

# Supporting Information (SI)

## **Sensitive and selective detection of mercury ions based on papain and 2, 6-Pyridinedicarboxylic acid functionalized gold nanoparticles**

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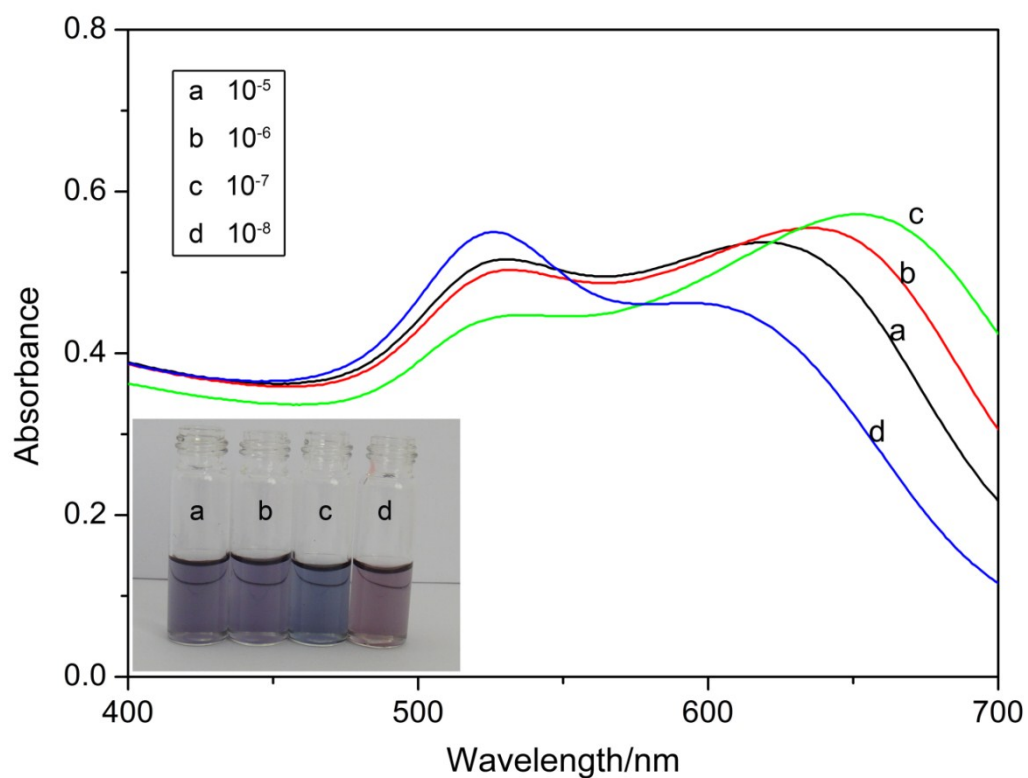
Total number of pages of Supporting Information: 7 (including cover page)

