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A STUDY ON BROADBAND PHOTODETECTOR BASED ON HYBRID 2D COPPER OXIDE/ REDUCED GRAPHENE OXIDE

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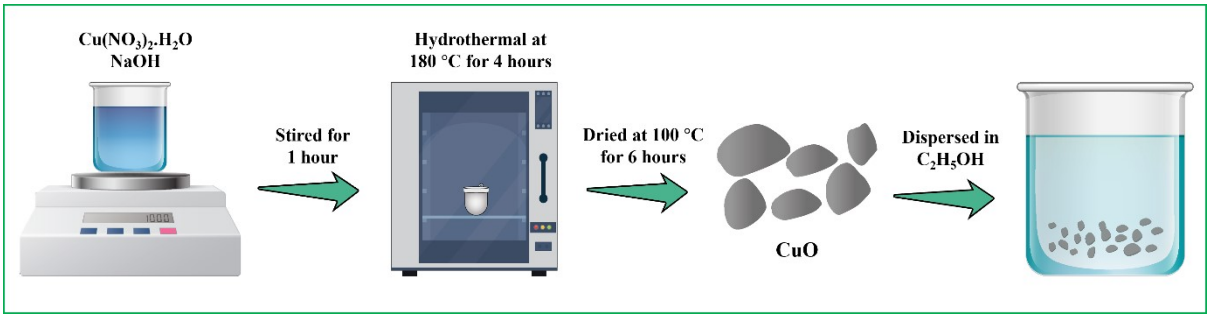


