Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

A one-pot hydrothermal synthesis of graphene/CdS:Mn photocatalyst for photoelectrochemical sensing of glutathione

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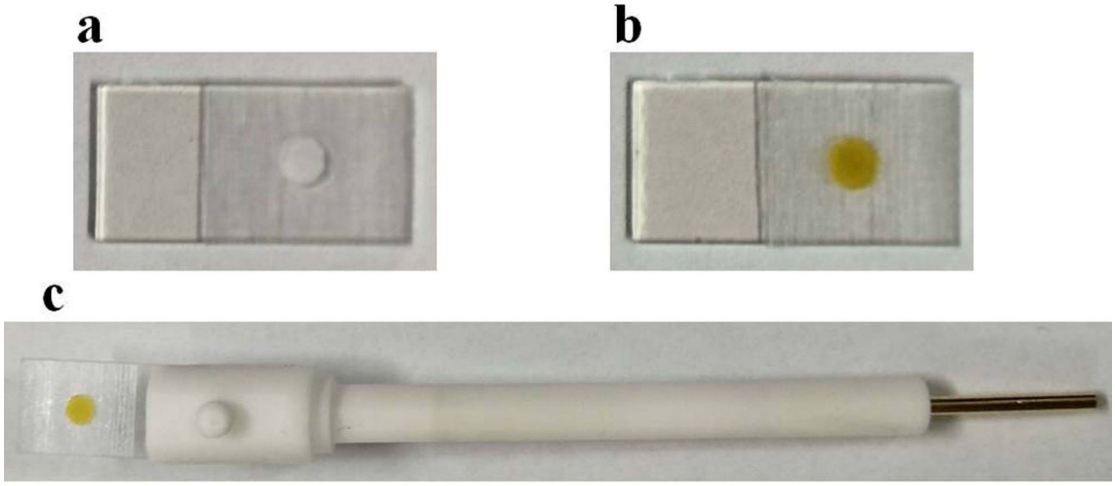

Fig. S1 Photos of (a) ITO glass with a fixed area controlled by using 3 M tape, (b) GR/CdS:Mn modified ITO glass, and (c) ITO/ GR/CdS:Mn working electrode.

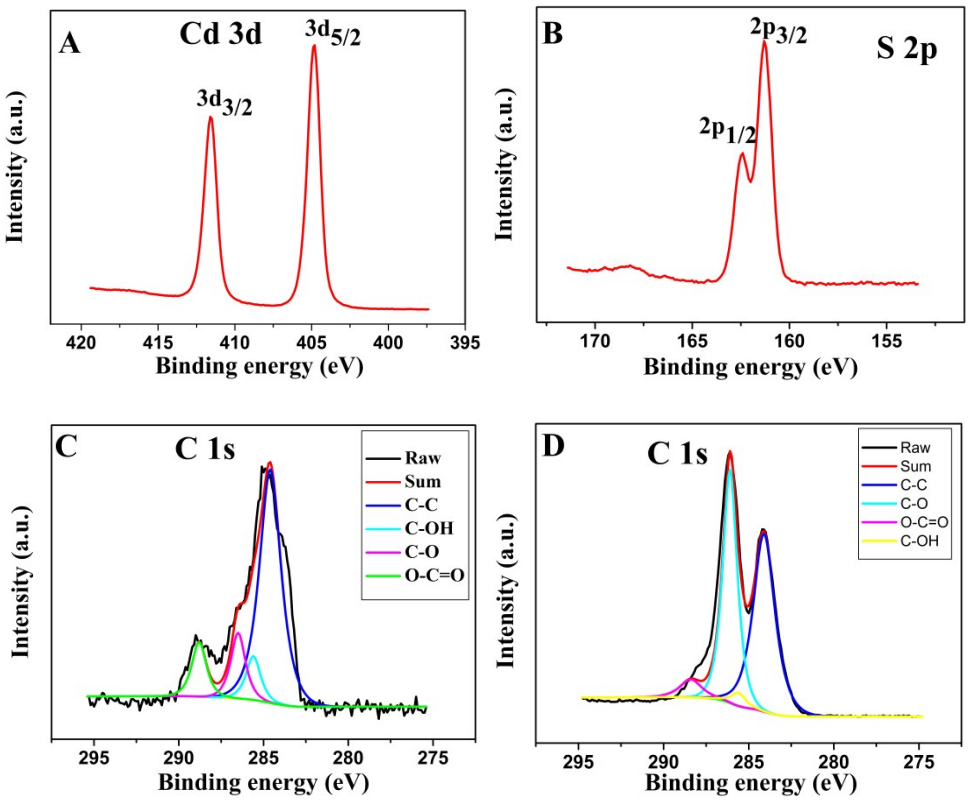

Fig. S2 High-resolution XPS spectra of (A) Cd 3d, (B) S 2p, (C) C 1s of GR/CdS:Mn composite, (D) C 1s of original GO.

