

Supplementary Information

Article

Effect of GO Additive in ZnO/rGO Nanocomposites with Enhanced Photosensitivity and Photocatalytic Activity

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

Structure	Substrate	λ_{UV} (nm)	UV intensity (W/cm ²)	Bias voltage (V)	Dark current (A)	Photosensitivity (I_{UV}/I_{DARK})	Response time (s)	Ref.
MgZnO/ZnO thin film	Glass	365	3.20×10^{-3}	4	$\sim 4.64 \times 10^{-6}$	~ 1.01	-	[1]
ZnO nanowires	SiO ₂ /Si	325	0.42×10^{-3}	1.5	$\sim 0.50 \times 10^{-6}$	<4	-	[2]
ZnO nanowires	SiO ₂ /Si	300	2×10^{-3}	0.1	$\sim 12.70 \times 10^{-6}$	~ 1.51	0.2	[3]
	SiO ₂ /Si	500	19.50×10^{-3}	0.1	$\sim 12.50 \times 10^{-6}$	~ 1.40	0.3	[3]
ZnO nanostructures	p-Si	365	0.80	3	$\sim 3.50 \times 10^{-6}$	~ 1.71	-	[4]
Ti-doped ZnO thin film	glass	~ 365	2×10^{-3}	5	$\sim 15.00 \times 10^{-9}$	~ 6.80	135	[5]
ZnO/rGO nanostructures	glass	365	0.80×10^{-3}	2	$\sim 7.00 \times 10^{-6}$	4	44	[6]
ZnO/GO nanostructures	glass	368	0.80×10^{-3}	4	-	20.10	-	[7]
ZnO/rGO (20%)	transparent film	365	0.62×10^{-3}	2	3.98×10^{-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 ⁻¹)	Light source	MB concentration (mg L ⁻¹)	Degradation rate (%) and time (min)	k_c (min ⁻¹)	Ref.
ZnO/GO (3%)	0.4	Metal halide lamp	10	$\sim 92\%$ / 30	0.042	[8]
ZnO-g-C ₃ N ₄ /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 ₃ N ₄ (500 °C)	0.2	4 - Visible-light lamps (545 nm)	10	$\sim 99\%$ / 180	~ 0.033	[16]
ZnO/rGO (20%)	0.2	Fluorescent lamp	10	93.78% / 60	0.0482	This work