Figure S1. *Synthesis process of 2D CuO dispersion.*

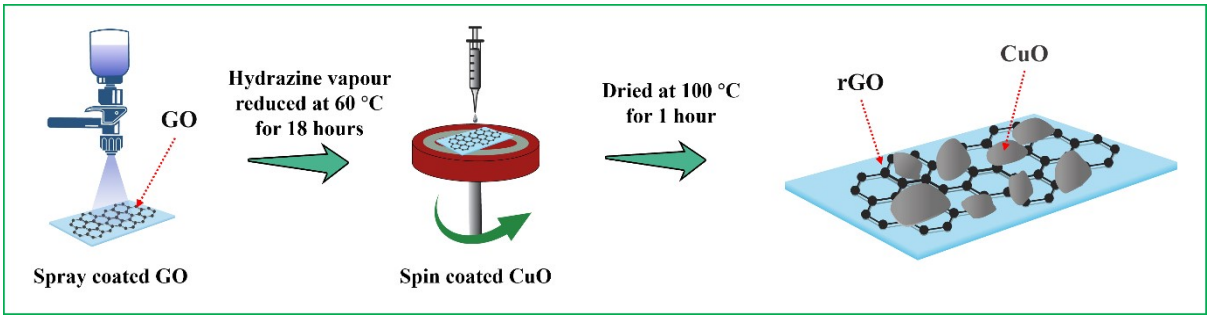


Figure S2. *Synthesis process of 2D CuO/rGO hybrid thin film.*

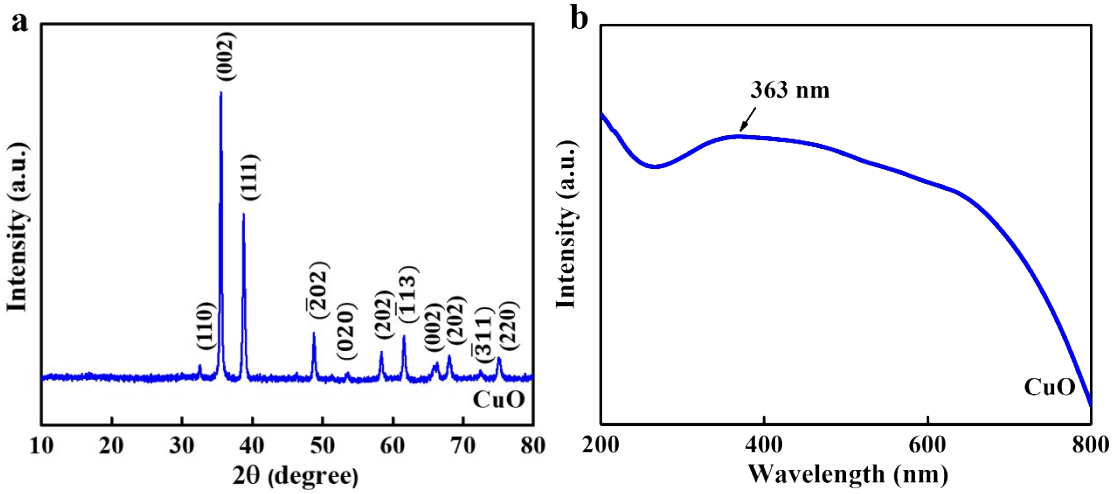


Figure S3. *(a) XRD pattern and (b) UV-vis spectrum of 2D CuO sample*

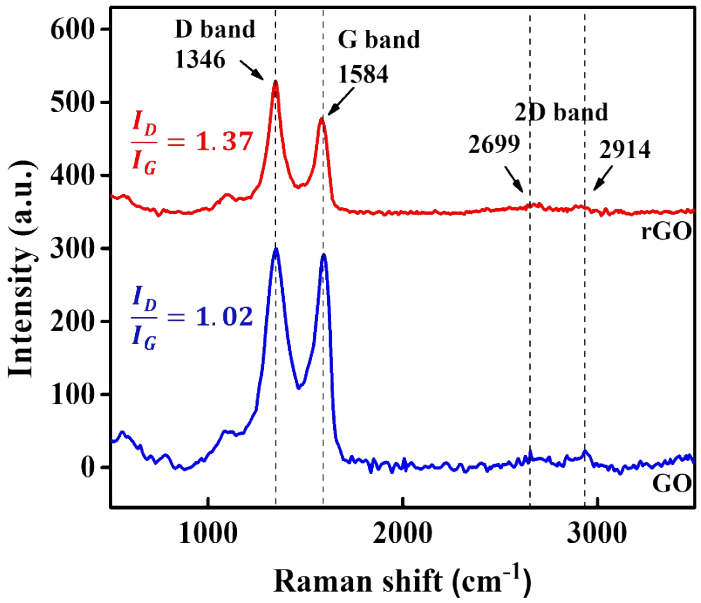
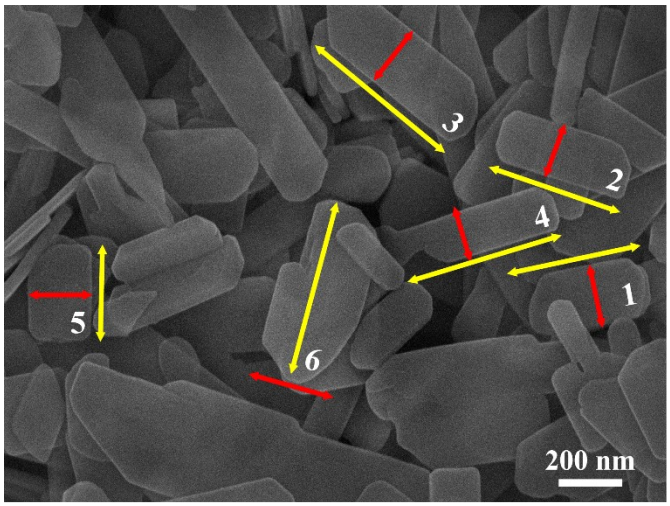


Figure S4. *Raman spectra of GO and rGO samples*



No.	Length (nm)	Width (nm)
1	406	236
2	412	232
3	423	243
4	414	231
5	369	234
6	432	252
Average	~ 410	~ 240

