Support Information

Rapid and Sensitive Colorimetric Sensing of the Insecticide Pymetrozine Using Melamine-Modified Gold Nanoparticles

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Table of concent

Characterization of materials

Optimized of experiment conditions

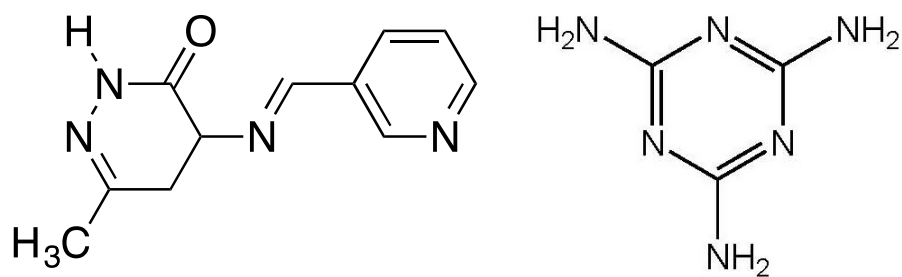**Characterization of materials**

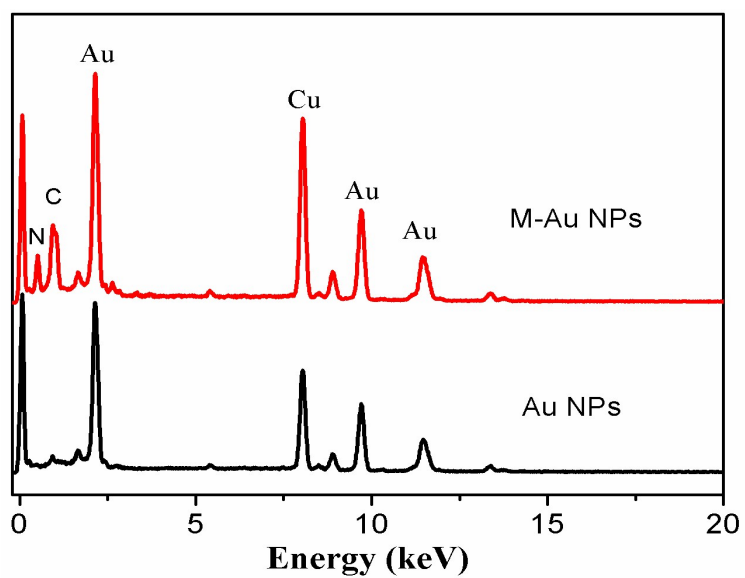**Figure S1.** (a) The structure of pymetrozine; (b) the structure of melamine

Figure S2. The EDS of Au NPs and M-Au NPs
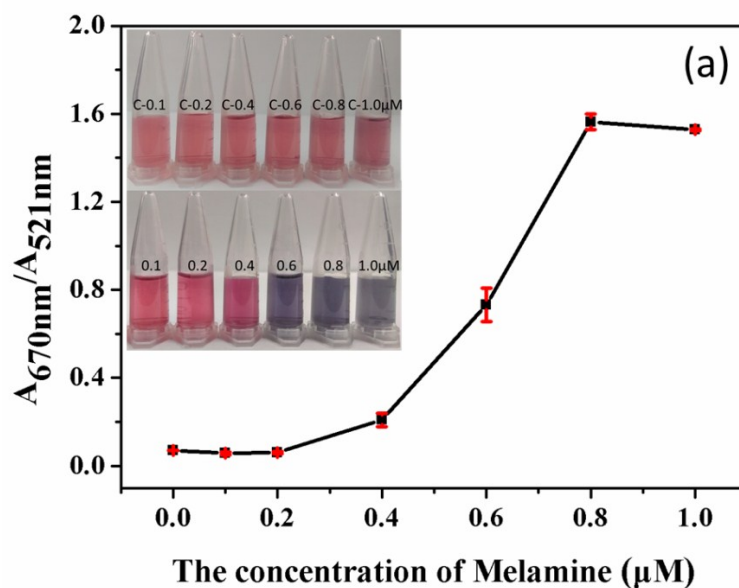
Optimized of experiment conditions

Figure S3. Effect of different concentration of melamine for the detection of 0.1μM PYM with M-Au NPs (A_{670nm}: the absorbance of the new appeared peak of M-Au NPs dispersion with PYM and A_{521nm}: the absorbance of primary peak of M-Au NPs)
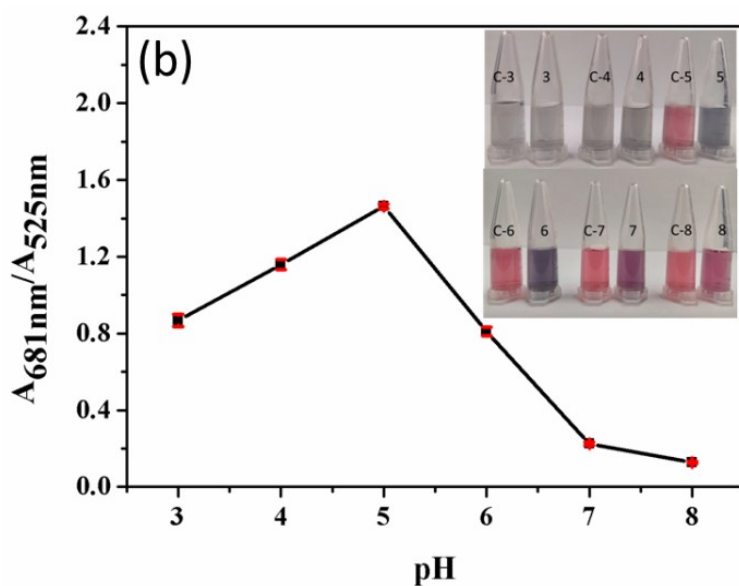

