

Electronic Supplementary Information for

**Synergistic aggregating of Au(I)-glutathione complex for
fluorescence “Turn-on” detection of Pb(II)**

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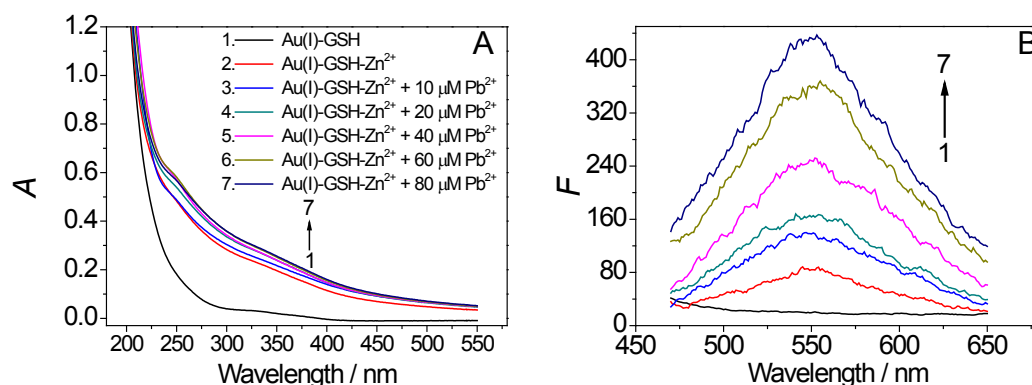


Fig. S1. The absorption spectra of Au(I)-glutathione complex after aggregated by Zn²⁺ and different concentrations of Pb²⁺ (A) and corresponding fluorescence spectra (B). Lines 1 to 7 were added 0, 0, 10.0, 20.0, 40.0, 60.0 and 80.0 μM of Pb²⁺, respectively. Experimental condition, Au(I)-glutathione (calculated by the gold atom), 0.2 mM; Zn²⁺ previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; λ_{ex} =345 nm; λ_{em} =550 nm.

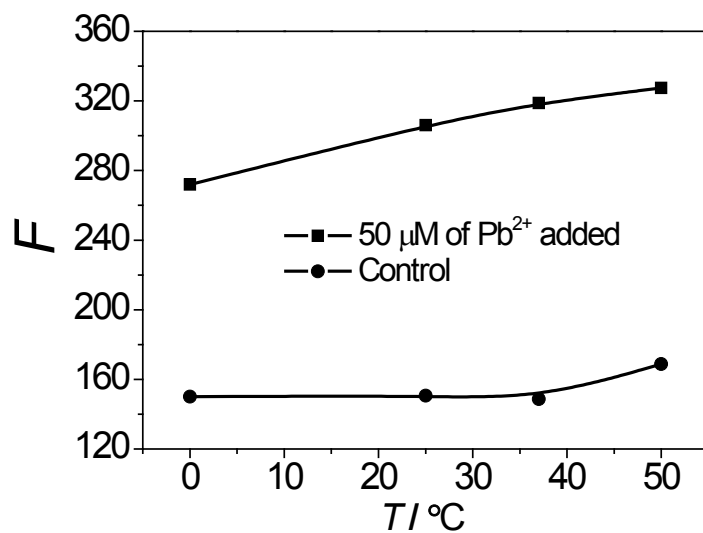


Fig. S2 Effect of temperature on detection of Pb²⁺. Experimental condition, Au (I)-glutathione, 0.2 mM; Zn²⁺ previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; λ_{ex} =345 nm; λ_{em} =550 nm

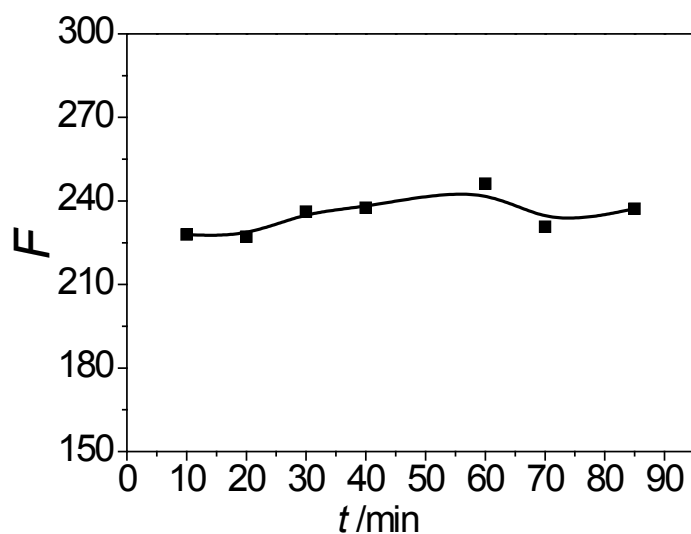


Fig. S3 Effects of time on Pb^{2+} detection. Experimental condition, Au(I)-glutathione, 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345$ nm; $\lambda_{\text{em}}=550$ nm