Figure S5. *SEM image and size statistics of 2D CuO nanoplates*

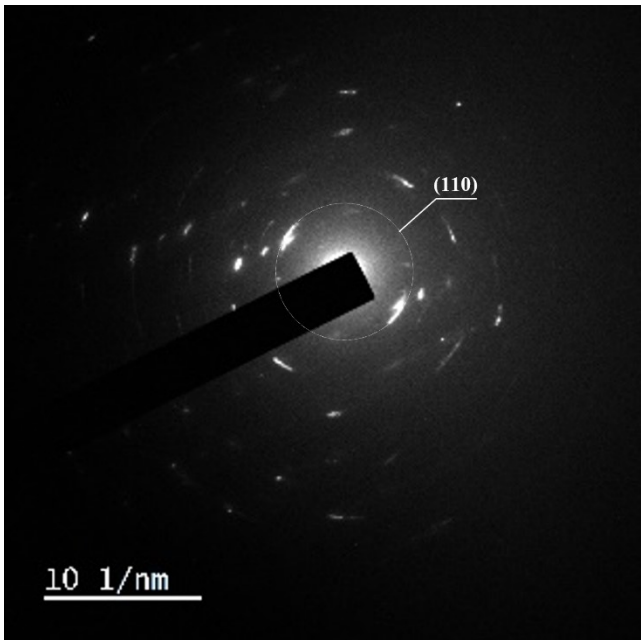


Figure S6. *SAED pattern of 2D CuO/rGO*

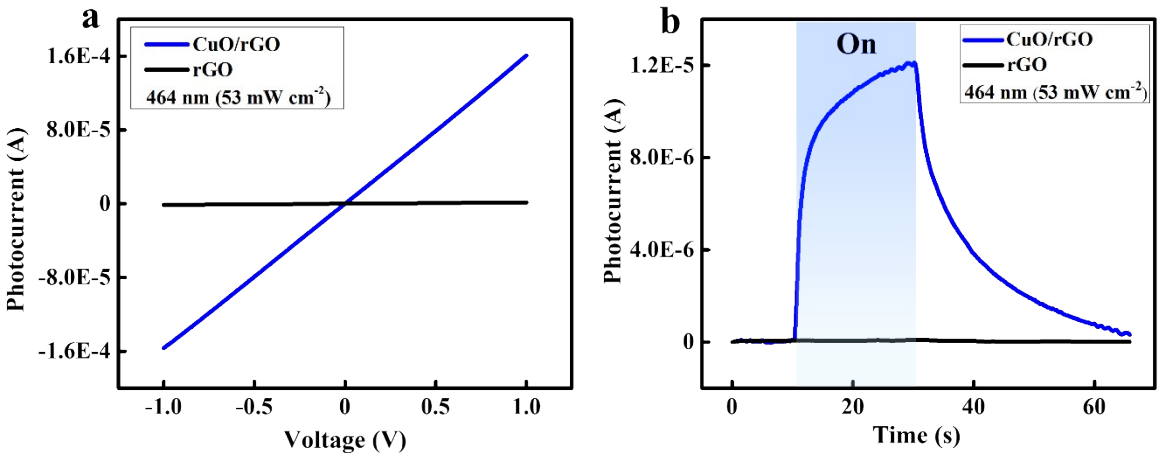


Figure S7. *(a) I–V and (b) I-t characteristics of rGO and 2D CuO/rGO photodetectors under 464 nm light*