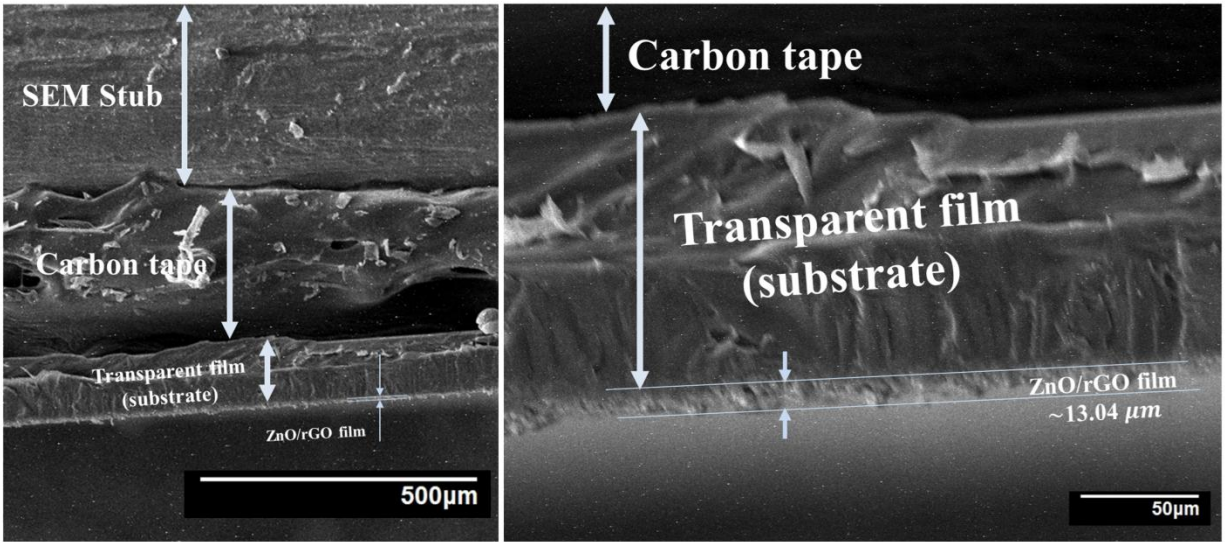


Figure S1. The thickness of prepared films by spray coating

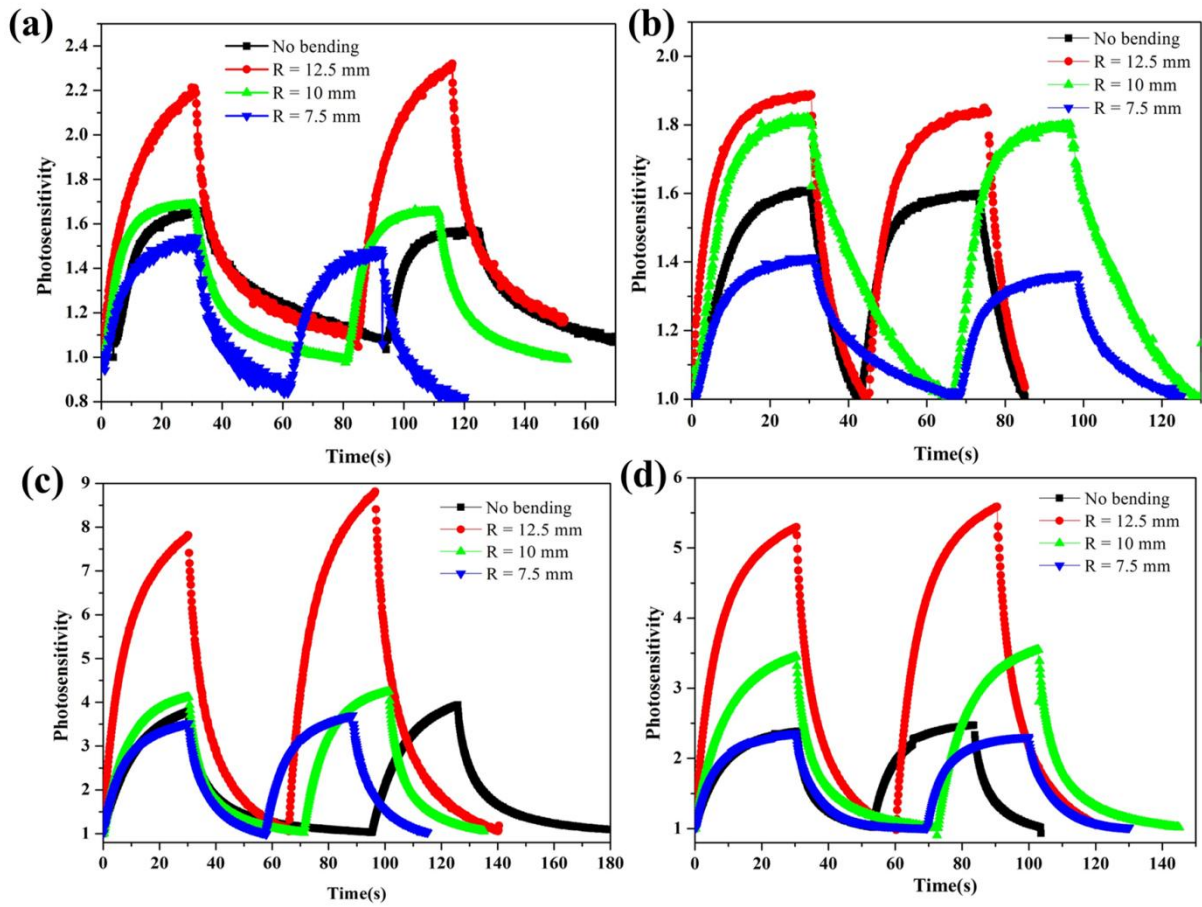


Figure S2. Current of as-synthesized ZnO/rGO with bending radius; (a) ZnO, (b) ZnO/rGO (10%), (c) ZnO/rGO (20%), and (d) ZnO/rGO (30%).