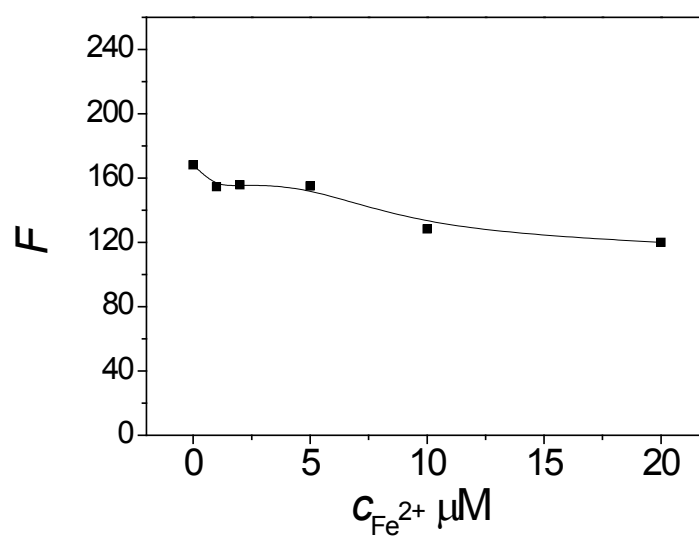


Fig. S4. Effect of Fe^{2+} on the fluorescence of Au(I)-glutathione- Zn^{2+} . Experimental condition, Au(I)-glutathione, 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345$ nm; $\lambda_{\text{em}}=550$ nm

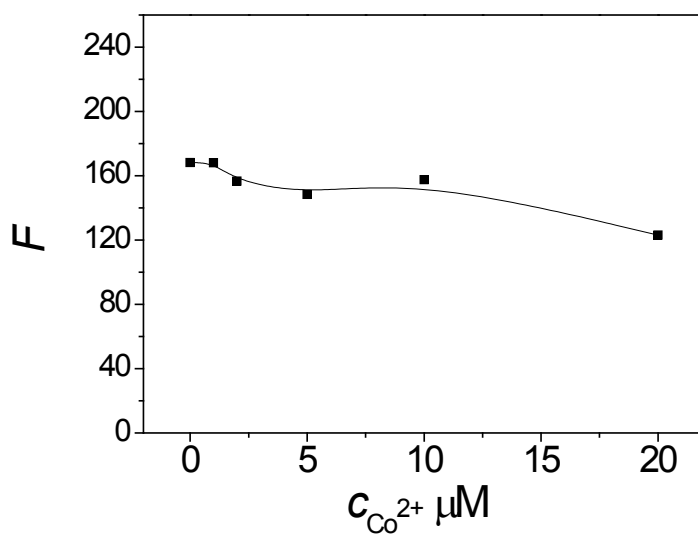


Fig. S5. Effect of Co^{2+} on the fluorescence of $\text{Au(I)-glutathione-Zn}^{2+}$. Experimental condition, Au(I)-glutathione , 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345 \text{ nm}$; $\lambda_{\text{em}}=550 \text{ nm}$

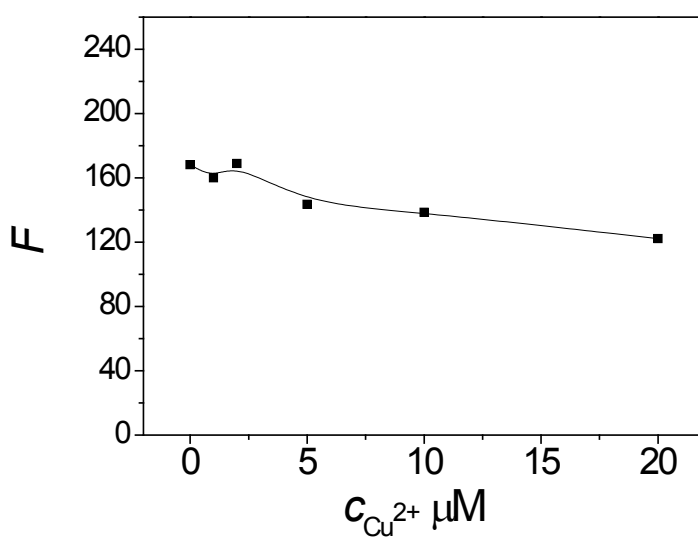


Fig. S6. Effect of Cu^{2+} on the fluorescence of $\text{Au(I)-glutathione-Zn}^{2+}$. Experimental condition, Au(I)-glutathione , 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345 \text{ nm}$; $\lambda_{\text{em}}=550 \text{ nm}$.

