Supporting Information

Ultra-thin high-quality SnTe nanoplates for fabricating flexible near-infrared photodetectors

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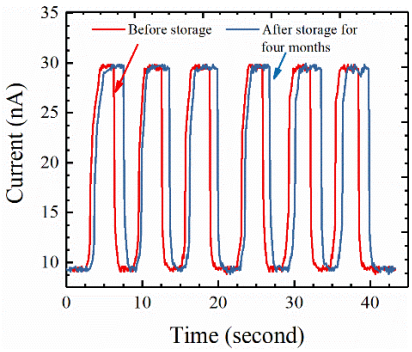

Figure S1. RT photo-switching behavior of the NIR SnTe nanoplate photodetectors before and after storage in air for four months. This photoresponse was measured under the illumination of the 980 nm laser with a laser intensity of 64.5 mW/cm^2.

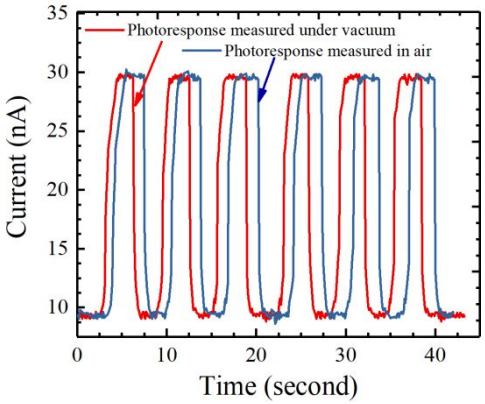

Figure S2. RT photoresponse of the SnTe nanoplate NIR photodetectors measured under vacuum and in air with a bias of 0.5 V and the illumination of a 980 nm laser with a power intensity of 64.5 mW/cm^2.

Table S1. RT performance summary for the SnTe nanoplate NIR photodetectors measured with five different lasers of the wavelengths of 450 nm, 532 nm, 650 nm, 785 nm, 850 nm and 980 nm.

	EQE	Responsivity	Detectivity
450 nm	966 %	3.5 A/W	4.41×10^{10} Jones
532 nm	554 %	2.37 A/W	3.06×10^{10} Jones
650 nm	177 %	1.52 A/W	1.96×10^{10} Jones
785 nm	102 %	1.12 A/W	1.38×10^{10} Jones
850 nm	131 %	896 mA/W	1.12×10^{10} Jones
980 nm	88.5 %	698 mA/W	8.86×10^{9} Jones

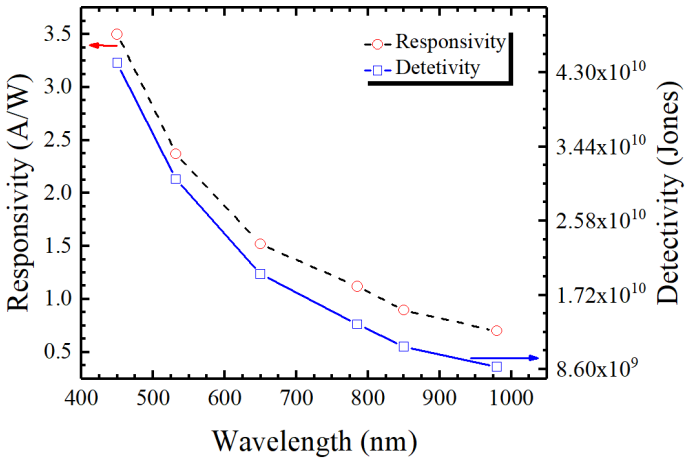

Figure S3. Wavelength-dependent performance of the SnTe nanoplate photodetectors measured at RT including responsivity and detectivity.

