



Supporting Information

High-Performance Photodetectors Based on the 2D SiAs/SnS₂ Heterojunction

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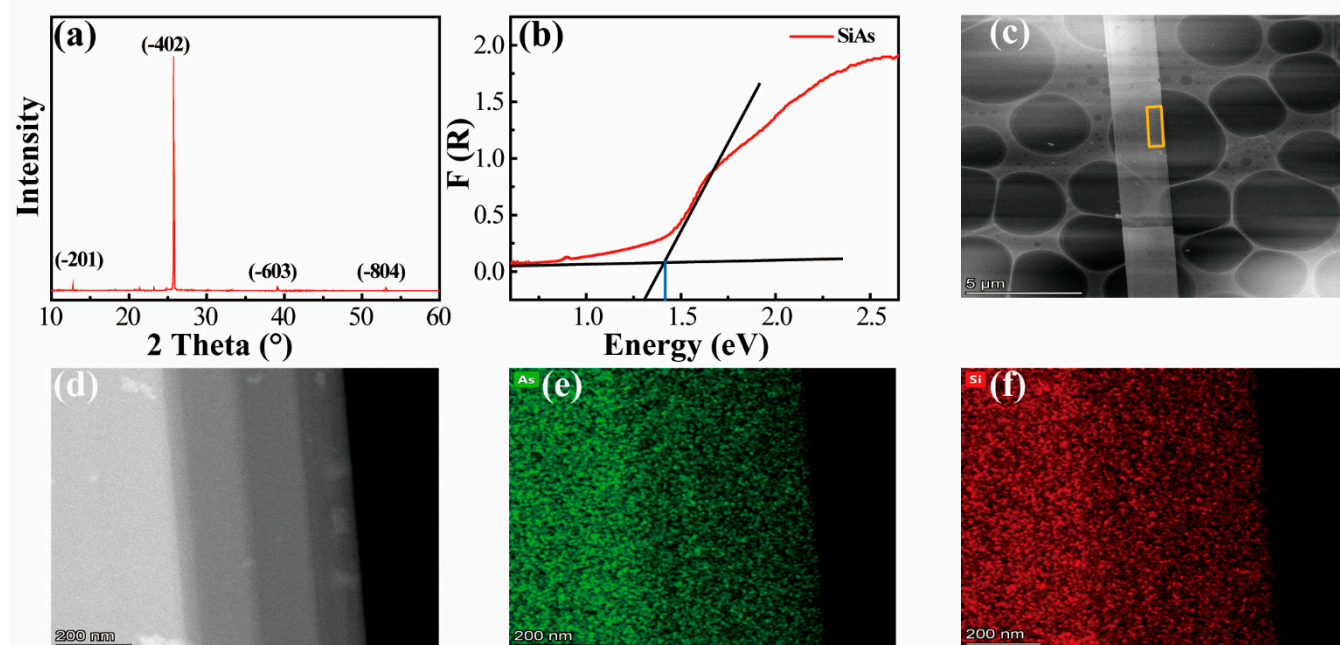


Figure S1. (a) X-ray diffraction (XRD) pattern of strip SiAs crystal. (b) The ultraviolet diffuse reflectance spectrum of SiAs polycrystalline powder. (c) Low-magnification image of striped SiAs crystal. (d) The picture of the significant part in figure (c) shows the delamination phenomenon. The upper right illustration shows the EDX element mapping between Si atoms and As elements. The lower illustration shows that Si:As is close to 1:1. (e–f) EDX element mapping of As (e) and Si (f) atoms.

