

A novel turn-on fluorescent sensor for sensitive detection of glutathione via gold nanoclusters preparation based on controllable ligand-induced etching

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SUPPLEMENTARY INFORMATION

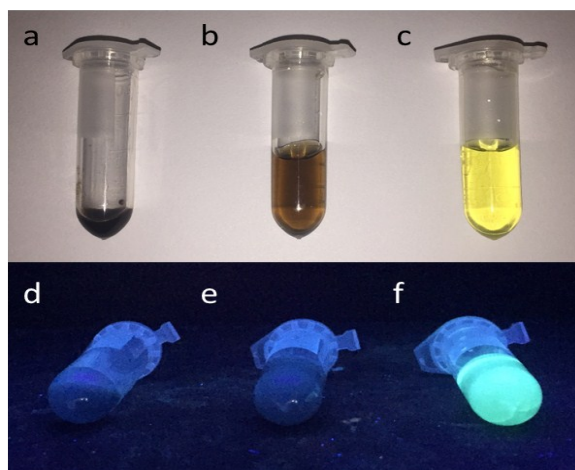


Fig.S1 The pictures of solution during the synthesize process under the filament lamp (a, b and c) and ultraviolet lamp (d, e and f).

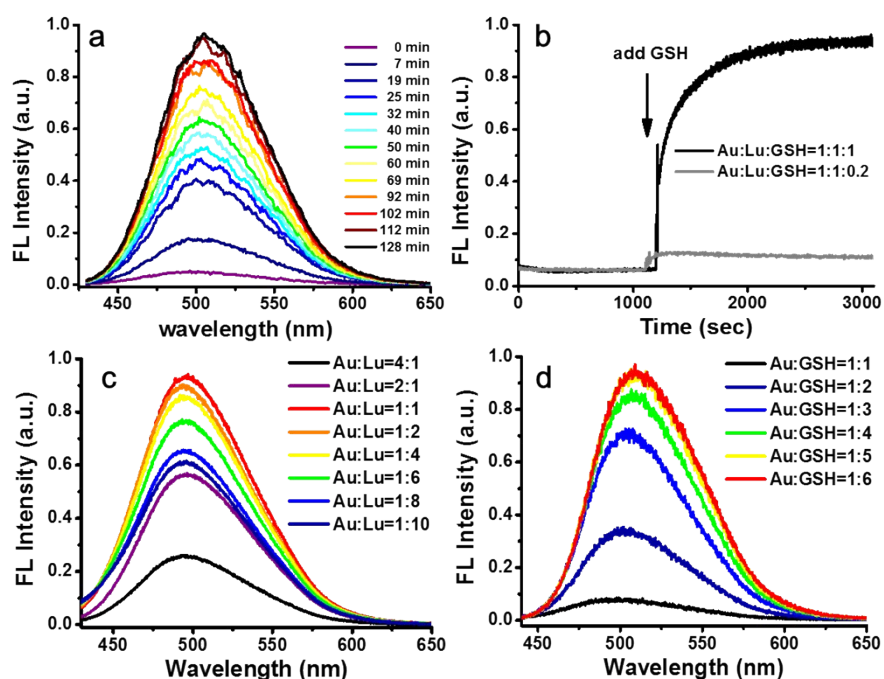


Fig.S2 (a) The FL spectra of reaction system after adding GSH. The molar ratio of gold, luminol and GSH is 1:1:1. (b) The time course curvilinear of fluorescence intensity during the reaction procedures in the Tris. The excitation and emission wavelength is 420 nm and 510 nm, respectively. (c) The FL spectra of Lum-AuNCs in Tris, synthesized with different molar ratios of gold to luminol. The concentrations of HAuCl₄ and GSH are 0.5 mM and 1.0 mM, respectively. (d) The FL spectra of Lum-AuNCs in Tris, synthesized with different molar ratios of gold to GSH. The concentrations of HAuCl₄ and luminol are 0.5 mM and 0.5 mM respectively. The excitation wavelength is 420 nm for all cases.