Number of Figures in Supporting Information: 6

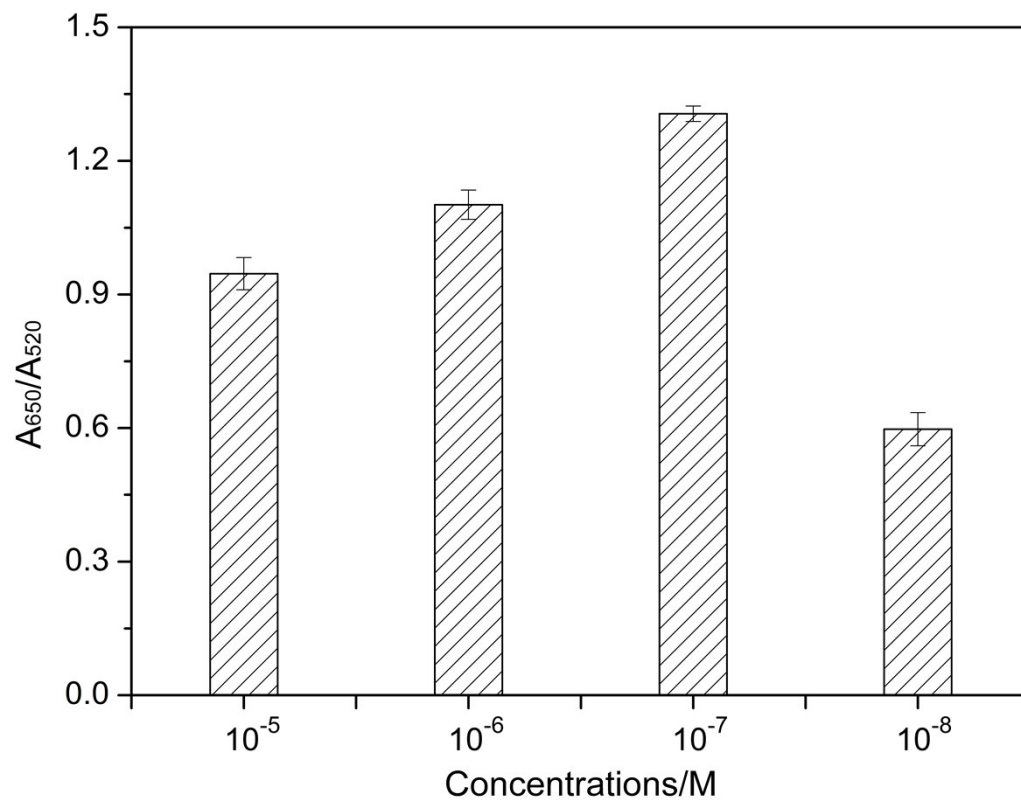
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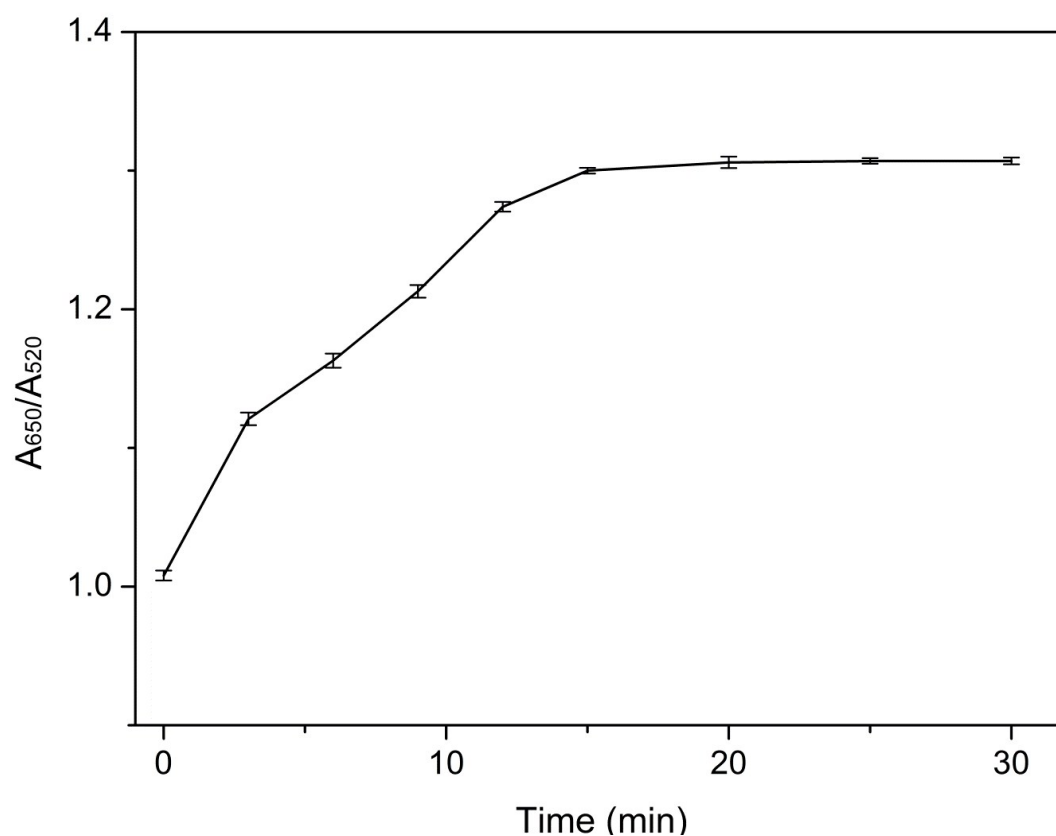
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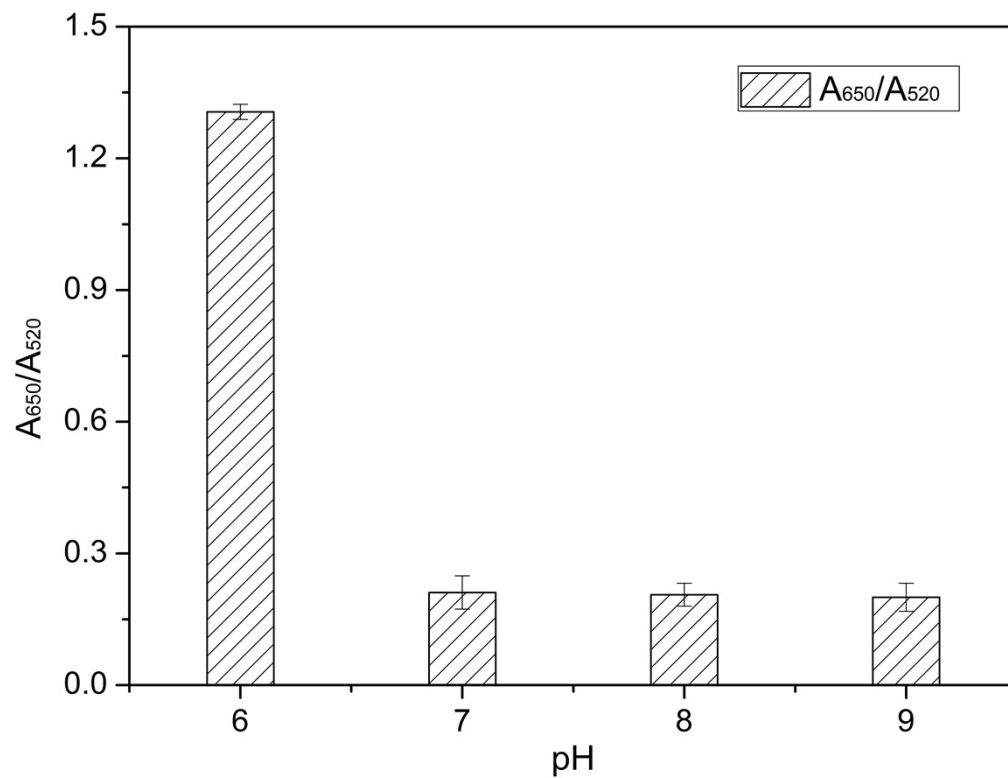
**Fig. S-1** UV-Vis absorption spectra of the P-PDCA-AuNPs with different concentration of papain ((a)  $1.0 \times 10^{-5}$ , (b)  $1.0 \times 10^{-6}$ , (c)  $1.0 \times 10^{-7}$ , (d)  $1.0 \times 10^{-8}$  M) in the presence of 1 mM Hg<sup>2+</sup>.



