

## A simple and sensitive colorimetric method for detection of mercury ions based on anti-aggregation of gold nanoparticles

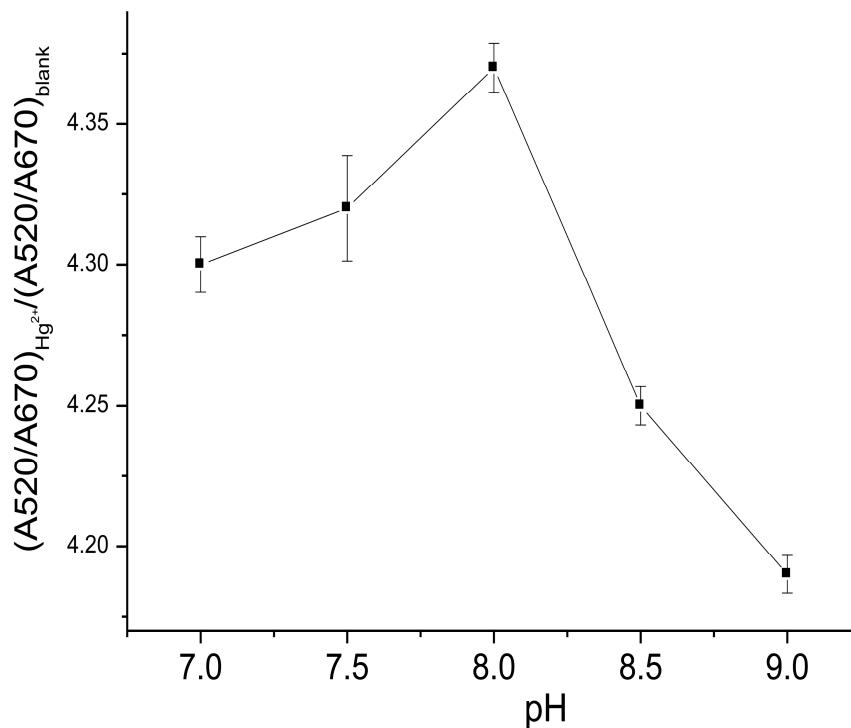
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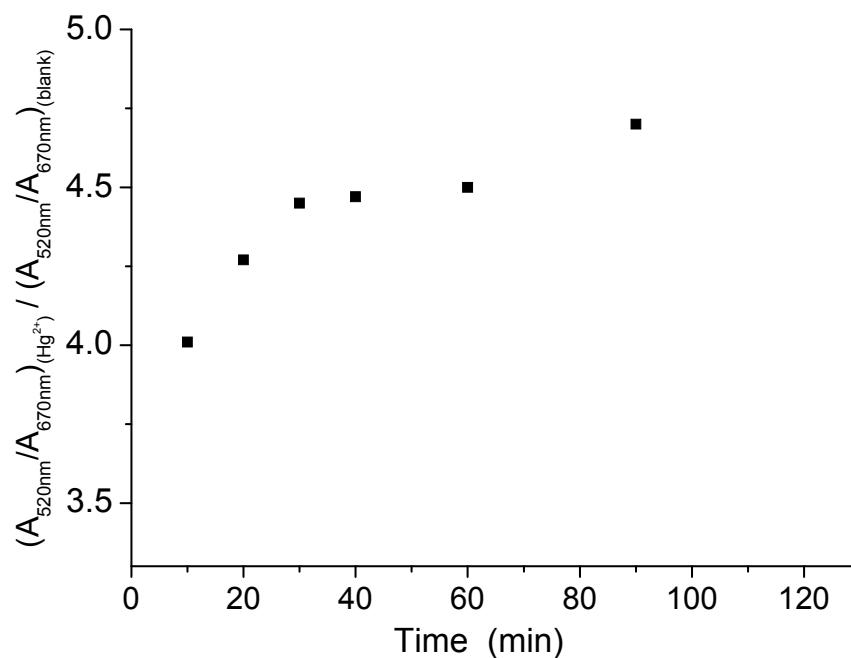
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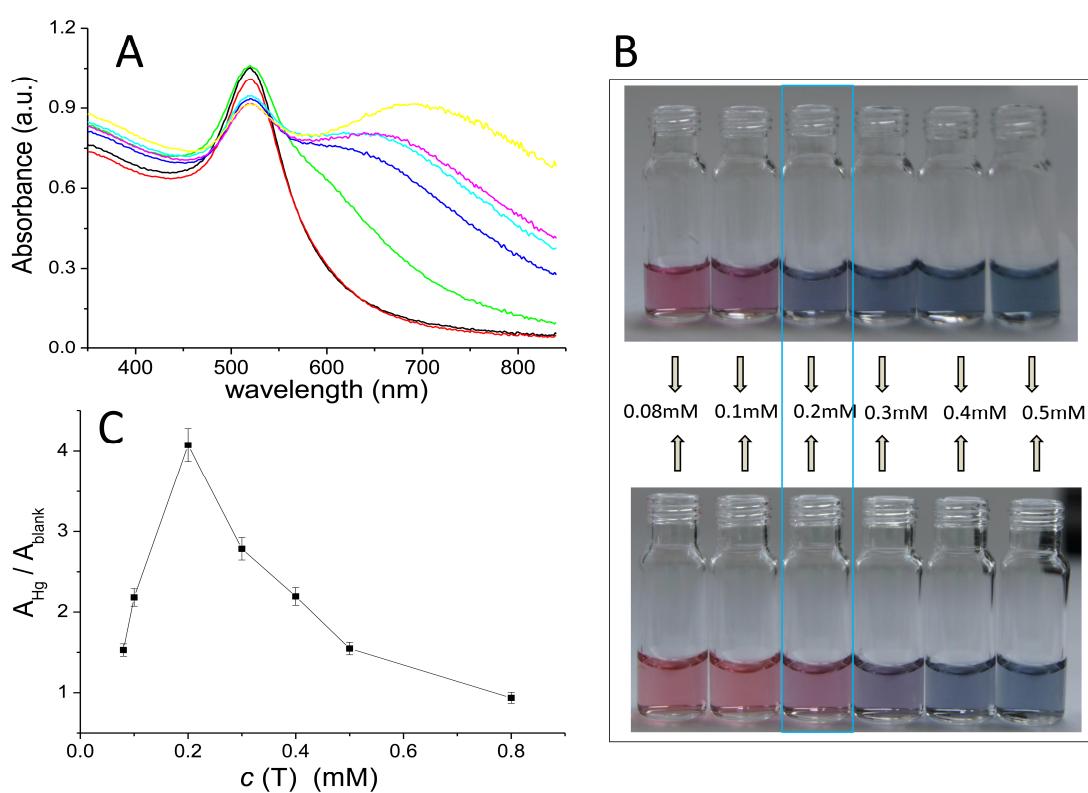
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**Fig. S1** Effect of the pH value of tris-HCl buffer solution on the anti-aggregation of AuNPs in the presence of Hg<sup>2+</sup>.



