

## Supplementary Information:

### Effect of GO additive in ZnO/rGO nanocomposites with enhanced photosensitivity and photocatalytic activity

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**Figure S2.** Time-dependent absorption spectra of Methyl blue (MB) solution under visible light using (a) ZnO, (b) ZnO/rGO (10%), (c) ZnO/rGO (20%), and ZnO/rGO (30%) as a photocatalyst.

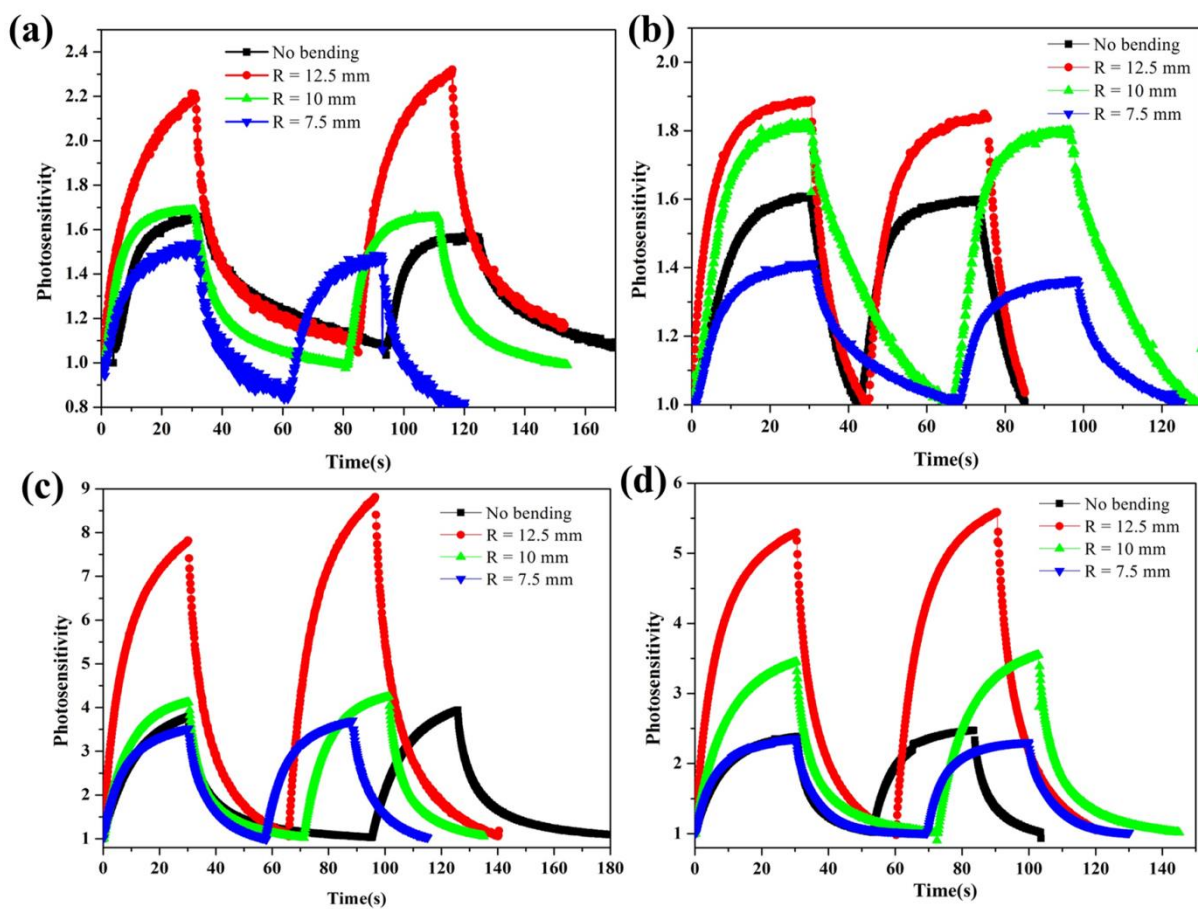
**Figure S3.** The photoluminescence spectra of pristine ZnO and as-synthesized ZnO/rGO

**Table S1** Comparisons of photosensitivity and time-dependent photocurrent response between the present work and other reported UV detectors.

