

High Photodetectivity in Low-Voltage Flexible Photodetectors Assembled with Hybrid Aligned Nanowire Arrays

Muhammad Shahid^a, Jing Cheng^a, Tianjun Li^a, Muhammad Ajmal Khan^c, Yuting Wang^a, Yue Hu^a, Mengfei Zhang^a, Jun Yang^a, Hafiz Sartaj Aziz^a, Chunlei Wan^a, Hiroki Nishijima^b, and Wei Pan^{a*}

^aState Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, Beijing 100084, People's Republic of China

^bFunctional Material Department, Inorganic Material Engineering Division, Toyota Motor Corporation, Toyota, Aichi 471-8572, Japan

^cDepartment of Engineering Physics, Tsinghua University, Beijing 100084, People's Republic of China

* Author to whom correspondence should be addressed.

Electronic mail: panw@mail.tsinghua.edu.cn.

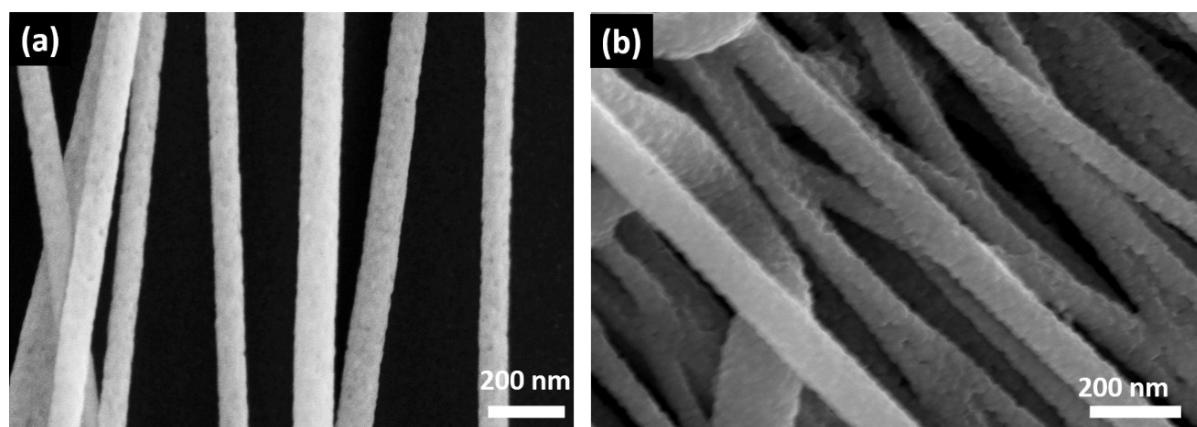


Fig. S1 Scanning electron microscopy images of (a) ZnGa_2O_4 (b) ZnO nanofibers.

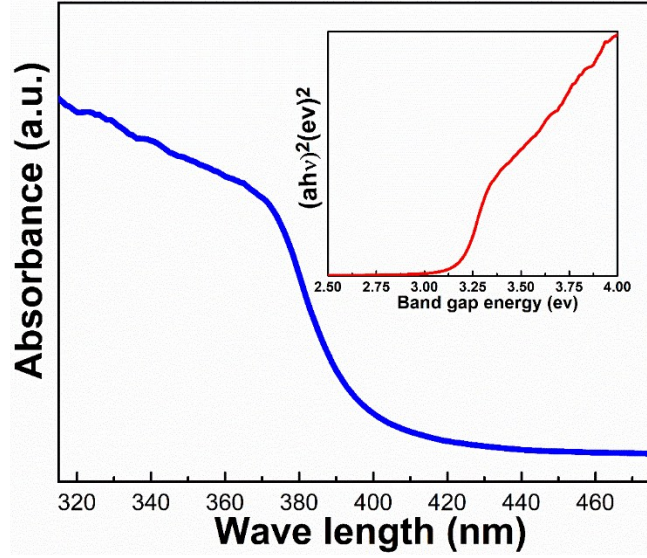


Fig. S2 Absorbance of the hybrid ZnO-ZnGa₂O₄ nanofibers (inset is the bandgap energy to the corresponding to the absorbance spectra).

