Supporting Information

Indium-doped α-Ga_2O_3 nanorod arrays for ultra-sensitive solar-blind UV photodetector

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Supplementary Figures and Tables

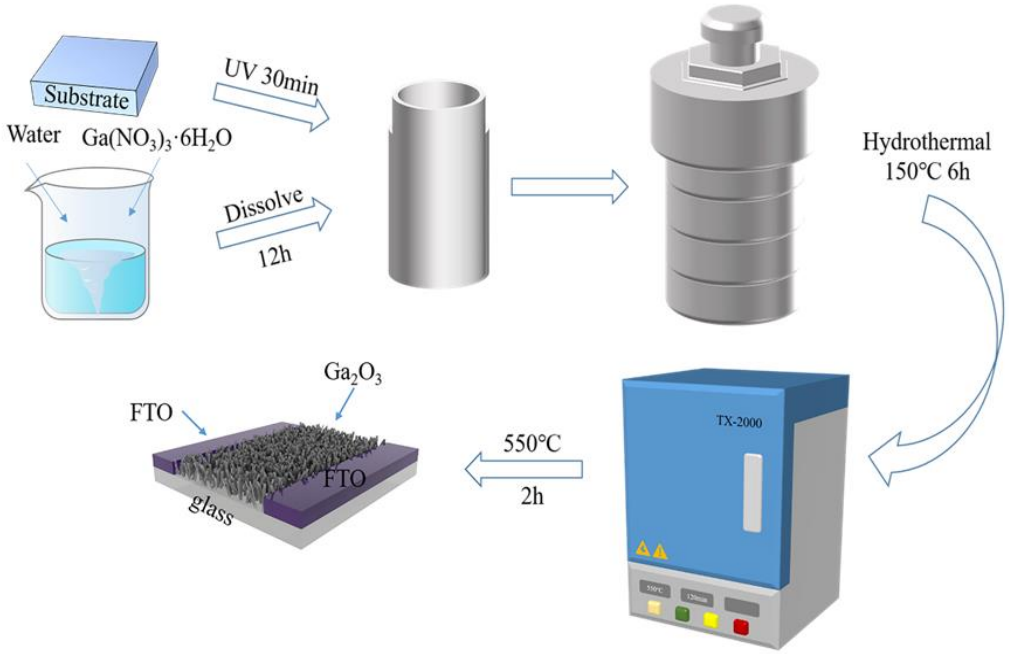

Fig. S1. Schematic diagram of IGO nanorods made by hydrothermal method.

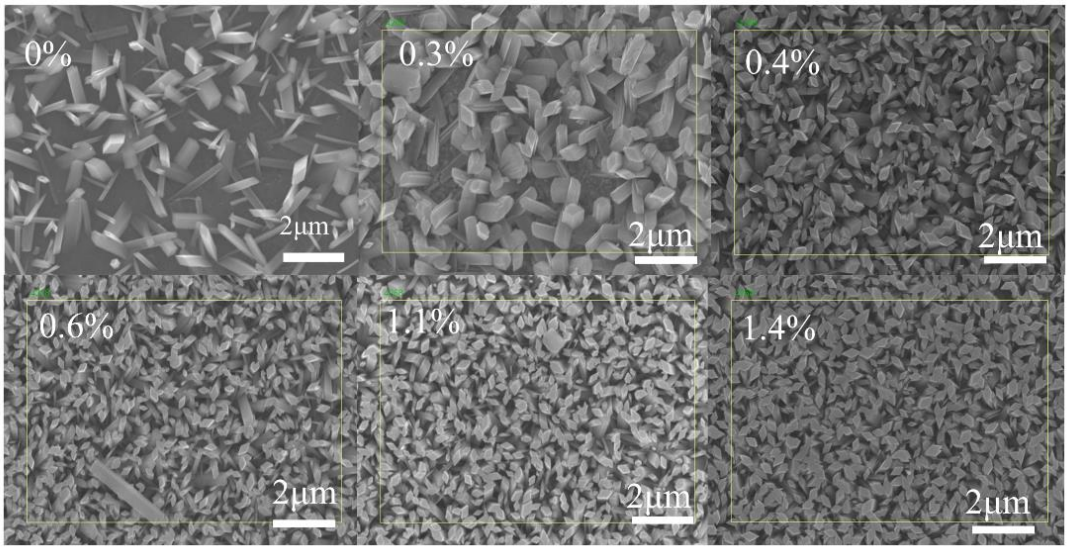

Fig. S2. Top-down SEM images with different concentration gradients of In-doping.