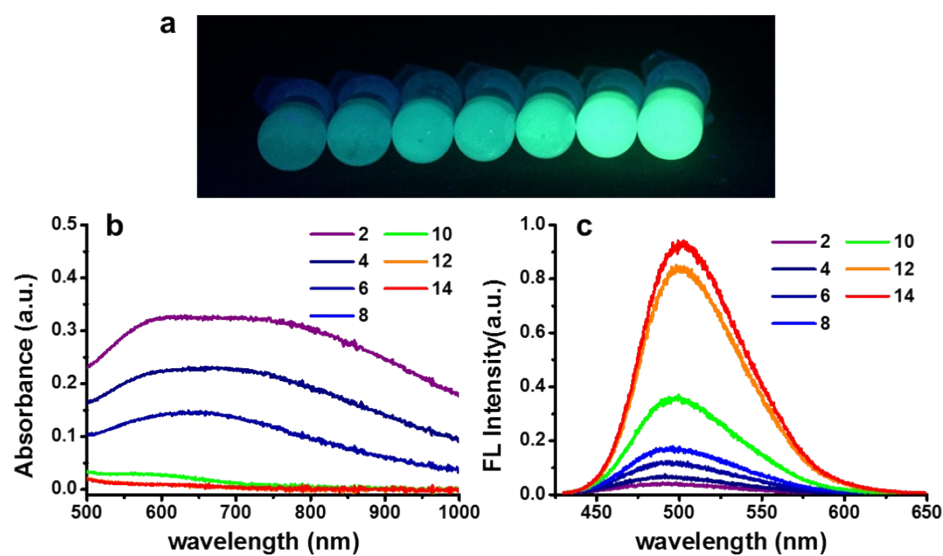


Fig.S3 (a) The picture of Lum-AuNPs in Tris recorded under the ultraviolet lamp about 2 h after adding with various volumes (2 μL , 4 μL , 6 μL , 8 μL , 10 μL , 12 μL , 14 μL from left to right) of 25 mM GSH. (b) and (c) The UV-Vis adsorption and FL spectrums obtained after 2 h.

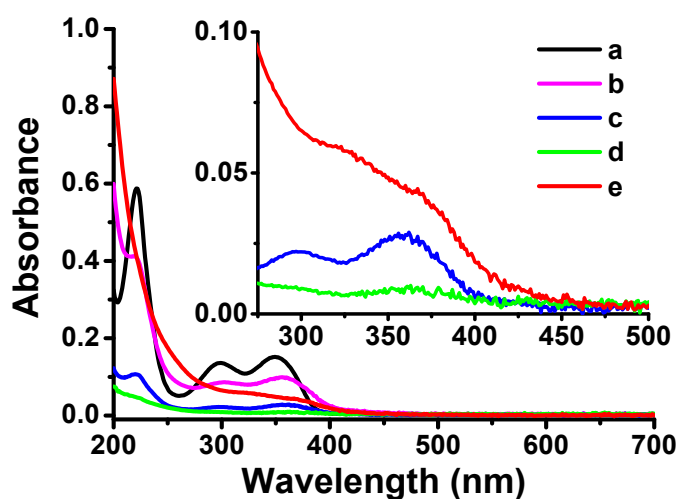


Fig.S4 UV-Vis absorption spectra of luminol, Lum-AuNCs before and after dialysis. (a) Luminol of 0.2 mM. (b) The as-prepared Lum-AuNCs solution. (c, d) The dialysate out of the dialysis bag after the first and fifth dialysis procedures, respectively. (e) Lum-AuNCs after dialysis. Inset: magnification of curves c-e in the range of 275-500 nm.

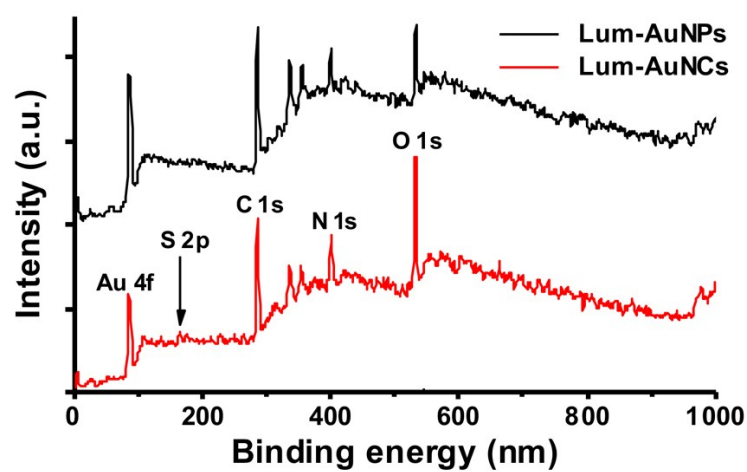


Fig.S5 XPS full spectra of Lum-AuNPs and Lum-AuNCs.