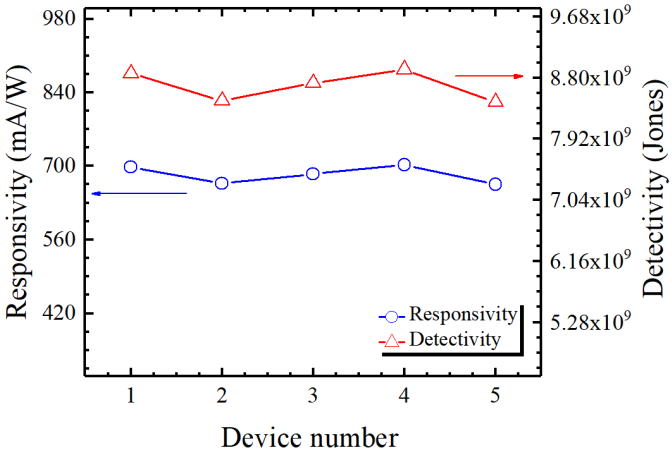

Figure S4. RT performance statistics of five SnTe nanoplate photodetectors fabricated in this work

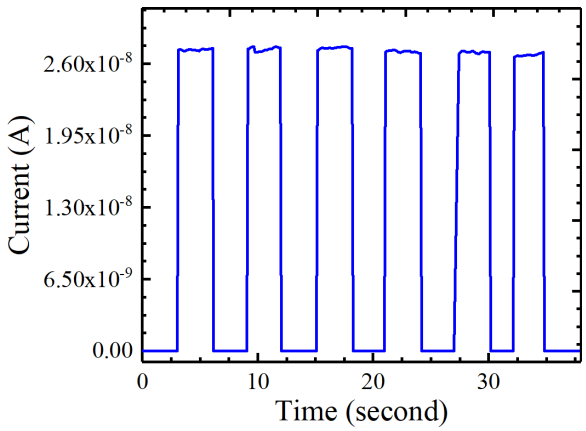

Figure S5. 80 K photoresponse of the SnTe nanoplate photodetector measured under the 980 nm laser illumination with an intensity of 64.5 mW/cm^2.

Table S2. RT and 80K performance of the SnTe nanoplate photodetector measured under the 980 nm laser illumination with an intensity of 64.5 mW/cm^2.

	Dark current	Photocurrent	Responsivity	Detectivity
Room temperature (300K)	9.3 nA	23.7 nA	669 mA/W	8.50×10^9 Jones
80 K	$9 \times 10^{-13} A$	28 nA	904 mA/W	1.17×10^{12} Jones

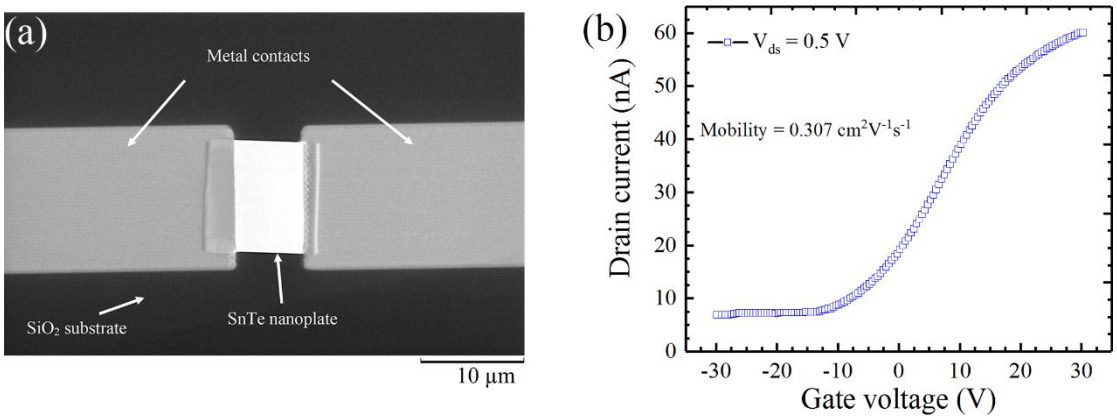

Figure S6 (a) SEM image of a SnTe phototransistor with the shape of a rectangle shape; (b) the corresponding measurement of transfer curve, indicating a mobility of 0.307 cm^{2}V^{-1}s^{-1}.