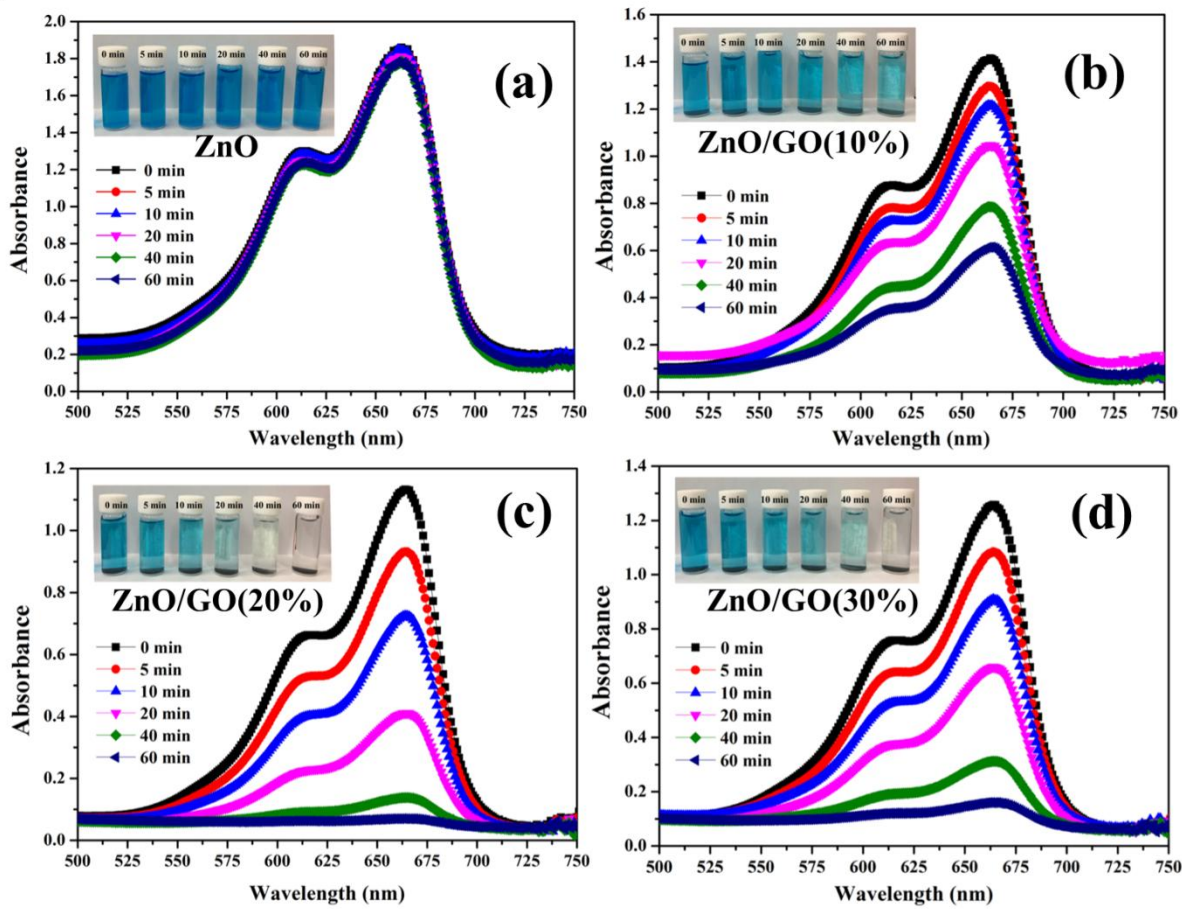


Figure S3. Time-dependent absorption spectra of Methyl blue (MB) solution under visible light using (a) ZnO, (b) ZnO/rGO (10%), (c) ZnO/rGO (20%), and (d) ZnO/rGO (30%) as a photocatalyst.

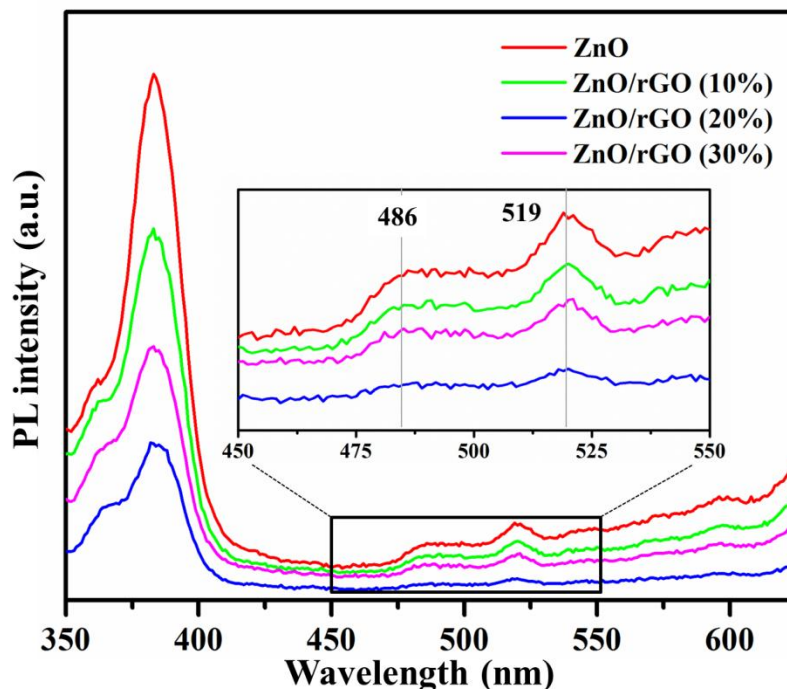


Figure S4. The photoluminescence spectra of pristine ZnO and as-synthesized ZnO/rGO

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