Supporting Information

Self-Powered Broadband Schottky Junction Photodetector Based on Single Selenium Microrod

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Figure S1 The photograph of the as-fabricated device.
Figure S2 $I-V$ curves of the device for both scan directions under dark and white light illumination.

Figure S3 The IPCE of the device under different monochromatic light.
**Figure S4** $I-V$ characteristics of the Ag/Se microrod/Ag symmetry photodiode in dark from -4 to 4 V.
Figure S5 Performance test of In-Ga/Se microrods array/Ag photodiode. (a) $I-V$ characteristics of the Se microrods array photodiode in dark and under different lights measured from -0.5 to 0.5 V. (b, c, d) Time response curves under 365, 405, 532 and 650 nm illumination at 0, -0.005 and -0.01 V. The light intensity is 1.97, 2.41, 3.48 and 2.55 $\mu$W/cm$^2$ for 365, 405, 532 and 650 nm monochromatic light, respectively.