## A novel ternary organic microwire radial heterojunction with high

## photoconductivity

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**Measurement and calculation details of EQE:** The external quantum yield (EQE) for the microwire was obtained by measuring the photocurrent of the device under illumination of monochromatic light with different wavelengths. The power of the monochromatic light ( $P_m$ ) was detected by a silicon photodetector (Newport 918D-UV-OD3R) and the diameter of incident light beam was approximately 3.0 mm, thus the incident irradiance can be estimated as  $I_{irr}$ . The effective microwire area (A) was taken as the wire diameter (~1.0 µm) multiplied by the gap length (2.5 µm), thus the incident radiant energy delivered to the microwire per second is  $I_{irr}A$ . Corresponding to the photon energy  $E_p$  of photons with different wavelengths, the quantity of incident photons per second can be estimated as  $I_{irr}A/E_p$ . Meanwhile, the quantity of photogenerated electrons ( $N_e$ ) pass through the microwire per second can be estimated from the photocurrent. Therefore, the EQE can be calculated by  $N_e E_p/I_{irr}A$ .



**Figure S1.** Photoconductive performance under illumination (79.4 mW/cm<sup>2</sup> white light) of several parallel devices on TCTA/PCBM/4CzIPN and TCTA/PCBM microwires.



**Figure S2.** The fluorescence microscope images of (a) TCTA/PCBM/F8BT and (b) TCTA/PCBM/Alq<sub>3</sub> microwires, excited by UV light (330–380nm). Scale bar: 10 μm.



Figure S3. UV-Vis absorption spectra of F8BT and Alq<sub>3</sub> films.