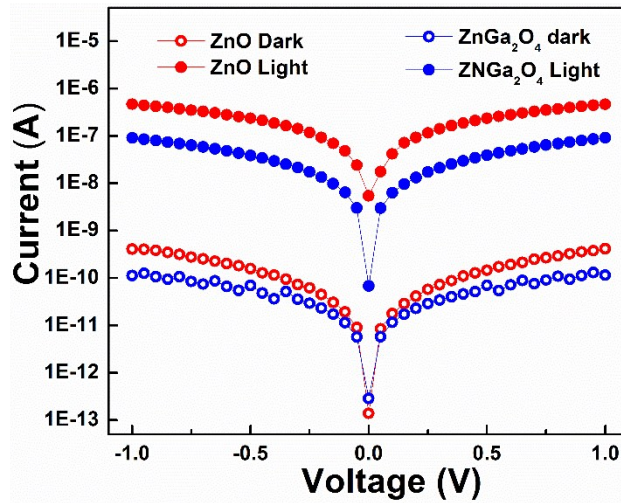


Fig. S3 (a) I-V curves of ZnO and ZnGa₂O₄ nanofibers photodetector measured under 303 nm wavelengths of light with light power intensity 500 $\mu\text{W}/\text{cm}^2$. I-V curves of ZnO and ZnGa₂O₄ nanofibers photodetector measured under 303 nm wavelengths of light with light power intensity 500 $\mu\text{W}/\text{cm}^2$.

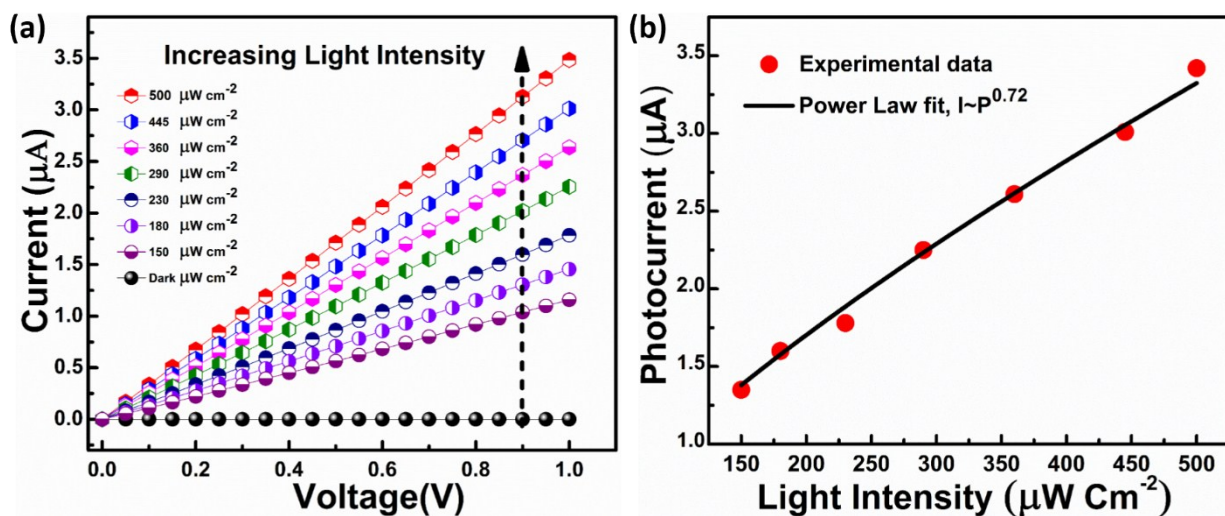


Fig. S4 (a) I-V with variation in light power intensity under 303 nm wavelength of light. (b) Photocurrent vs light intensity and its power law fitting.