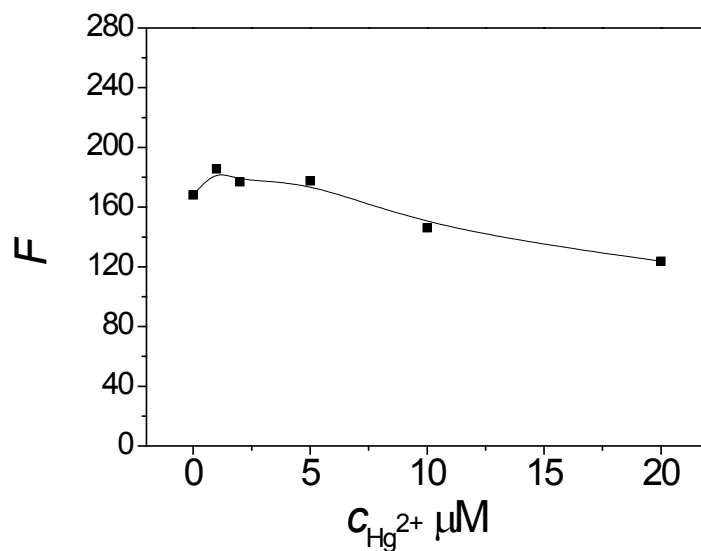


Fig. S7. Effect of Hg^{2+} on the fluorescence of $\text{Au(I)-glutathione-Zn}^{2+}$. Experimental condition, Au(I)-glutathione , 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345 \text{ nm}$; $\lambda_{\text{em}}=550 \text{ nm}$

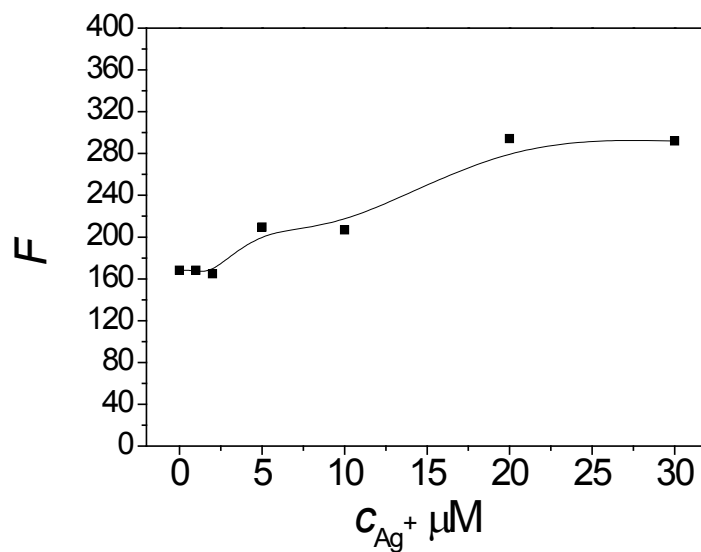


Fig. S8. Effect of Ag^{+} on the fluorescence of $\text{Au(I)-glutathione-Zn}^{2+}$. Experimental condition, Au(I)-glutathione , 0.2 mM; Zn^{2+} previously added, 0.3 mM; pH, 7.1; reaction time, 30 min; $\lambda_{\text{ex}}=345 \text{ nm}$; $\lambda_{\text{em}}=550 \text{ nm}$

Tab.S1. Interference of foreign substances on detection of 20.0 μM of Pb^{2+} .

Foreign substances	Concern coexists (μM)	Relative error (%)	Foreign substances	Concern coexists (μM)	Relative error (%)
NaCl	200	-3.8	K_2CrO_4	200	1.3
NaNO ₃	200	7.2	KIO_3	200	5.1
Na_3PO_3	200	-4.2	KBr	200	0.8
NaH_2PO_3	200	-2.9	MgSO_4	200	0.5
Na_3Cit	20	-6.5	$\text{Al}(\text{NO}_3)_3$	20	-1.4
ZnCl_2	20	2.3	$\text{Cd}(\text{NO}_3)_2$	20	1.2
FeCl_3	20	-9.3	CuCl_2	2	-1.6
CoSO_4	2	4.3	HgCl_2	2	5.6
FeCl_2	1	0.1	AgNO_3	1	7.3
Threonine	200	-0.8	Aspartic acid	200	-7.3
Arginine	200	-3.1	Alanine	200	1.0
Tyrosine	200	0.5	Leucine	200	2.9
Lysine	200	2.5	Glycine	200	0.5
Proline	200	-0.8	Serine	200	-0.1
Glutamic acid	200	-3.6	Valine	200	-1.6
Glutamine	200	-5.8	Histidine	100	-0.7
Methionine	200	2.0	Cysteine	20	0.7
Phenylalanine	200	0.2	Glucose	200	-0.9
Isoleucine	200	0.5	Dopamine	100	-9.8