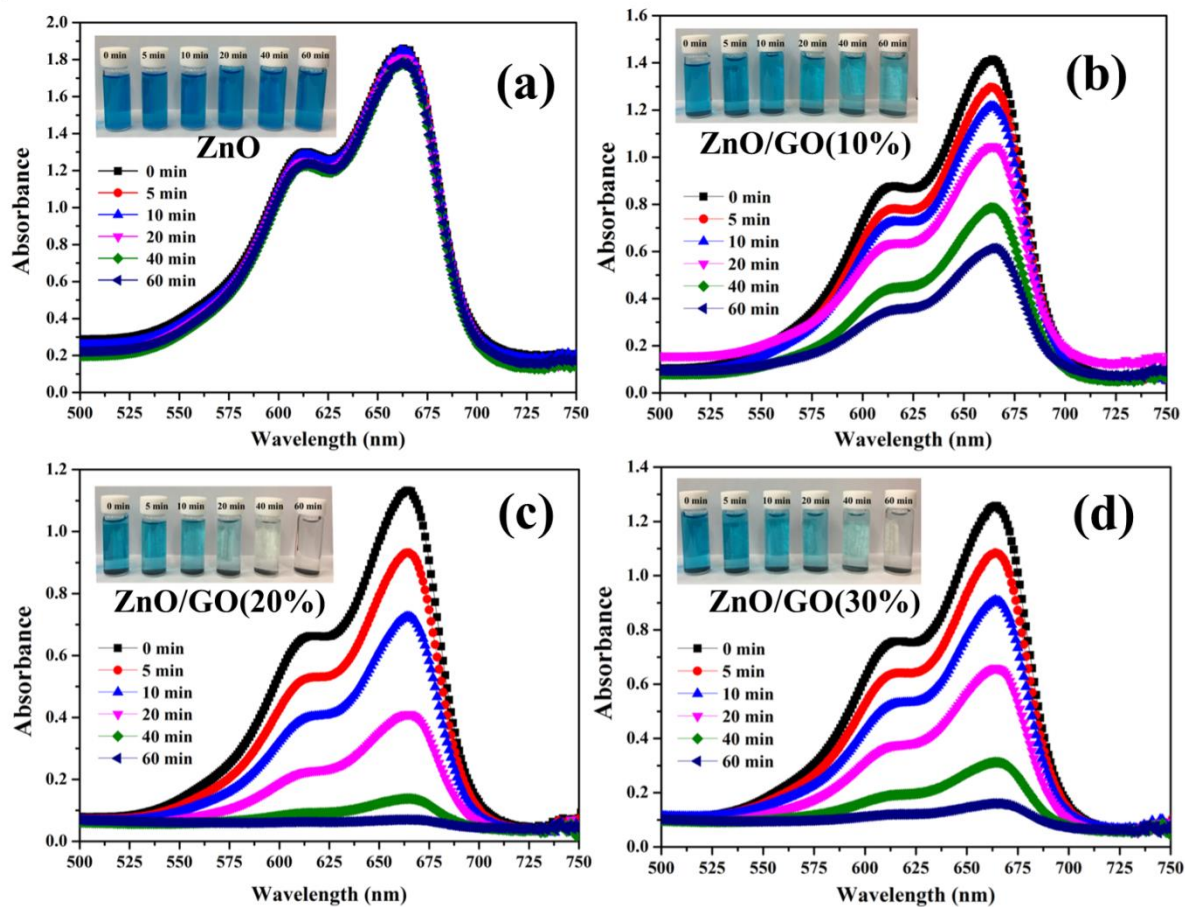
Structure	Substrate	$\lambda_{UV}$ (nm)	UV intensity (W/cm <sup>2</sup> )	Bias voltage (V)	Dark current (A)	Photosensitivity (I <sub>UV</sub> /I <sub>DARK</sub> )	Response time (s)	Ref.
MgZnO/ZnO thin film	Glass	365	$3.20 \times 10^{-3}$	4	$\sim 4.64 \times 10^{-6}$	$\sim 1.01$	-	[1]
ZnO nanowires	SiO <sub>2</sub> /Si	325	$0.42 \times 10^{-3}$	1.5	$\sim 0.50 \times 10^{-6}$	$< 4$	-	[2]
ZnO nanowires	SiO <sub>2</sub> /Si	300	$2 \times 10^{-3}$	0.1	$\sim 12.70 \times 10^{-6}$	$\sim 1.51$	0.2	[3]
	SiO <sub>2</sub> /Si	500	$19.50 \times 10^{-3}$	0.1	$\sim 12.50 \times 10^{-6}$	$\sim 1.40$	0.3	[3]
ZnO nanostructures	p-Si	365	0.80	3	$\sim 3.50 \times 10^{-6}$	$\sim 1.71$	-	[4]
Ti-doped ZnO thin film	glass	$\sim 365$	$2 \times 10^{-3}$	5	$\sim 15.00 \times 10^{-9}$	$\sim 6.80$	135	[5]
ZnO/rGO nanostructures	glass	365	$0.80 \times 10^{-3}$	2	$\sim 7.00 \times 10^{-6}$	4	44	[6]
ZnO/GO nanostructures	glass	368	$0.80 \times 10^{-3}$	4	-	20.10	-	[7]
ZnO/rGO (20%)	transparent film	365	$0.62 \times 10^{-3}$	2	$3.98 \times 10^{-9}$	8.81	18.16	This work

