Electronic Supplementary Material (ESI) for Analytical Methods.

A new method for cartap detection with high sensitivity and selectivity based on the inner filter effect between GSH-Cu NCs and Au NPs

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Fig.S1 The fluorescence intensity of GSH-Cu NCs stored at 4 ℃ for 2 months.

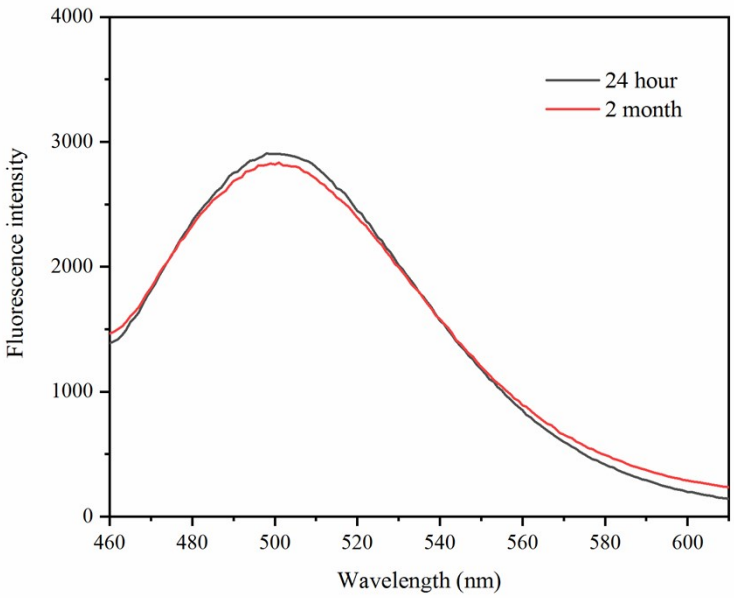


Fig.S2 Photostability of the GSH-Cu NCs measured with a fluorescence spectrophotometer at 20 min intervals (λ ex = 430 nm).

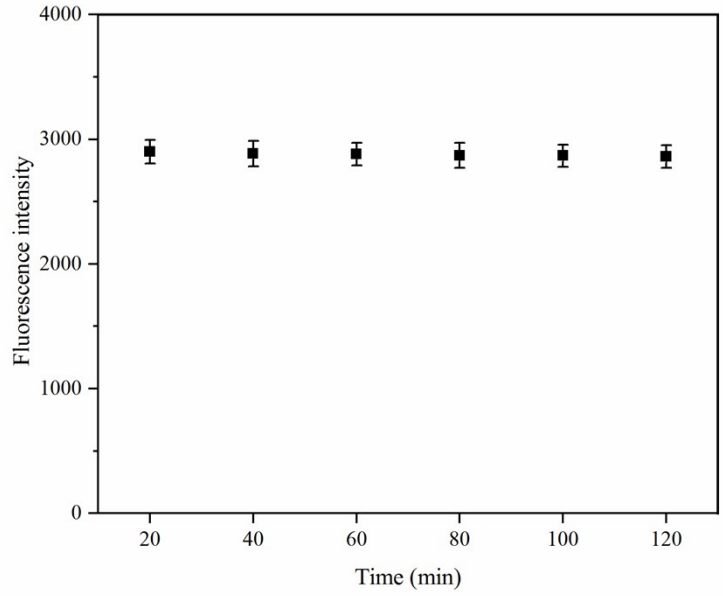


Fig.S3 The fluorescence intensity of GSH-Cu NCs in the presence of different concentrations of NaCl.