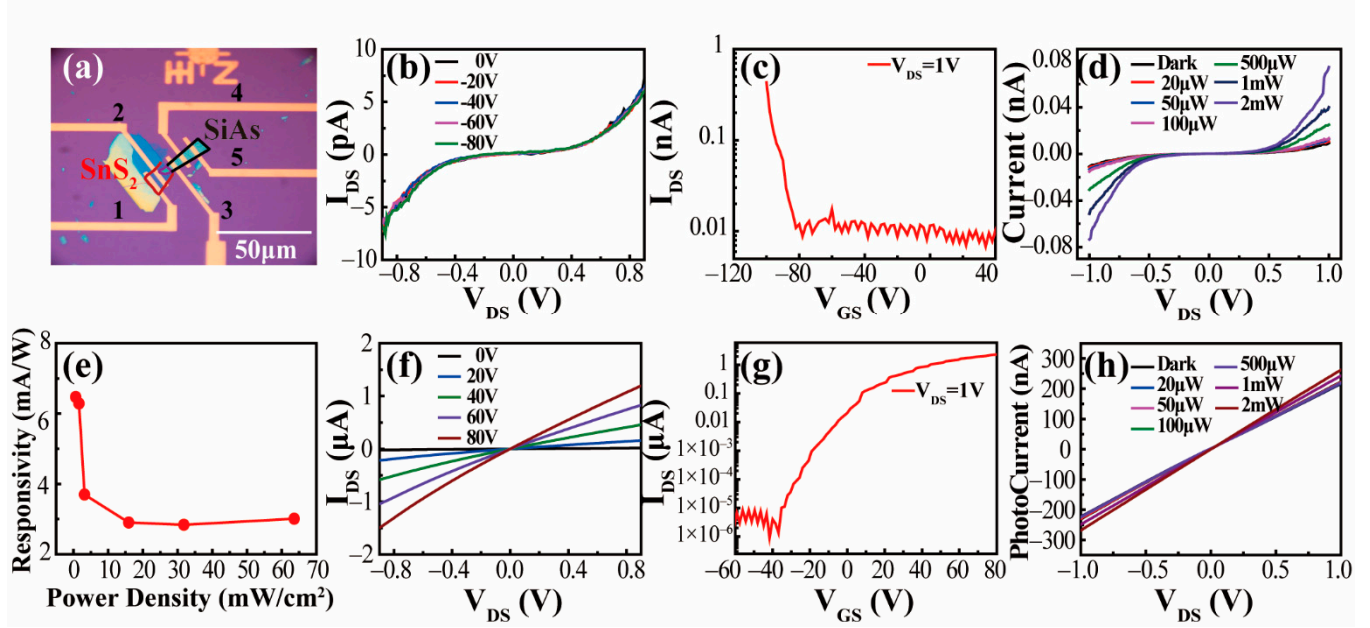


Figure S2. (a) SiAs-SnS₂ heterojunction morphology picture. (b) The output curves of p-SiAs crystal under different gate voltages. (c) When $V_{DS}=1V$, the transfer characteristic curve of SiAs device. (d) When $V_{GS}=0V$, the relationship between photocurrent and V_{DS} of 4/5 electrode pairs (SiAs devices) under different incident light powers. (e) The photoelectric responsivity of SiAs devices. (f) The output curves of the SnS₂ device under different gate voltages. (g) Transfer characteristic curve of n-SnS₂ when $V_{DS}=1V$. (h) The relationship between photocurrent and V_{DS} of n-SnS₂ under different incident optical power.

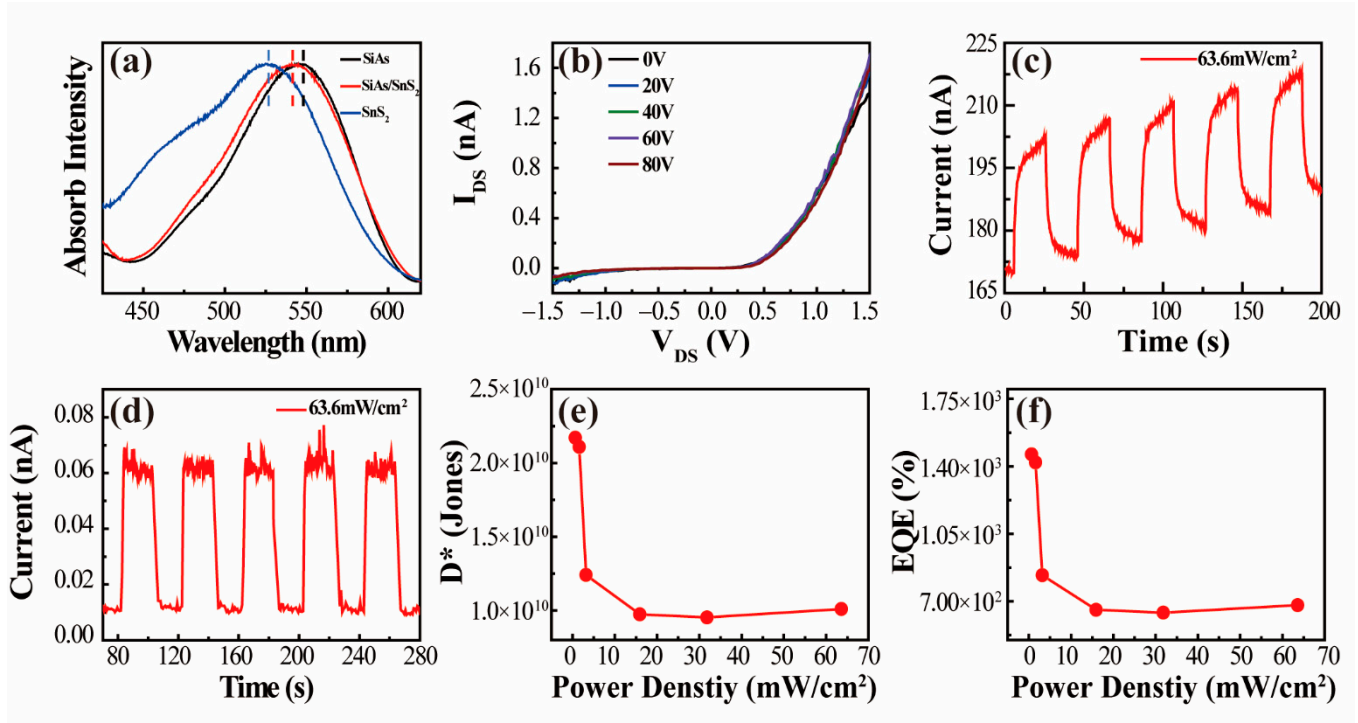


Figure S3. (a) Absorbance spectra of different structural regions after normalization. (b) Output characteristic curve of 2 / 4 electrodes pair for comparison. (c–d) Time resolution curves of SnS₂ devices and SiAs devices. (e–f) The relationship between D^* and EQE of SiAs device under 550 nm laser irradiation and incident optical power density.