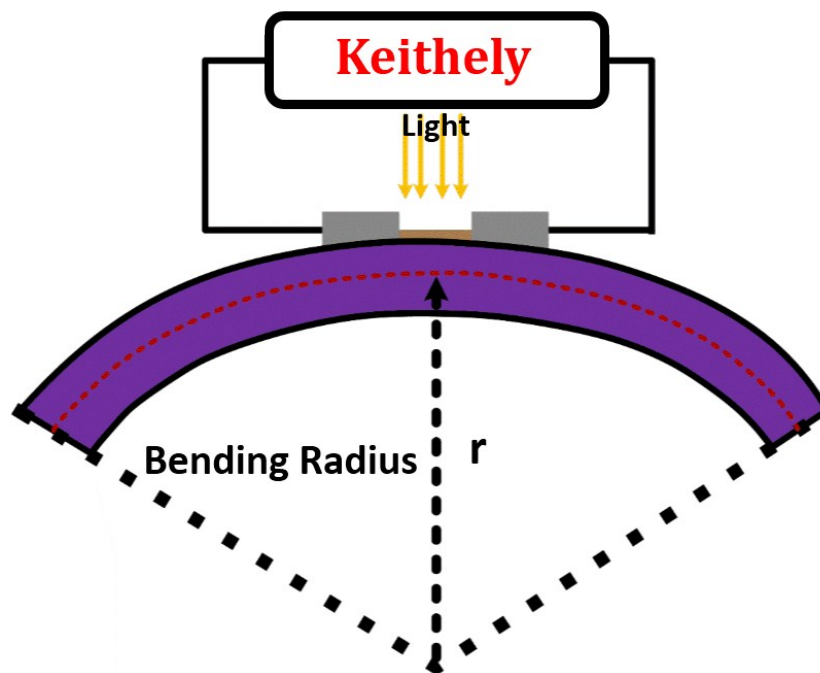


Fig. S5 Schematic of the flexible device measurement setup

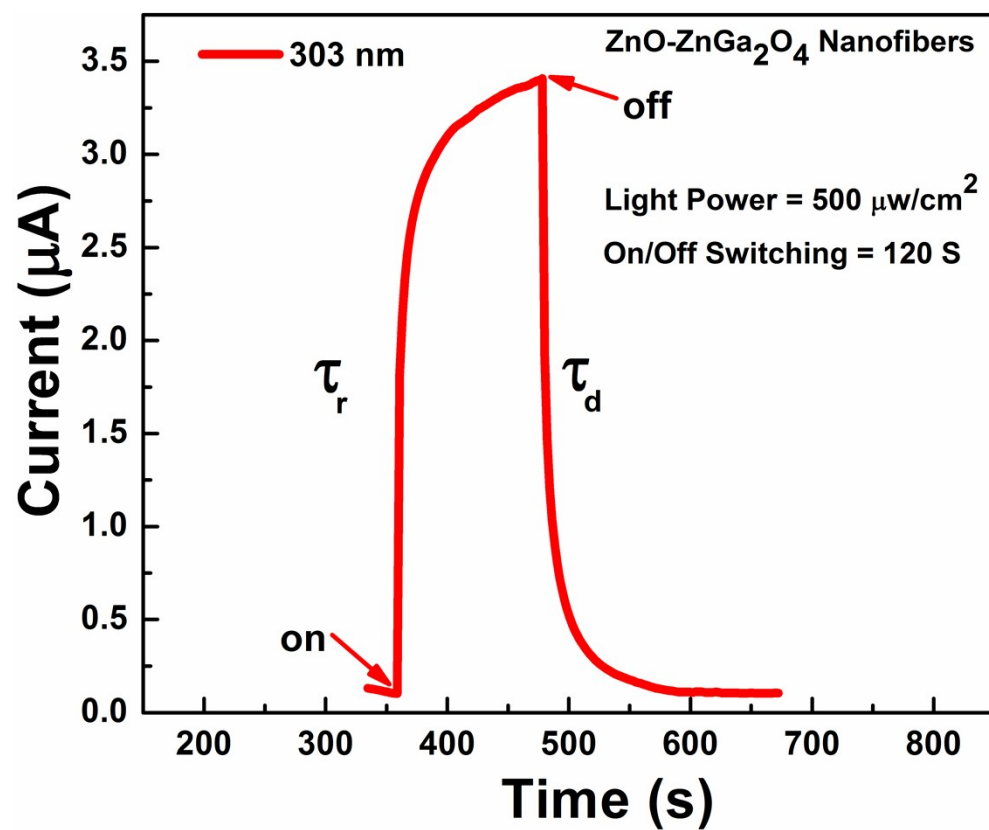


Fig. S6 Time dependent Photoresponse for one on/off cycle