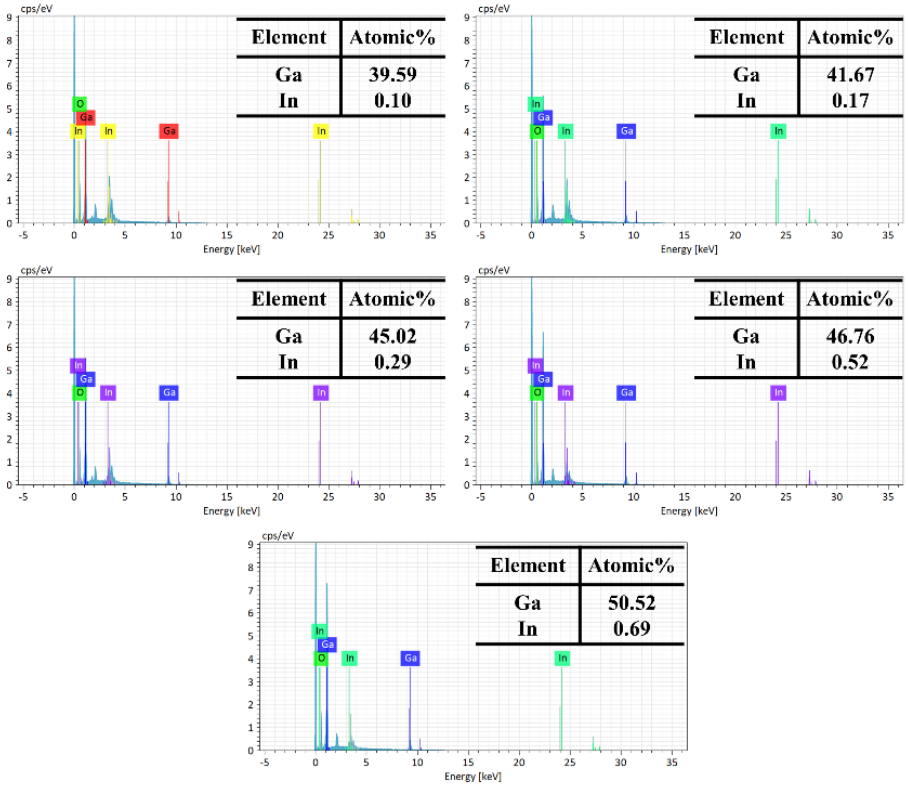

Fig. S3. The element content analysis of top-down SEM images with different concentration gradients of In-doping.

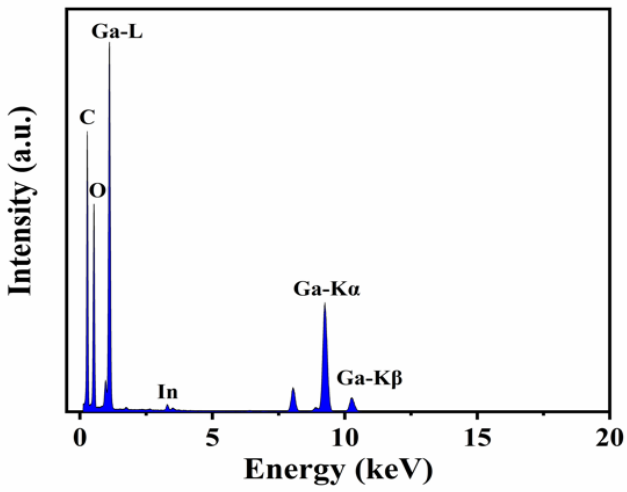

Fig. S4. EDX spectrum of the IGO nanorod.

