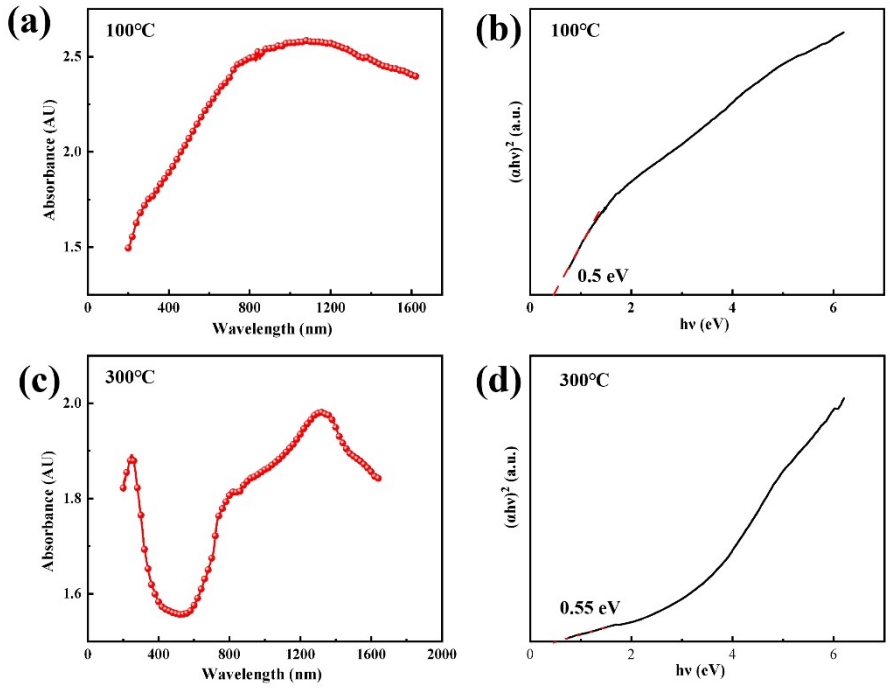

Fig. S5 Absorbance spectra of Te grown at (a) 100°C and (c) 300°C, $(\alpha hv)^2$- hv relationship graph of Te grown at (b) 100°C and (d) 300°C.

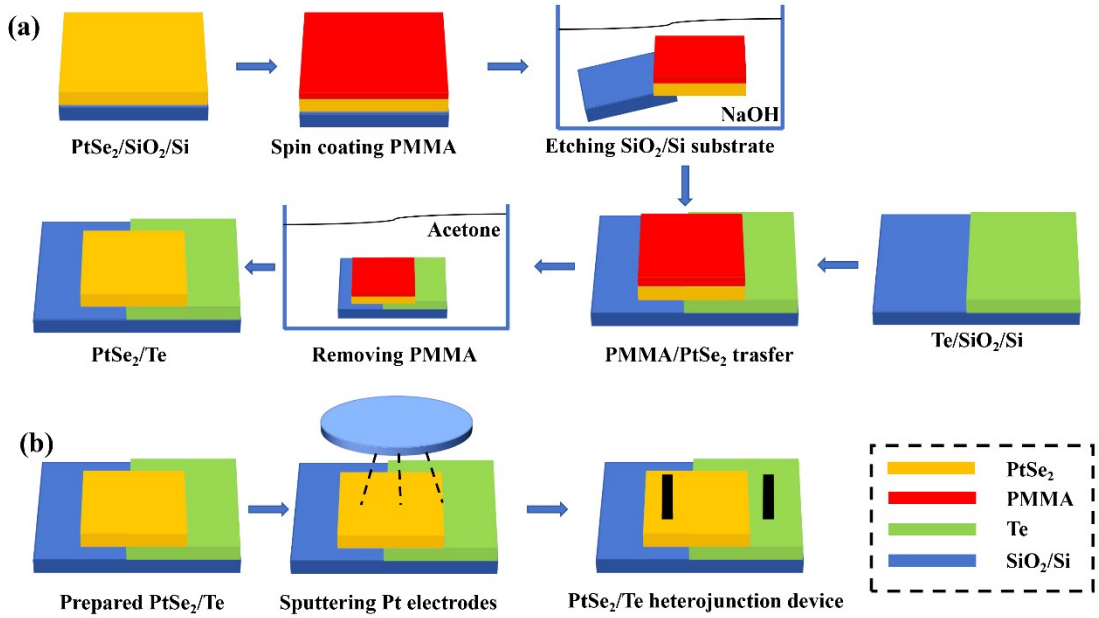

Fig. S6 Schematic diagram of process of preparation of $PtSe_2$/Te device.