**Table S2** Comparisons of photocatalytic activity between the present work and other reported research.

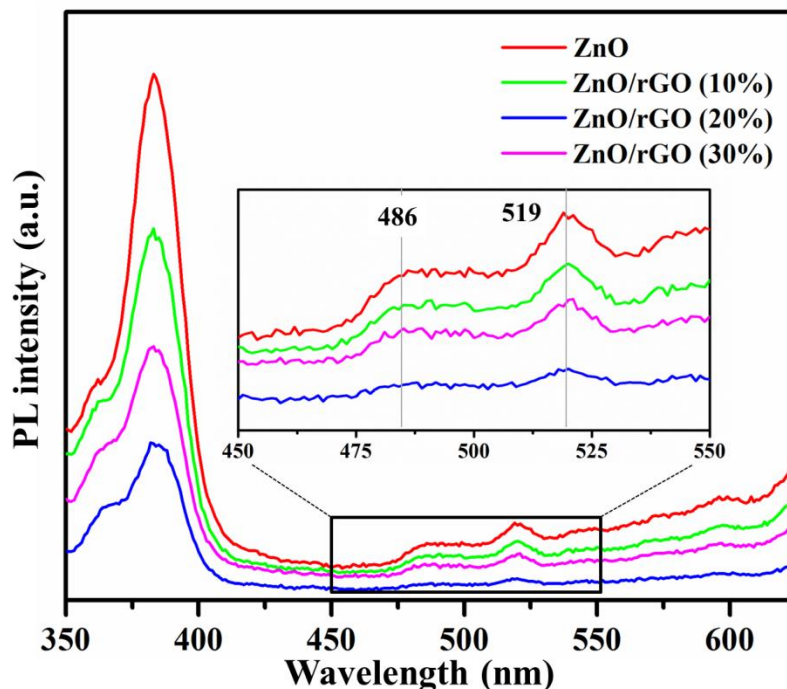
Catalyst	Catalyst concentration (g L <sup>-1</sup> )	Light source	MB concentration (mg L <sup>-1</sup> )	Degradation rate (%) and time (min)	$k_c$ (min <sup>-1</sup> )	Ref.
ZnO/GO (3%)	0.4	Metal halide lamp	10	$\sim 92\%$ / 30	0.042	[8]
ZnO-g-C <sub>3</sub> N <sub>4</sub> /GO (50%)	0.3	Visible light	10	99% / 90	0.030	[9]
GO/ZnO (1:2)	0.4	UV light (254 nm)	5	94.5% / 60	-	[10]
ZnO/rGO (2.5%)	0.5	Mercury lamp (310-400 nm)	10	$\sim 80\%$ / 120	0.012	[11]
ZnO NPs/rGO	0.3	Hg lamp (365 nm)	10	99.5% / 180	-	[12]
ZnO/rGO	0.1	Mercury lamp (365-366 nm)	10	83% / 10	-	[13]
ZnO/rGO	0.15	Hg lamp (365 nm)	5	88% / 260	-	[14]
ZnO/rGO (1.5%)	0.2	Natural sunlight	5	82.3% / -	-	[15]
ZnO/g-C <sub>3</sub> N <sub>4</sub> (500 °C)	0.2	4 - Visible-light lamps (545 nm)	10	$\sim 99\%$ / 180	$\sim 0.033$	[16]
ZnO/rGO (20%)	0.2	Fluorescent lamp	10	93.78% / 60	0.0482	This work



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**Figure S3.** The photoluminescence spectra of pristine ZnO and as-synthesized ZnO/rGO

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