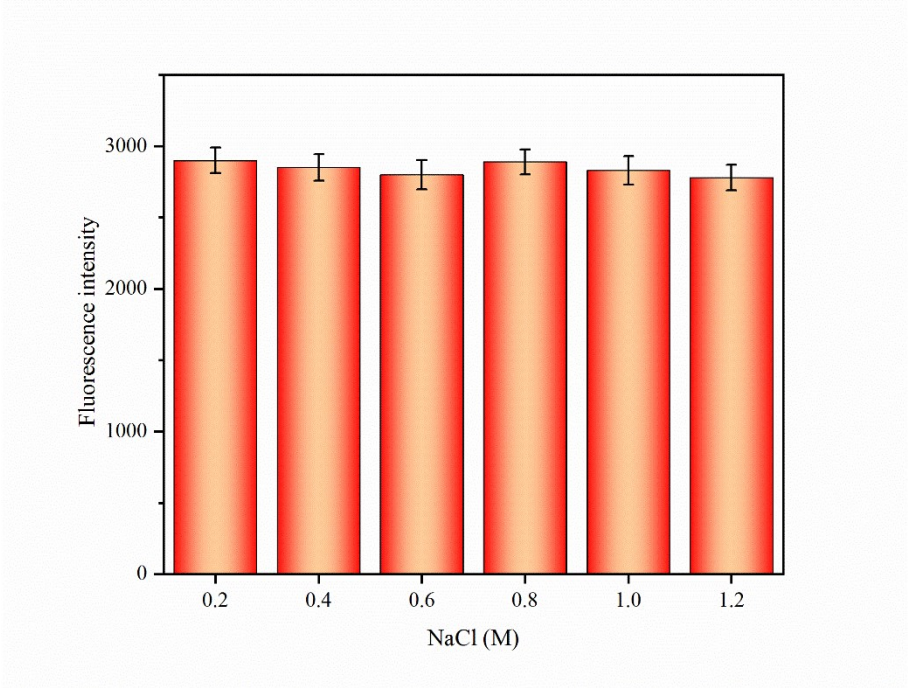


Fig.S4 Fluorescence intensity of GSH-Cu NCs in the presence of difference Au NPs concentrations (0, 0.58, 0.87, 1.17, 1.46, 1.75, 2.62, 2.93 nM).

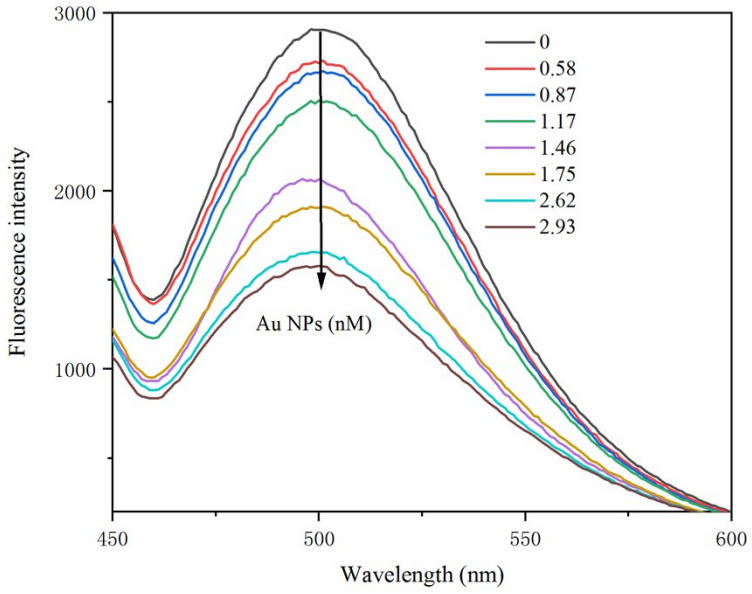
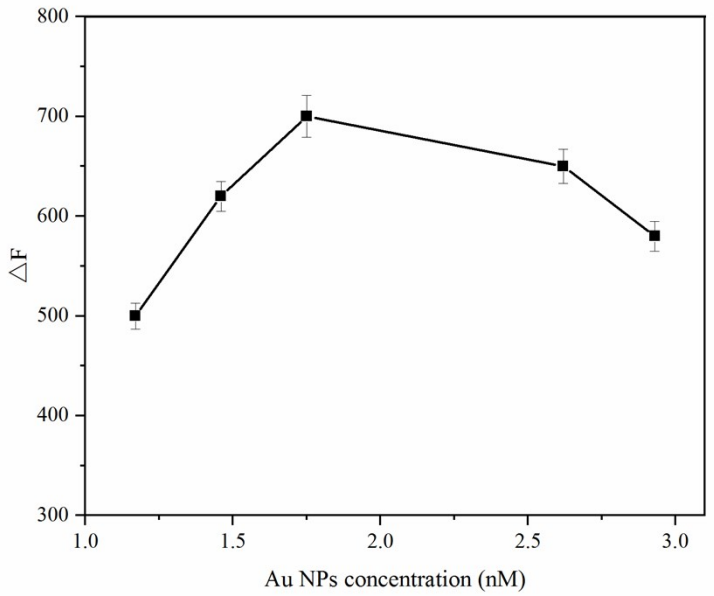
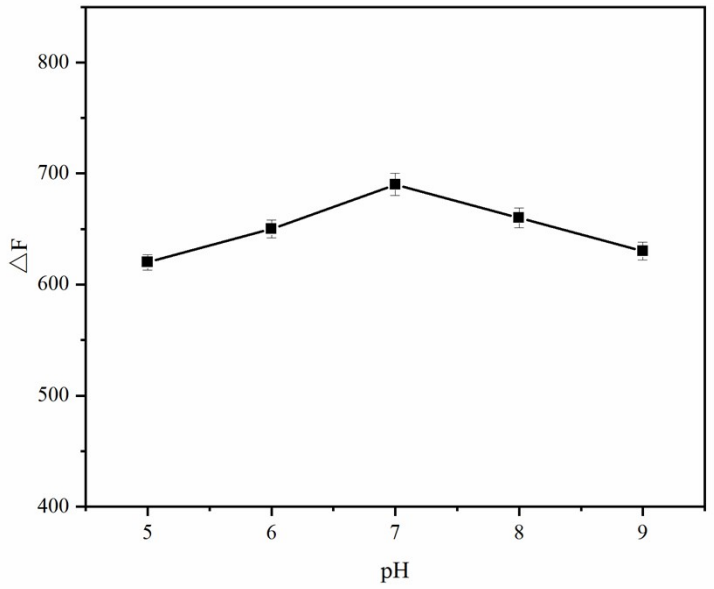