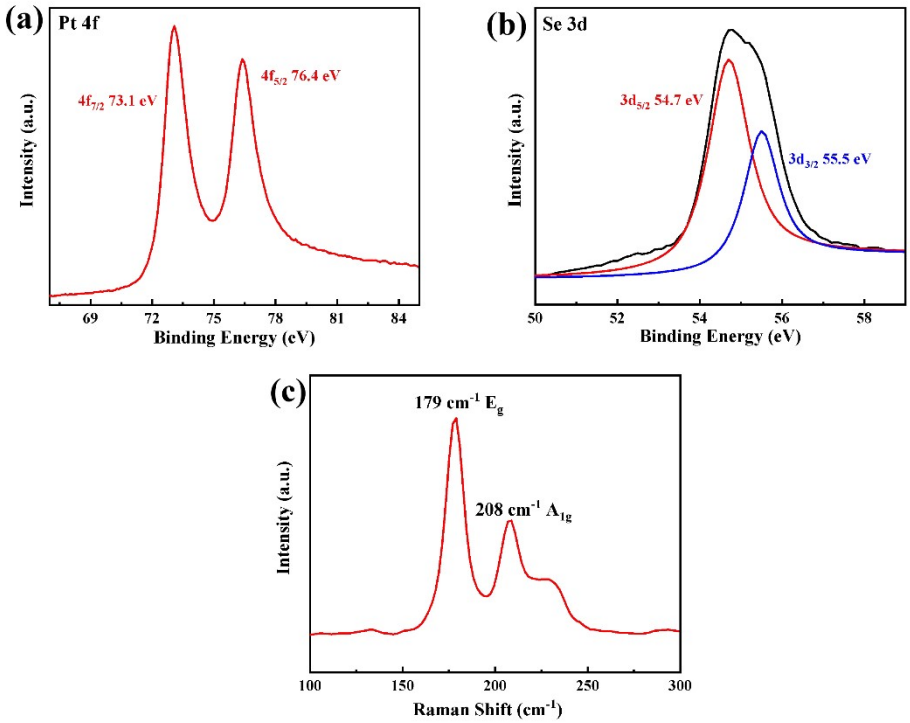

Fig. S7 XPS spectra of (a) Pt 4f and (b) Se 3d. (c) Raman spectrum of the $PtSe_2$ film.

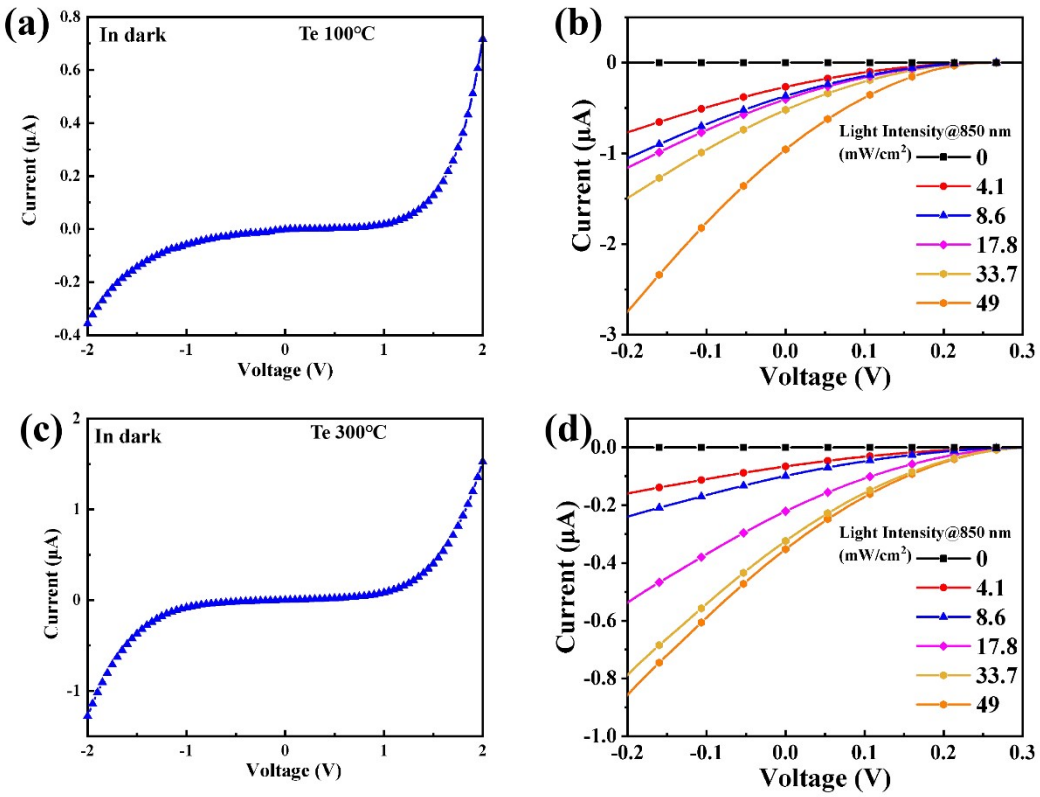

Fig. S8 I-V curves of the heterojunction for the Te films grown at 100℃ (a) in the dark and (b) under 850 nm illumination and 300℃ (c) in the dark and (d) under 850 nm illumination.