

Supporting Information

UV to NIR Photodetection in Lateral Homojunction PN Diode of WSe₂

Achieved by IGZO Sputtering

Muhammad Abubakr^{1,2,#}, Muhammad Hamza Pervez^{3,#}, Arslan Rehmat^{4,#}, Muhammad Asghar Khan⁴, Ehsan Elahi⁴, Muhammad Asim⁴, Muhammad Rabeel¹, Muhammad Nasim³, Zeesham Abbas⁵, Malik Abdul Rehman⁶, Aize Hao⁷, Eom Jonghwa³, Shania Rehman^{3*}, Muhammad Farooq Khan^{1*}

¹*Department of Materials Engineering and Convergence Technology, Gyeongsang National University, Jinju, Gyeongsangnam-do 52828, Republic of Korea*

²*Department of Optical Engineering, Sejong University, Seoul, 05006, Republic of Korea*

³*Department of Semiconductor Systems Engineering, Sejong University, Seoul, 05006, Republic of Korea*

⁴*Department of Physics & Astronomy, Sejong University, Seoul, 05006, Republic of Korea*

⁵*Department of Nanotechnology and Advanced Materials Engineering, Sejong University, Seoul, 05006, Republic of Korea*

⁶*Department of Chemical Engineering, New Uzbekistan University, Tashkent 100007, Uzbekistan*

⁷*College of Chemical Engineering, Sichuan University of Science and Engineering, Zigong 643000, Sichuan, PR China*

These authors contributed equally

* Corresponding Author: mfk@sejong.ac.kr and shania.rehman19@sejong.ac.kr

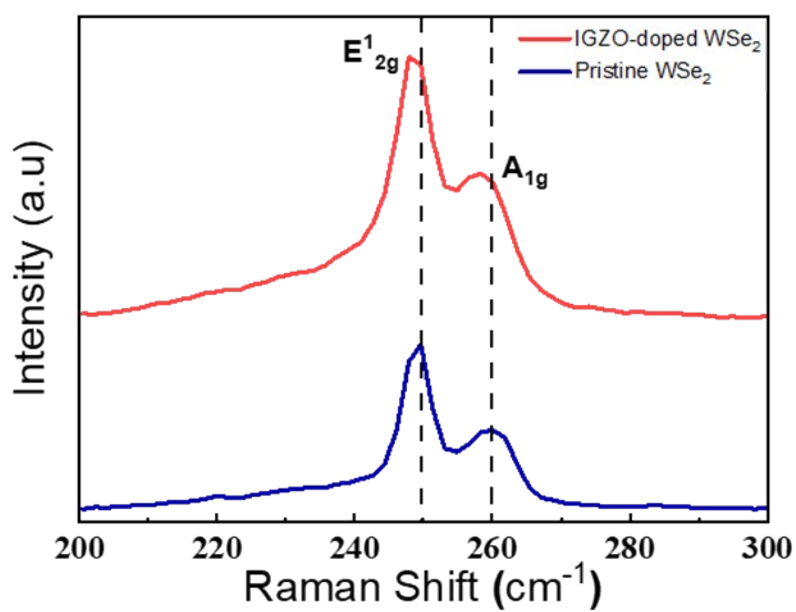


Figure S1. The Raman spectrum of WSe₂ and IGZO/WSe₂ flakes at ambient condition.

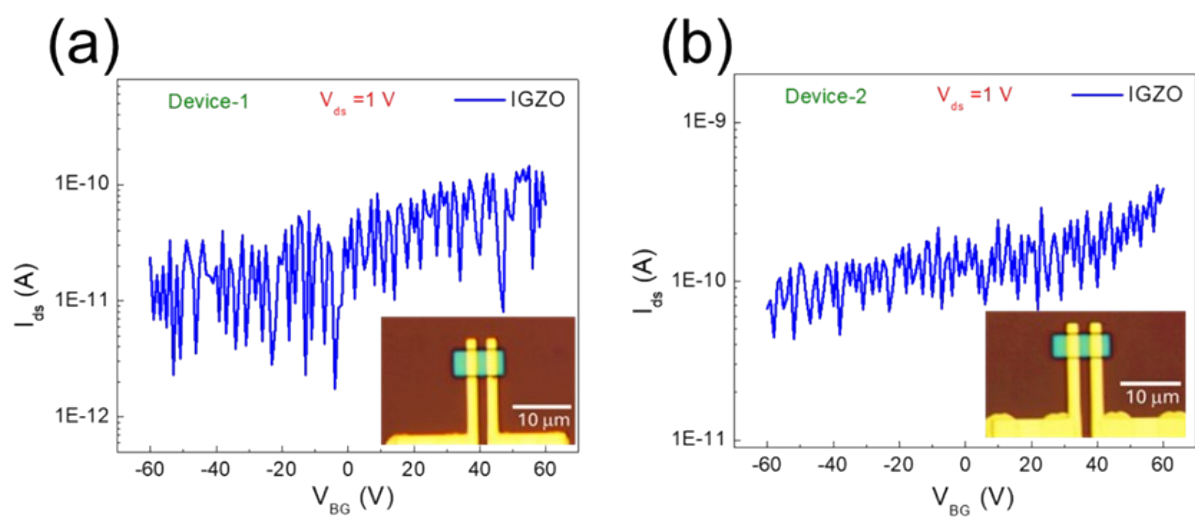


Figure S2. Transfer curves (I_{ds} - V_{BG}) of sputtered IGZO on Si/SiO₂ substrate **(a)** device-1 and **(b)** device-2.

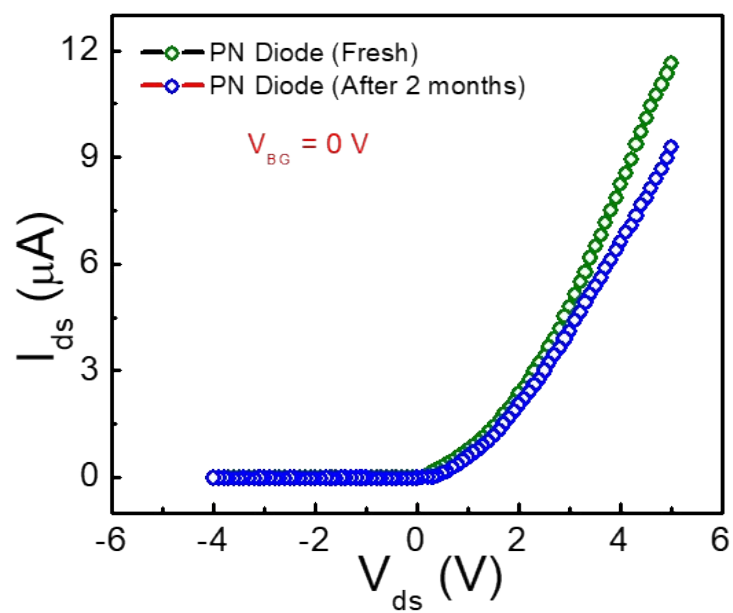


Figure S3. PN homo-diode (p-WSe₂/n-IGZO.WSe₂) curves of fresh and after two months.