Fig.S5 (a) different concentrations of Au NPs with 80 nM cartap, (b) different pH in the presence of 80 nM cartap and 1.75 nM Au NPs and (c) the incubation time in the presence of 80 nM cartap, 1.75 nM Au NPs, pH 7.0. ΔF represents the fluorescence changes with and without cartap.

(a)


800
700
600
500
400
300
△F
1.0
1.5
2.0
2.5
3.0
Au NPs concentration (nM)

(b)


800
700
600
500
400
△F
5
6
7
8
9
pH

(c)

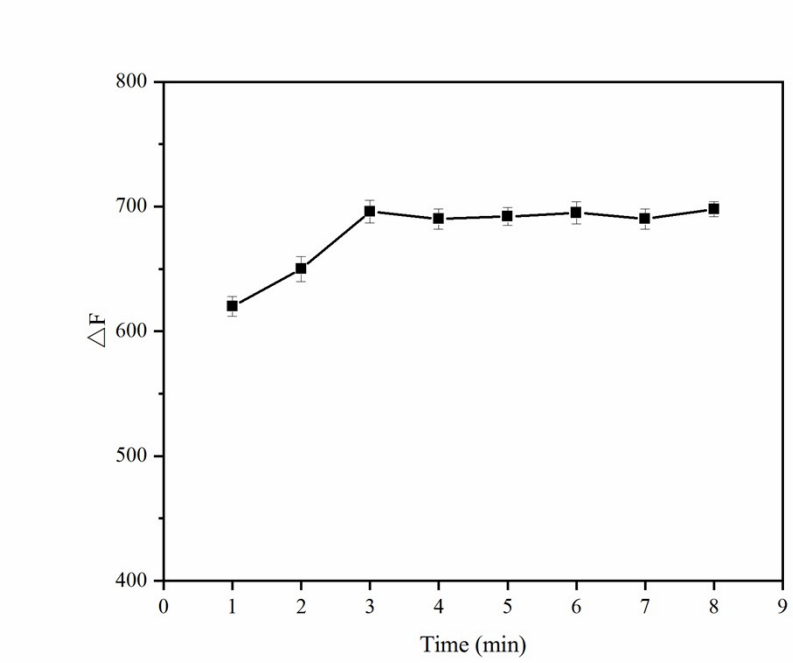


Fig.S6 Fluorescence emission spectra (A), (C) and the corresponding fluorescence changes (B), (D) of the GSH-Cu NCs and Au NPs system with various interfering substances.