**Figure S2** Plot of  $A_{520\text{nm}}/A_{670\text{nm}}$  ratio between in the presence of 10  $\mu\text{M}$  Hg<sup>2+</sup> and in the absence of Hg<sup>2+</sup> against time. 1.0 mL of the mixture solution containing 100  $\mu\text{L}$  of as-prepared stock solution of AuNPs and 800  $\mu\text{L}$  of buffer solution (1 mM, pH8.0) after the addition of 100  $\mu\text{L}$  thymine.



**Figure S3** UV–vis spectra (A) and Photographic images corresponding (B) of AuNPs nanodispersion under different concentrations of thymine: 0.08, 0.1, 0.2, 0.3, 0.4 and 0.5 mM without the addition of Hg<sup>2+</sup> (the top image) and in the addition of Hg<sup>2+</sup> ( the bottom image), respectively. (C) Plot of  $A_{520\text{nm}}/A_{670\text{nm}}$  ratio between the presence of Hg<sup>2+</sup> and the absence of Hg<sup>2+</sup> against different concentrations of thymine.

**Table S1** Recovery of the method based anti-aggregation of AuNPs for determination of Hg<sup>2+</sup> in tap water samples

Samples	Added ( $\mu\text{M}$ )	Found ( $\mu\text{M}$ )	Recovery (%)
1	2.00	$1.76 \pm 0.16$	88.0
2	4.00	$3.926 \pm 0.24$	98.2
3	6.00	$6.75 \pm 0.61$	112.5