

Bi₂O₂Se/BP van der Waals heterojunction for high performance broadband photodetector

Xing Liu, Wenhui Wang, Fang Yang, Shaopeng Feng, Zhenliang Hu, Junpeng Lu* and Zhenhua Ni*

School of Physics, Southeast University, Nanjing 211189, China

*Corresponding Author (email: phyljp@seu.edu.cn, zhni@seu.edu.cn)

Supporting Information

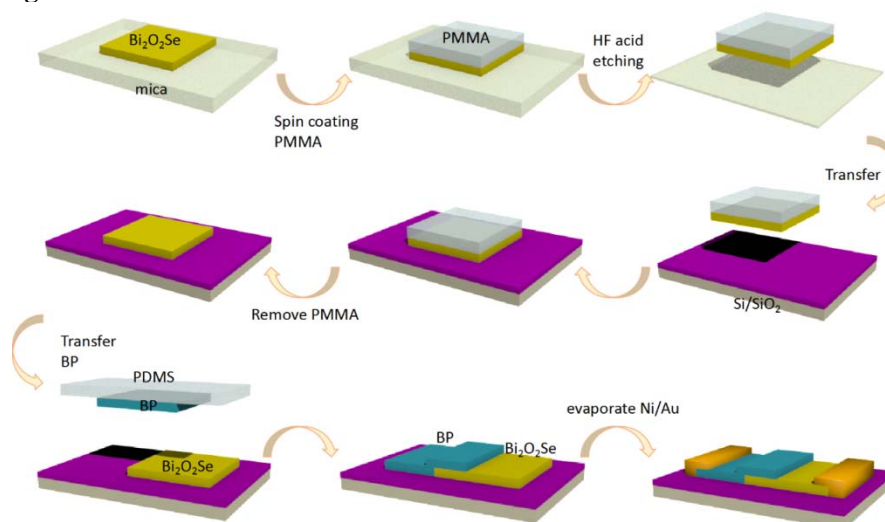


Figure S1. Schematic diagram fabrication process of the Bi₂O₂Se/BP vdW heterojunction photodetector.

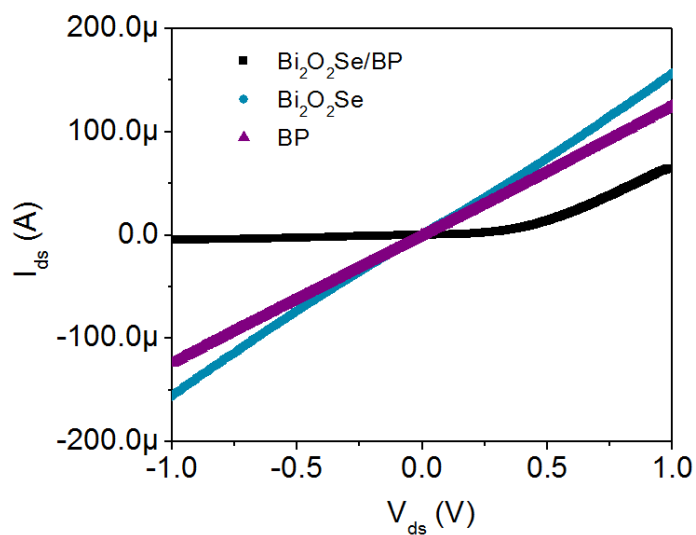


Figure S2. The output characteristics I_{ds} - V_{ds} curves of the Bi₂O₂Se FET, BP FET and Bi₂O₂Se/BP device .

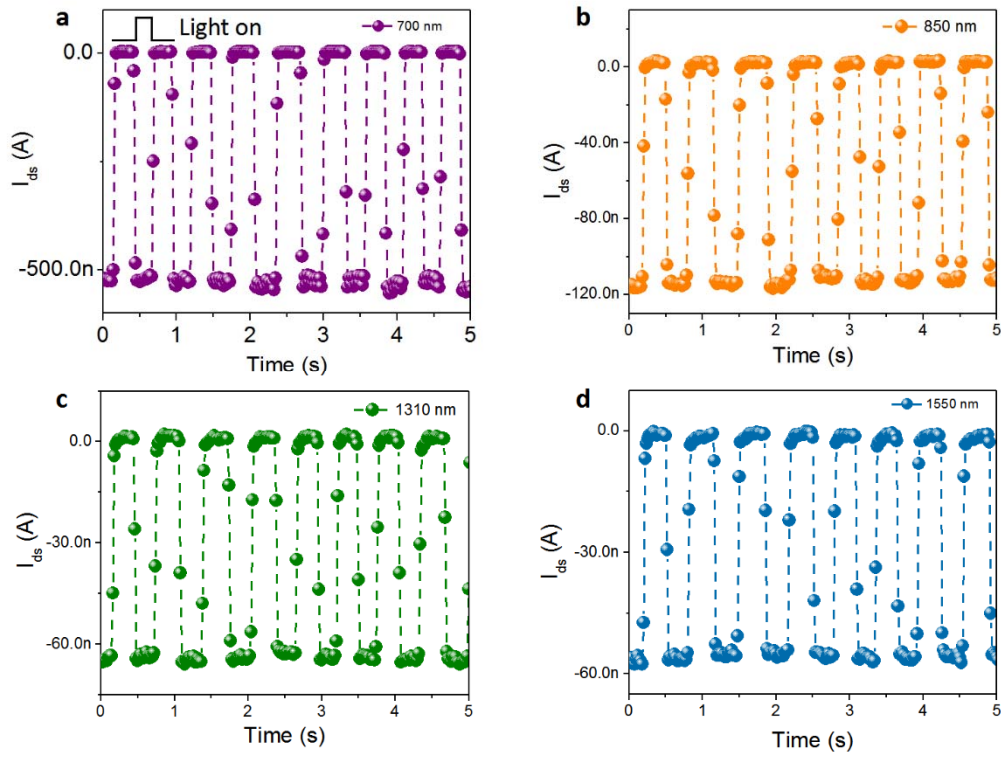


Figure S3. Photoswitching response of the device under 700 nm, 850 nm, 1310 nm and 1550 nm laser illumination at zero bias.