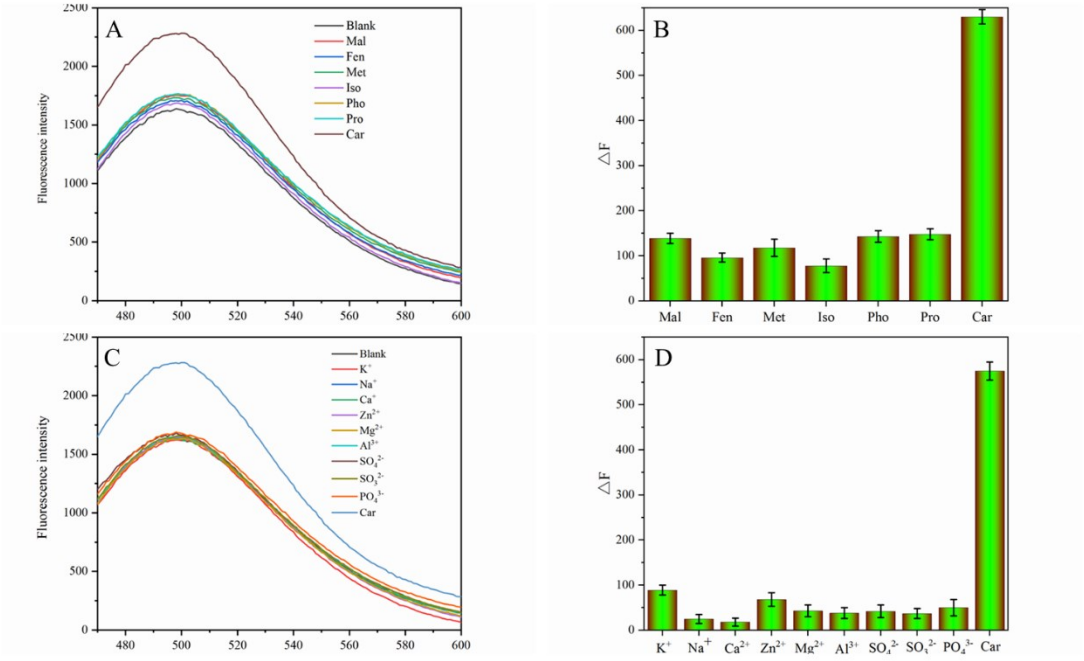


Fig.S7 (A)TEM image of Au NPs; (B)TEM image of AuNPs after the addition of cartap.

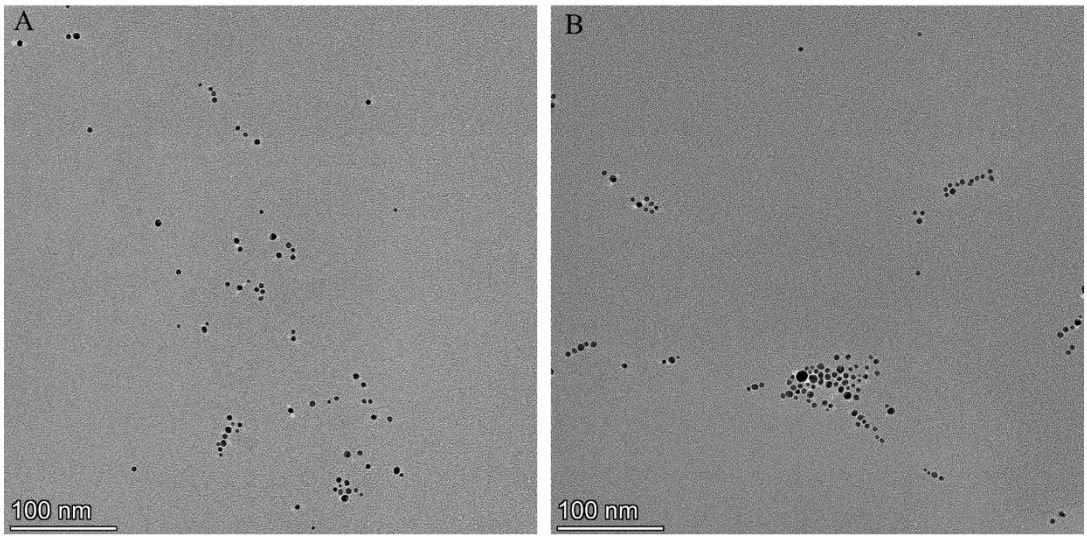


Fig.S8 DLS images of AuNPs (A) and AuNPs after the addition of cartap (B).