Figure S4. Effect of pH on the detection of 0.2 μM PYM with M-Au NPs (A_{681nm} is the absorbance of the new appeared peak of M- Au NPs dispersion with PYM and A_{525nm} is the absorbance of primary peak of M-Au NPs)
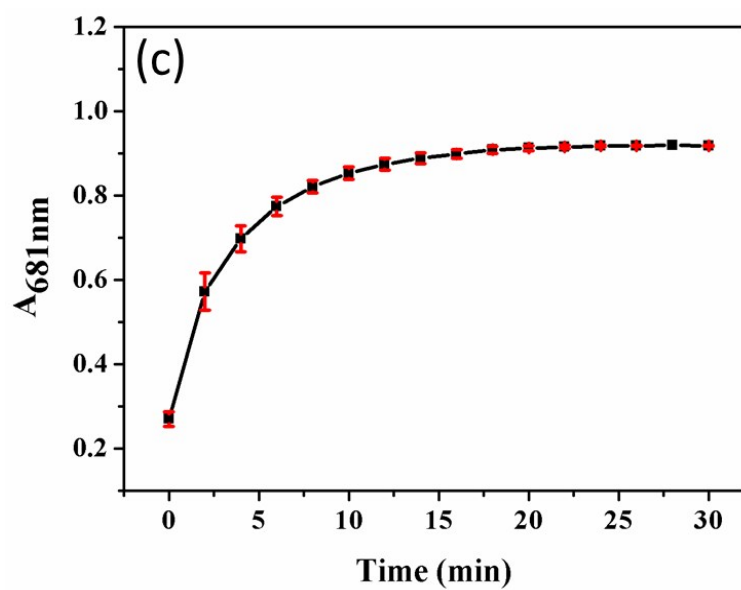
Figure S5. Effect of reaction time on the detection of 0.2 μM PYM with M-Au NPs at pH=5 (A_{681nm} absorbance: the new peak of M-Au NPs dispersion with PYM)
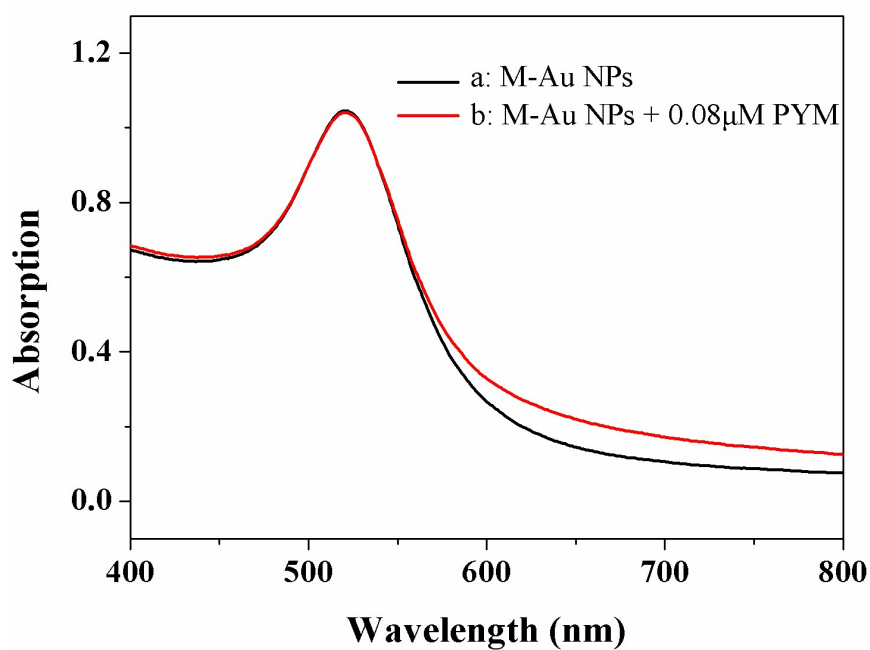

Figure S6. UV-Vis absorption spectra of (a) M-Au NPs and (b) M-Au NPs with 0.08μM PYM

Table S1. Comparison of various typical techniques for PYM analysis in solution

Method	LOD (Naked eyes / UV-Vis)	Selectivity	Linear range (nM)	Ref.
GC	--/ 55nM	--	13.8-4600	7
Electrochemical	--/80nM	--	100-5000	11
DPP	--/148nM	Good	497-7350	13
HPLC	--/92nM	--	--	29
Colorimetry	--/46nM	Good	92-460	25
Colorimetry	1μM/--	Good	4.6-368	26
Colorimetry	80nM/10nM	Good	10-1000	This work