SUPPLEMENTARY INFORMATION

Solution-processed-2D on 3D heterojunction UV-Visible photodetector for low light applications

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Table 1. Hall effect measurement data of the GaN substrate used here.

Carrier Concentration (cm^{-3})	**Mobility (cm^2/Vs)**	**Resistivity (Ω cm)**
– (5-7) × 10^{16}	~ 2 × 10^2	~0.35

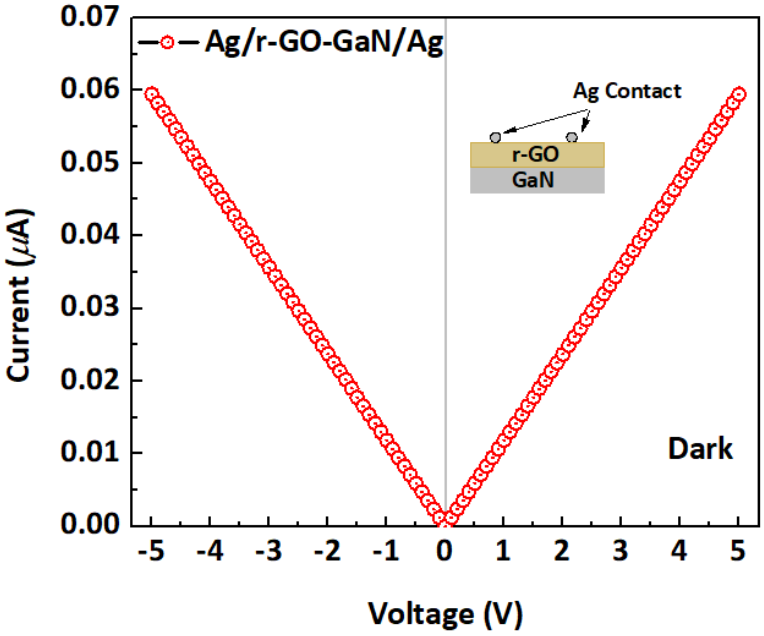

Figure S1. The I-V characteristics of the r-GO film deposited over GaN substrate showing the ohmic behaviour of the Ag contacts with r-GO film.

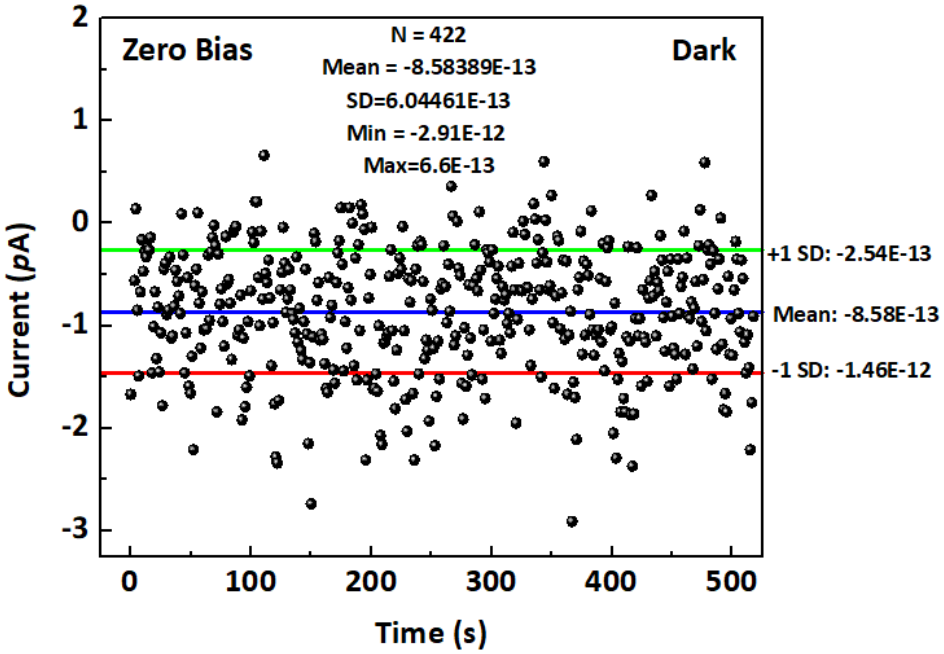

Figure S2. Dark Current statistics of the device at zero bias.