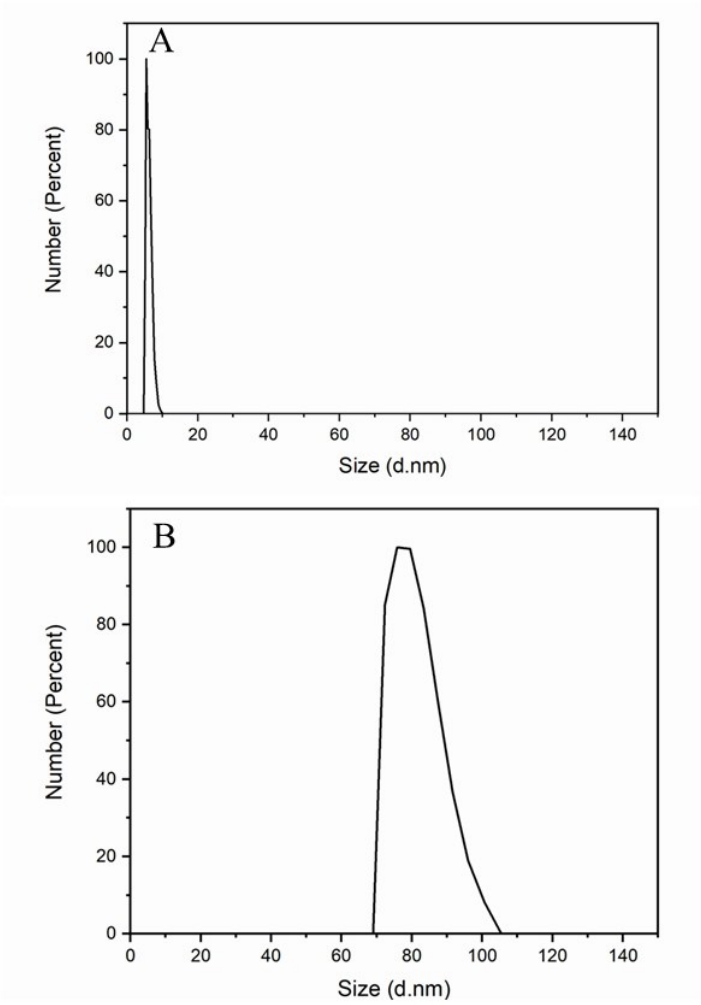


Table S1 Comparison of analytical performance of some assays for cartap detection.

Methods	Range	LOD	Ref
CB[7]-PAL complex	30–8770 nM	10 nM	[1]
Au NPs	180–2190 nM	150 nM	[2]
Au@Ag nanoparticles	20–240 nM	22.64 nM	[3]
CdTe QDs and Au NPs	40–1830 nM	30 nM	[4]
CdTe QDs and MA-Au NPs	20–100 nM	4.02 nM	[5]
CDs and Au NPs	5-300 nM	3.84 nM	[6]
GSH-Cu NCs and Au NPs	7-100 nM	3.34 nM	This work

Table S2 Detection of cartap in Chinese cabbage samples via the proposed method and GC-MS method

Sample	Spiked (nM)	The proposed method		GC-MS method	
		Found (nM)	Recovery ± RSD (%) (n = 3)	Found (nM)	Recovery ± RSD (%) (n = 3)
Chinese cabbage	20	21.36	106.8 ± 5.82	19.28	96.4 ± 3.57
	40	36.57	91.4 ± 4.26	41.67	104.2 ± 1.54
	80	75.23	94 ± 2.89	78.81	98.5 ± 3.63

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