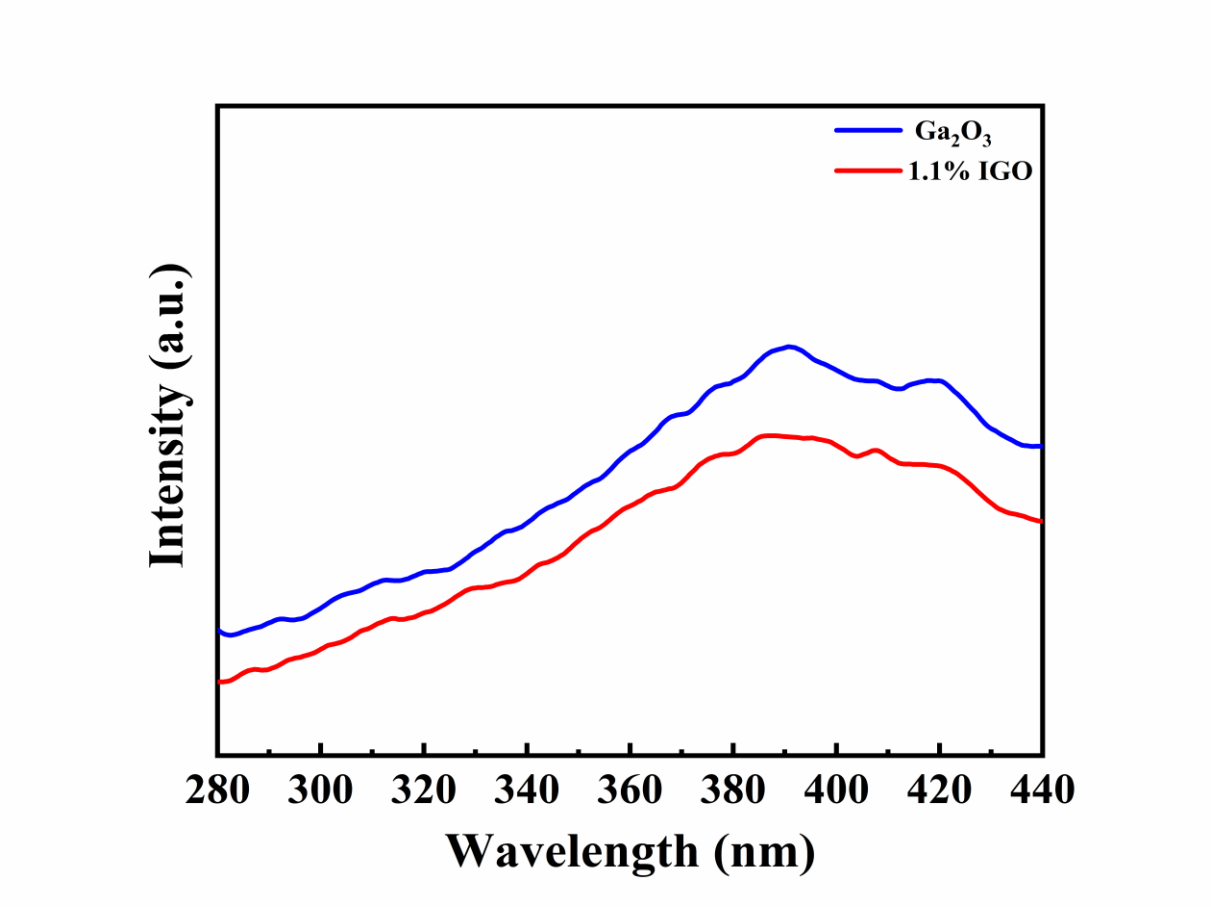

Fig. S5. Steady-state PL spectra of the undoped sample and that with the optimal concentration doping.