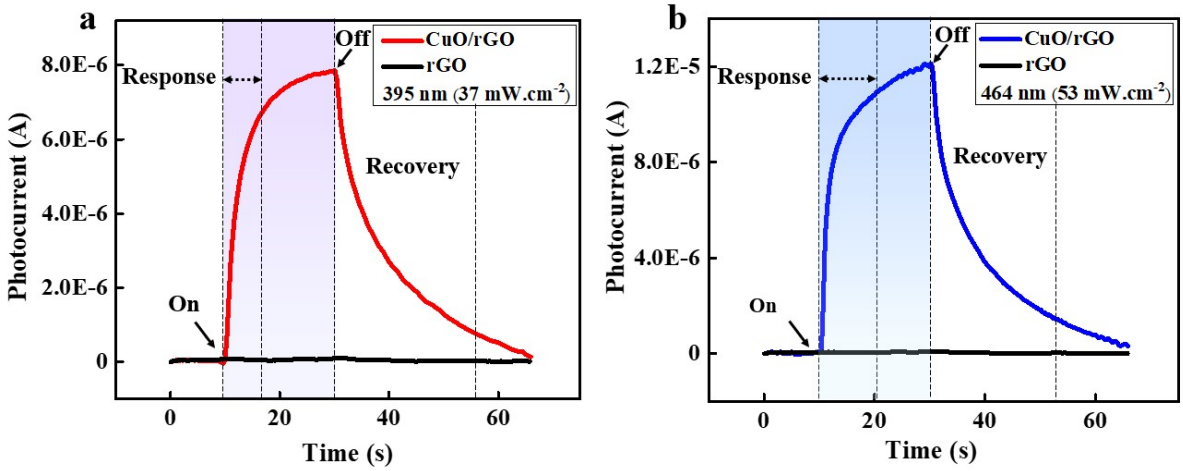


Figure S8. *Response and recovery time of a hybrid photodetector under exposure to (a) 395 nm and (b) 464 nm lights*

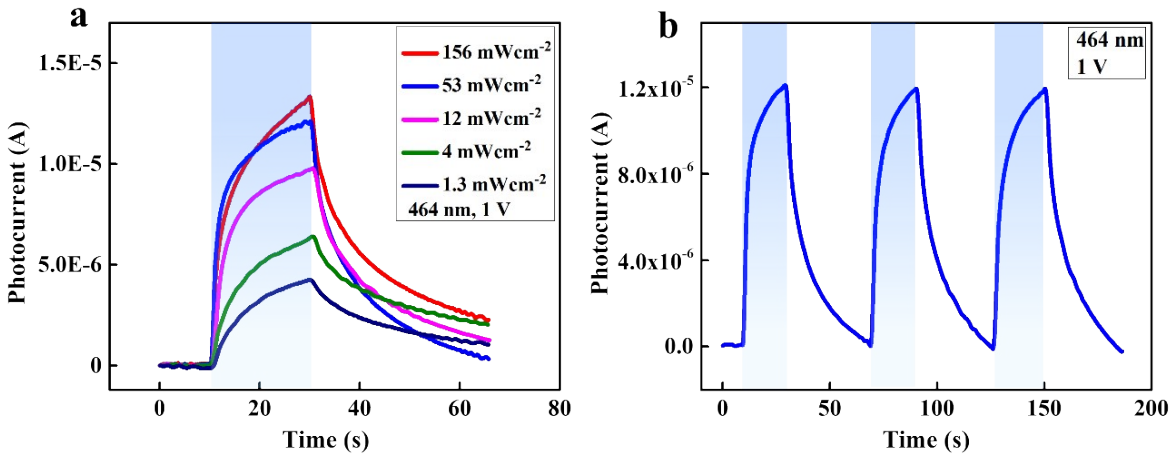


Figure S9. *(a) I–t curves and (b) the repeatability of a hybrid photodetector under 464 nm light*