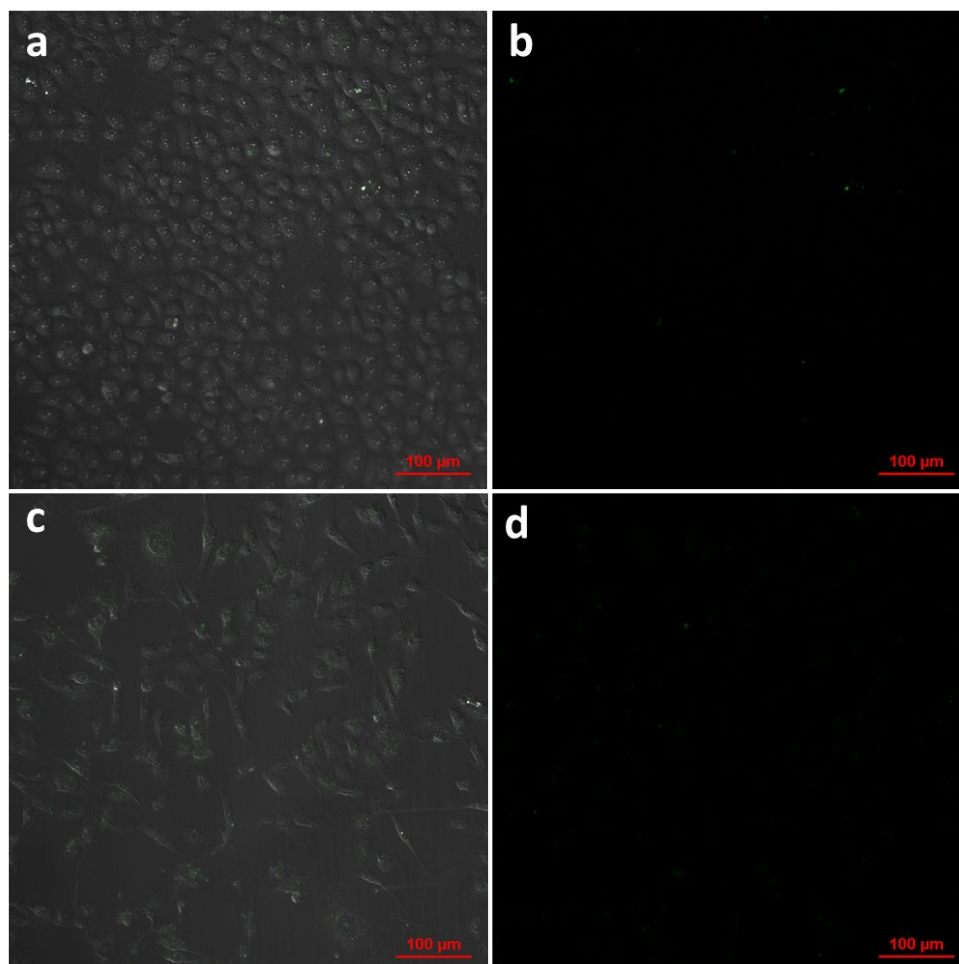


Fig.S6 The confocal fluorescence imaging of (a, b) L02 and (c, d) U87 cells without Lum-AuNCs for 24 h. The overlay (a, c) of bright field imaging and fluorescence imaging, and the fluorescence imaging (b, d) only.

Table S1 Comparisons of sensing performances from different GSH detections.

Materials	Method	LOD (nM)	Linear range (μ M)	Reference
Carbon dots	ECL	54.3	0.1-1	1
Carbon dots	PEC	6.2	0.02-4	2
Co ₃ O ₄ - montmorillonite	Colorimetry	88	0.1-20	3
Carbon dots-AuNPs	Colorimetry	50	1-4	4
MnO ₂ nanoflakes	Colorimetry	670	2-200	5
AuNPs-TMB	Colorimetry	13	1-40	6
Carbon dots	Fluorimetry	42	0-13.3	7
Carbon dots-MnO ₂	Fluorimetry	600	1-200	8
Gold nanorods	Fluorimetry	100	0-18	9
Carbon dots-AuNPs	Fluorimetry	210	3.8-415.1	10
Lum-AuNPs	Fluorimetry	35	0.05-300	This work

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