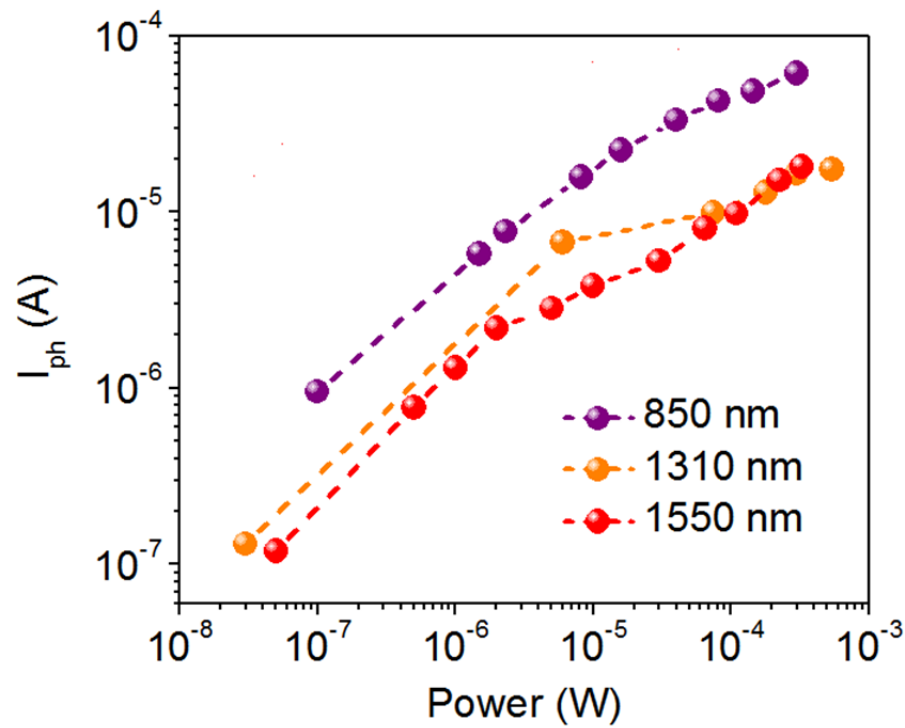


Figure S4. I_{ph} of the $\text{Bi}_2\text{O}_2\text{Se}/\text{BP}$ vdW heterojunction photodetector as a function of incident power under near-infrared waveband light (850 nm, 1310 nm and 1550 nm) at $V_{ds} = -1\text{V}$.

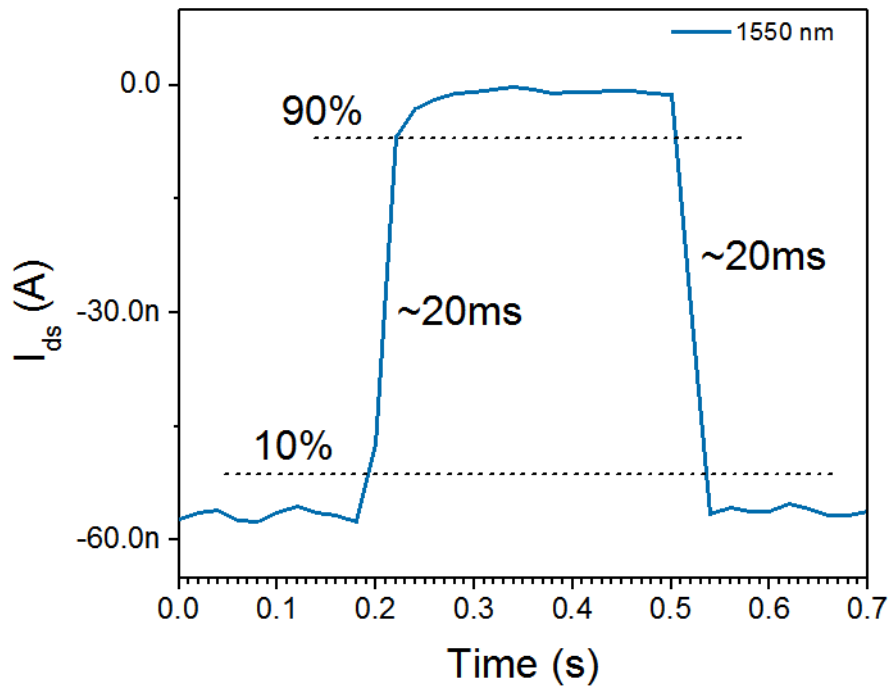


Figure S5. Response time of the $\text{Bi}_2\text{O}_2\text{Se}/\text{BP}$ vdW heterojunction photodetector under 1550 nm laser illumination at $V_{ds} = 0$ V.