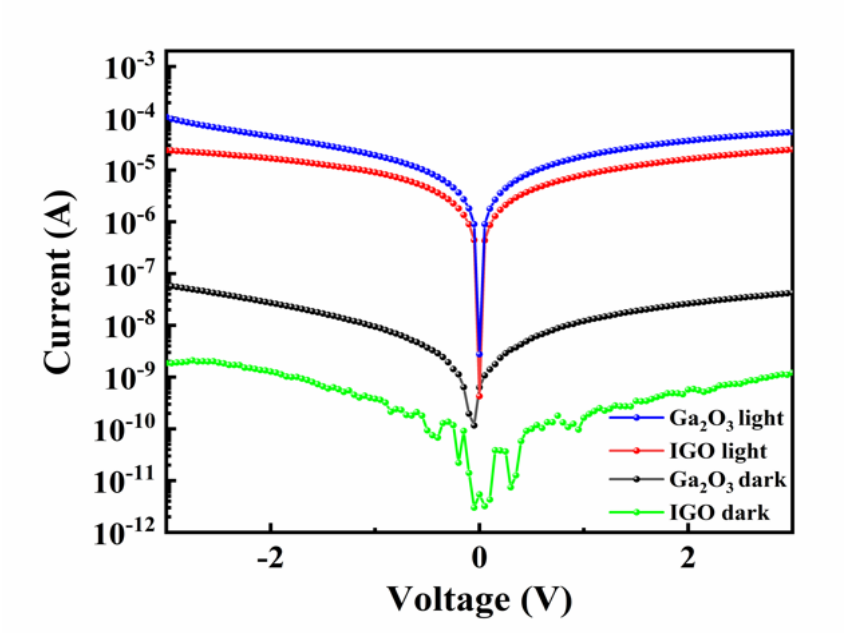

Fig. S6. *I-V* curves before and after In-doping.

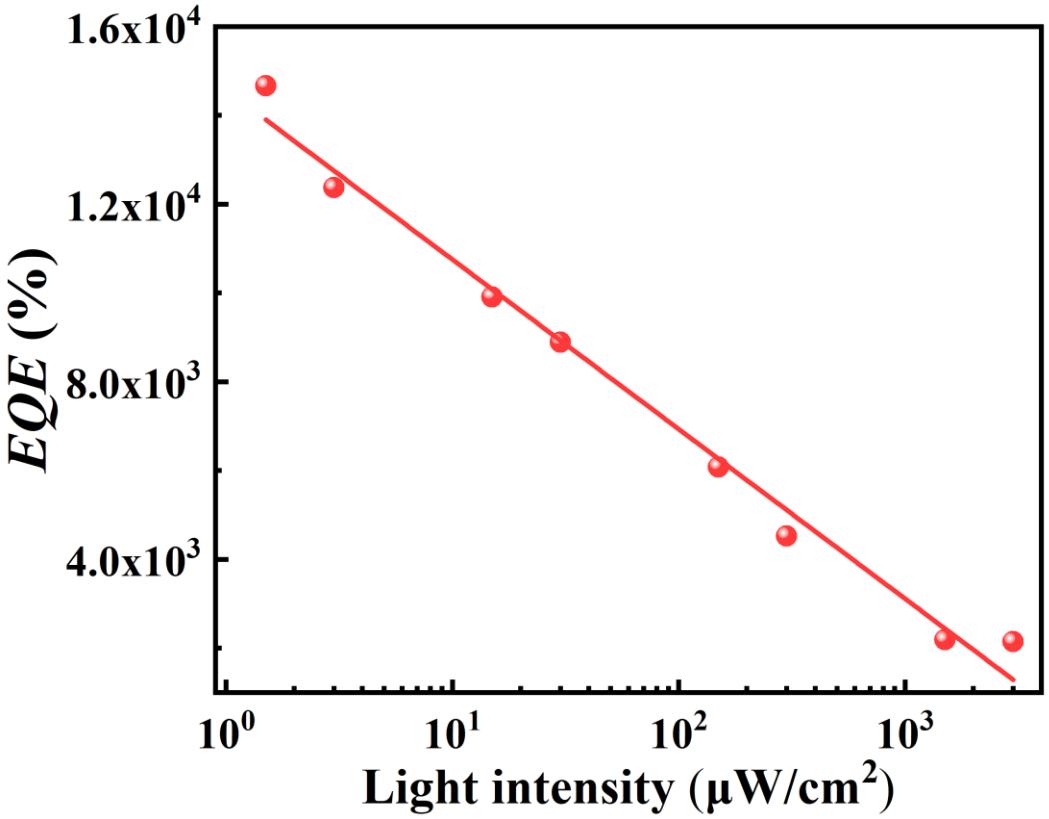

Fig. S7. *EQE* plotted by light intensity.

By *R*, the External quantum efficiency (*EQE*) of the device is further calculated, which represents the ratio of the number of charge excitons collected in SBPD to the number of incident lights. The definition formula is as follows:

$$EQE = \frac{R\,h\,c}{q\,\lambda} \tag{3}$$

In this formula, *h* refers to Planck's constant, *c* is the speed of light, *q* is the elementary charge, and λ is the wavelength of the irradiated light. A higher *EQE* value in a photodetector signifies a greater efficiency in converting incoming photons into photocharge carriers. As shown in **Fig. S7**, the *EQE* of the device reaches 14665 %. The ultra-high *EQE* further demonstrates the excellent solar-blind detection capability of SBPDs.