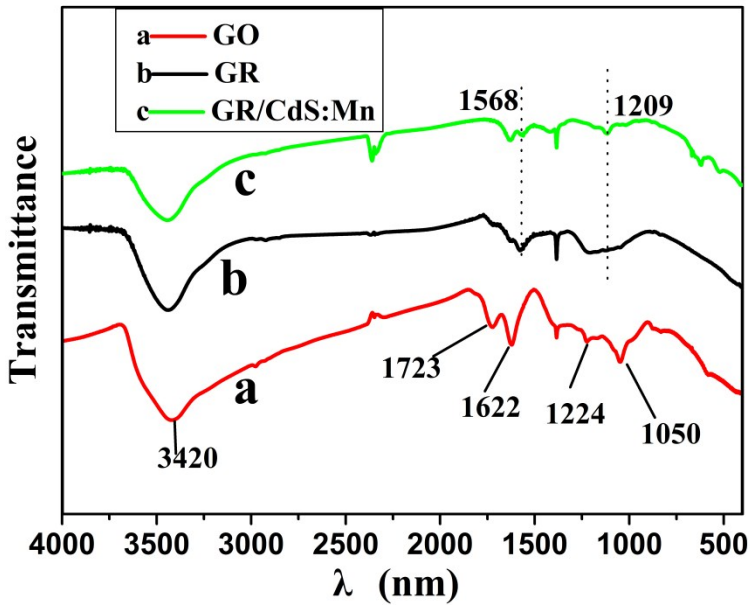

Fig. S3 FT-IR spectra of (a) GO, (b) GR, (c) GR/CdS:Mn.

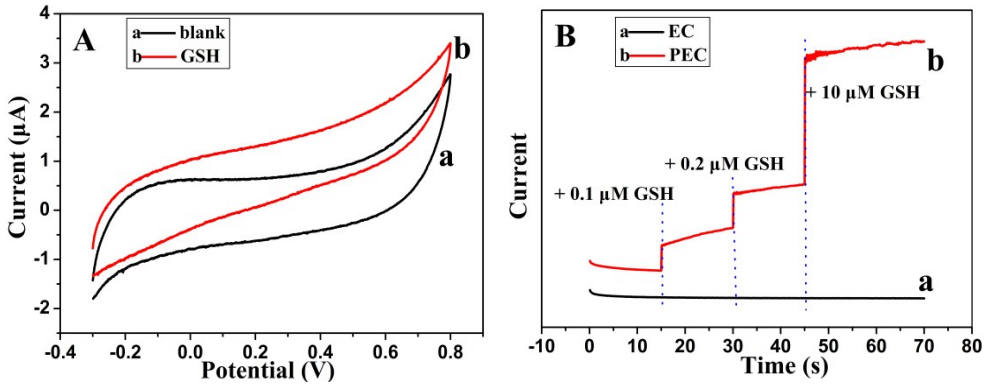

Fig. S4 (A) CV curves of GR/CdS:Mn/ITO in blank solution (0.1 M Na_2SO_4) (a) and in 100 μM GSH (b), λ: 470 nm, scanning rate:50 mV/s. (B) Amperometric curve of GR/CdS:Mn/ITO in GSH solutions without (marked as EC, a) and with irradiation (marked as PEC, b) at 0 V (vs. SCE).