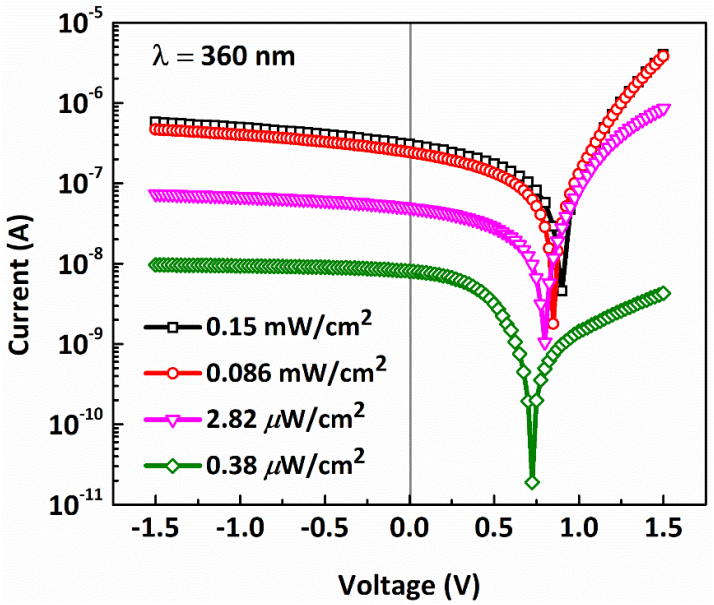

Figure S3. I-V characteristics of the device under different light intensity of 360 nm wavelength illumination. The V_{OC} was found to be 0.89, 0.85, 0.80, and 0.72 V for 0.15 mW/cm^2, 0.086 mW/cm^2, 2.82 μW/cm^2, and 0.38 μW/cm^2, respectively.

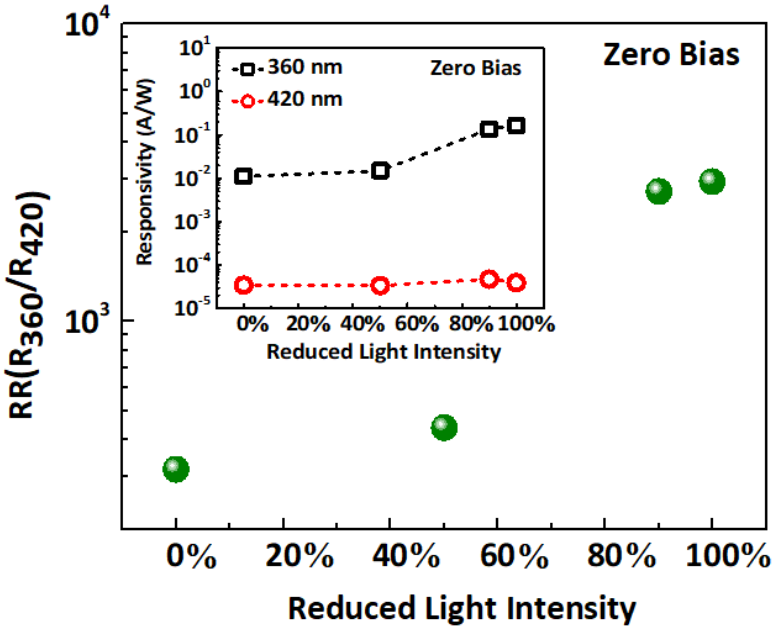

Figure S4. The UV-to-Visible Rejection Ratio parameter at different light intensities between the wavelength 360 and 420 nm. The inset shows the corresponding device responsivity values for the wavelength 360 and 420 nm.