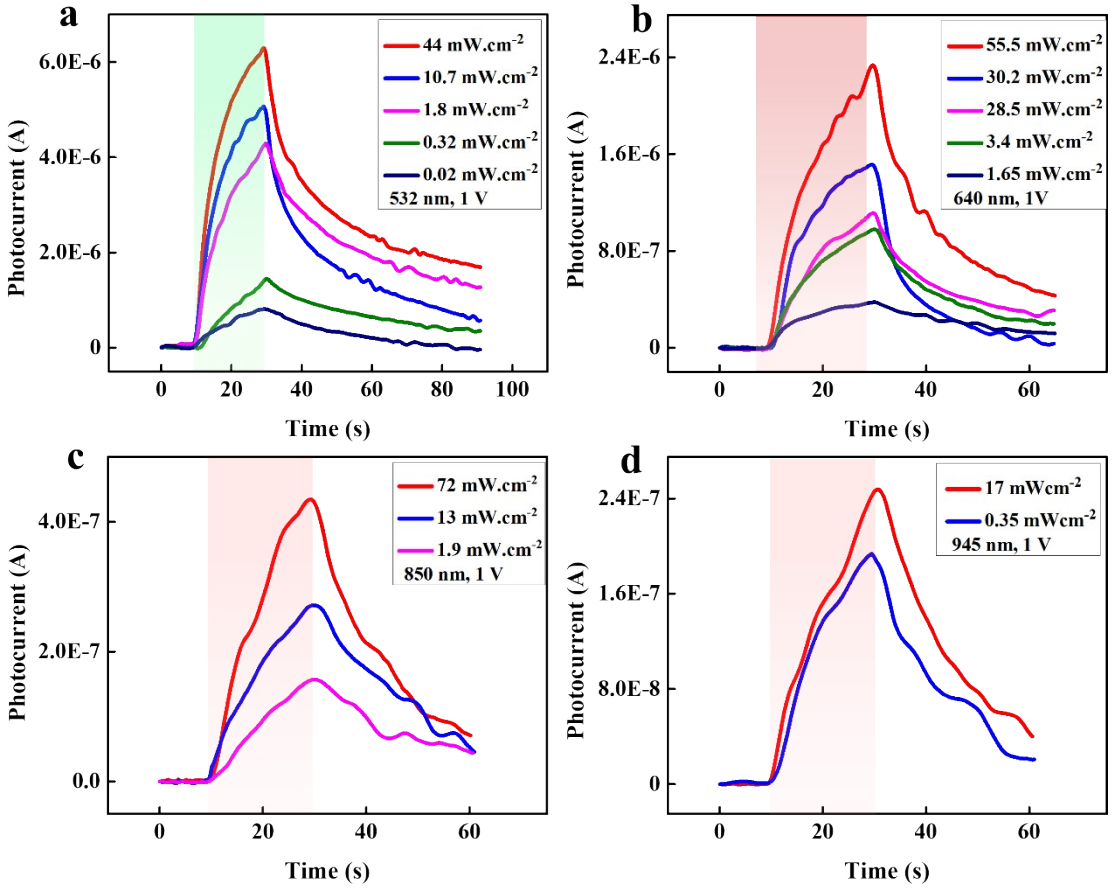


Figure S10. *I–t curves of the hybrid device under exposure to light at wavelengths of (a) 532 nm, (b) 640 nm, (c) 850 nm, and (d) 945 nm.*

The hybrid device generated the highest photocurrents of 6.3, 2.3, 0.43, and 0.25 μA when excited by the 532-, 640-, 850-, and 945-nm wavelengths, respectively. When the light was ON, the photocurrent immediately increased, and when the light was OFF, the photocurrent decreased. Notably, it gradually decreased as increasing the light intensity.

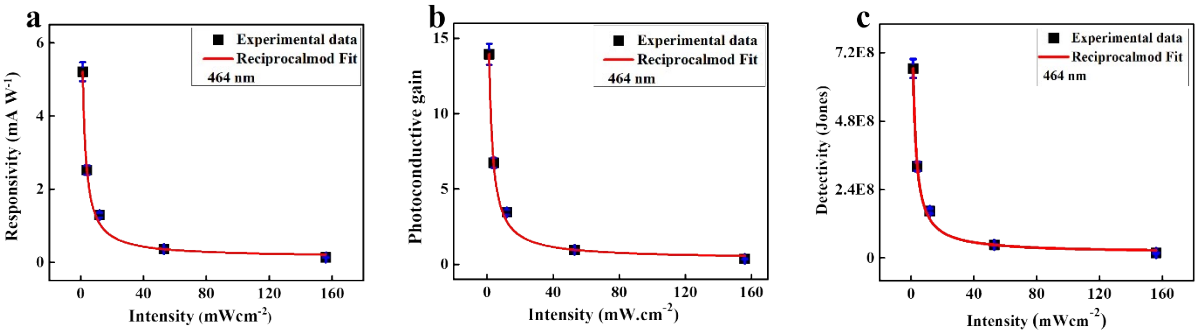


Figure S11. *(a) Responsivity, (b) photoconductive gain and (c) detectivity of 2D CuO/rGO device including reciprocal function fitting lines with error bar.*