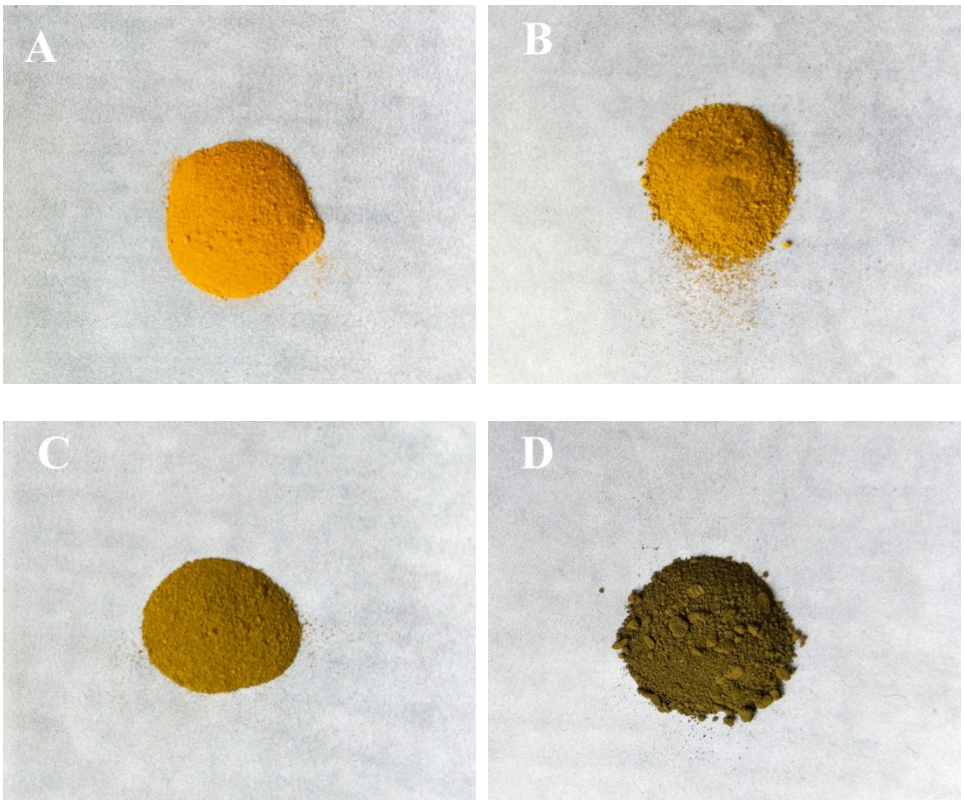

Fig. S5 Photos of GR/CdS:Mn composites with different content of GO: (A) 0.23 wt%, (B) 1.40 wt%, (C) 3.50 wt%, (D) 7.00 wt%

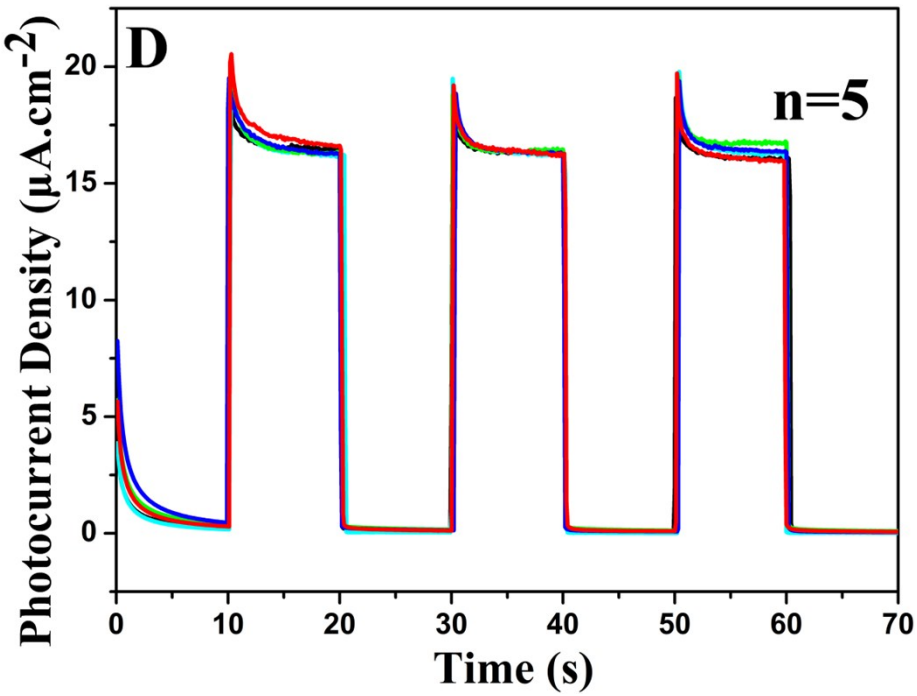

Fig. S6 The reproducibility of five measurements.

Table S1. Comparison of the GR/CdS:Mn based PEC sensor with previously reported literatures for the detection of GSH.

Methods	Materials	LR (μM)	LOD (μM)	Reference
EC	Hg/Pd	25-150	8.1	[1]
EC	$Cu(OH)_2$-carbon ionic liquid electrode	1-50	0.03	[2]
EC	Ordered mesoporous carbon	3-130	0.1	[3]
ECL	CdTe QD-GO	24-214	8.3	[4]
PEC	rGO/ZnO NRs array	10-200	2.17	[5]
PEC	CdS/RGO/ZnO	50-1000	10	[6]
PEC	Au NPs@ZnO	20-1000	3.29	[7]
PEC	Flowe-like Cu_2O/ZnO	1-10,20-100	0.8	[8]
PEC	Graphene-CdS	10-1500	3	[9]
PEC	IrO_2−Hemin−TiO_2	0.01-10	0.01	[10]
PEC	Porous TiO_2-Pt	0.5-40	0.1	[11]
PEC	FeTPPS-TiO_2	50-2400	30	[12]
PEC	**GR/CdS:Mn**	**0.01-100**	**0.01**	**This work**

LOD = limit of detection; LR = linear ranges; ECL = electrochemiluminescence

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