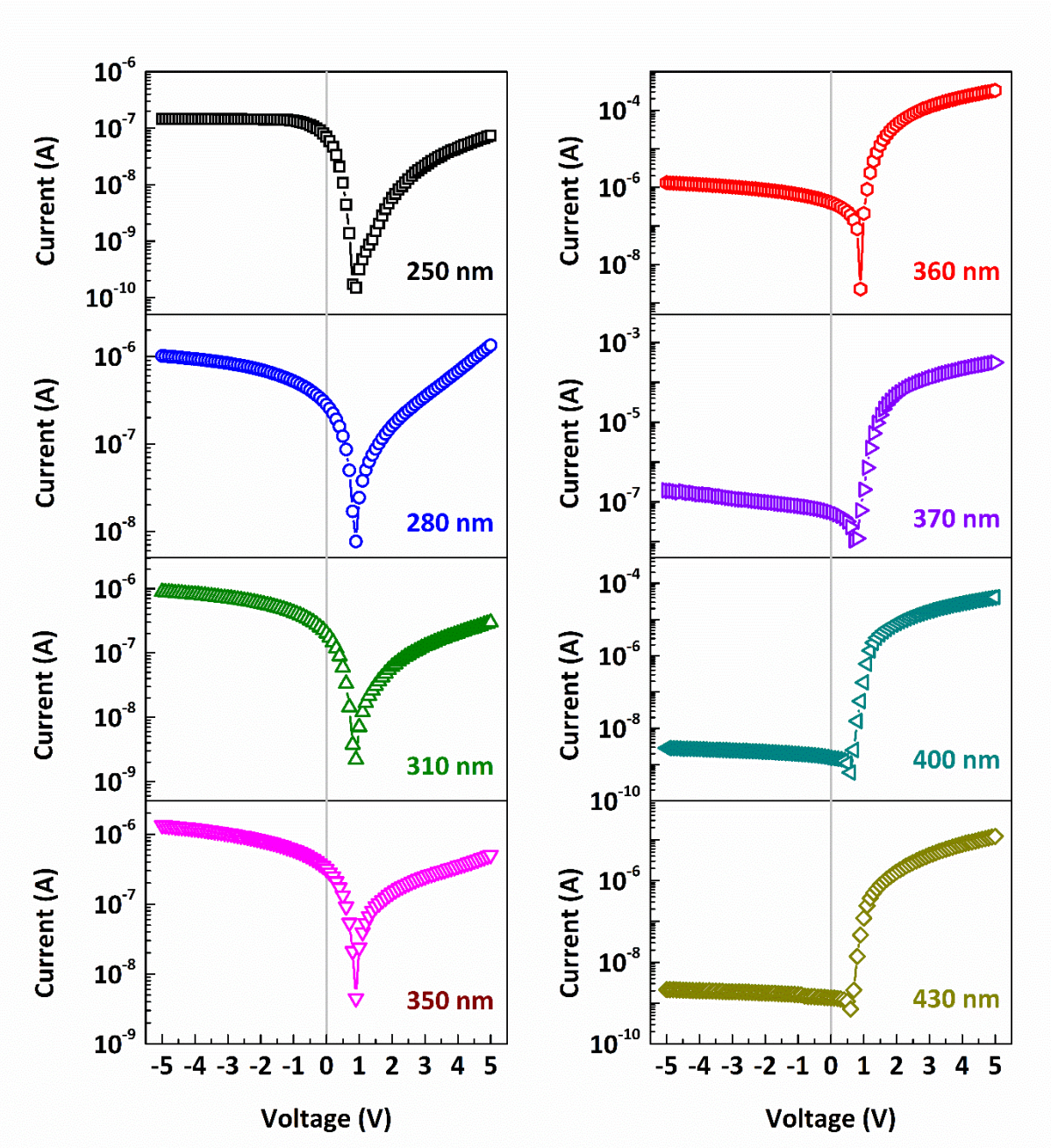

Figure S5. I-V characteristics of the device under different illumination wavelengths showing a transformation from quasi photoconductive (λ at 250 nm (0.01 mW cm^{-2}), 280 nm (0.083 mW cm^{-2}), 310 nm (0.082 mW cm^{-2}), 350 nm (0.146 mW cm^{-2})) to photodiode (λ at 360 nm (0.156 mW cm^{-2}), 370 nm (0.154 mW cm^{-2}), 400 nm (0.466 mW cm^{-2}), and 430 nm (0.50 mW cm^{-2})) behavior.