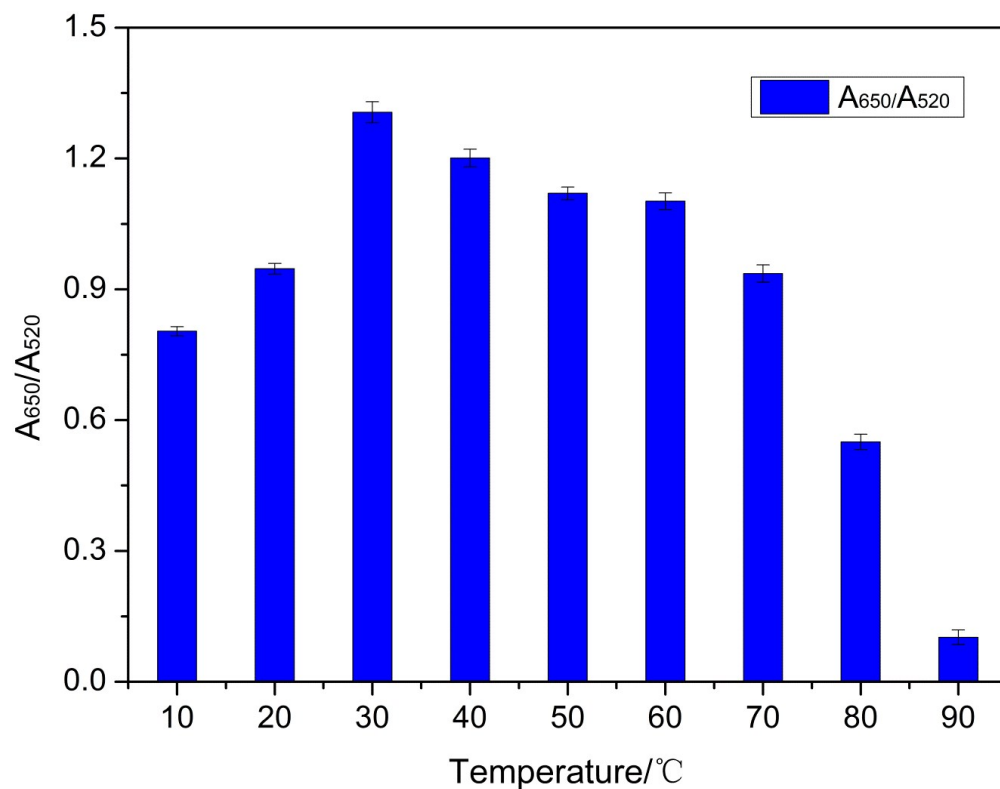
**Fig. S-2**  $A_{650}/A_{520}$  values of P-PDCA-AuNPs versus the concentrations of papain ( $1.0 \times 10^{-5}$ ,  $1.0 \times 10^{-6}$ ,  $1.0 \times 10^{-7}$ ,  $1.0 \times 10^{-8}$  M) in the presence of 1 mM  $\text{Hg}^{2+}$ . Error bars were obtained from three experiments.



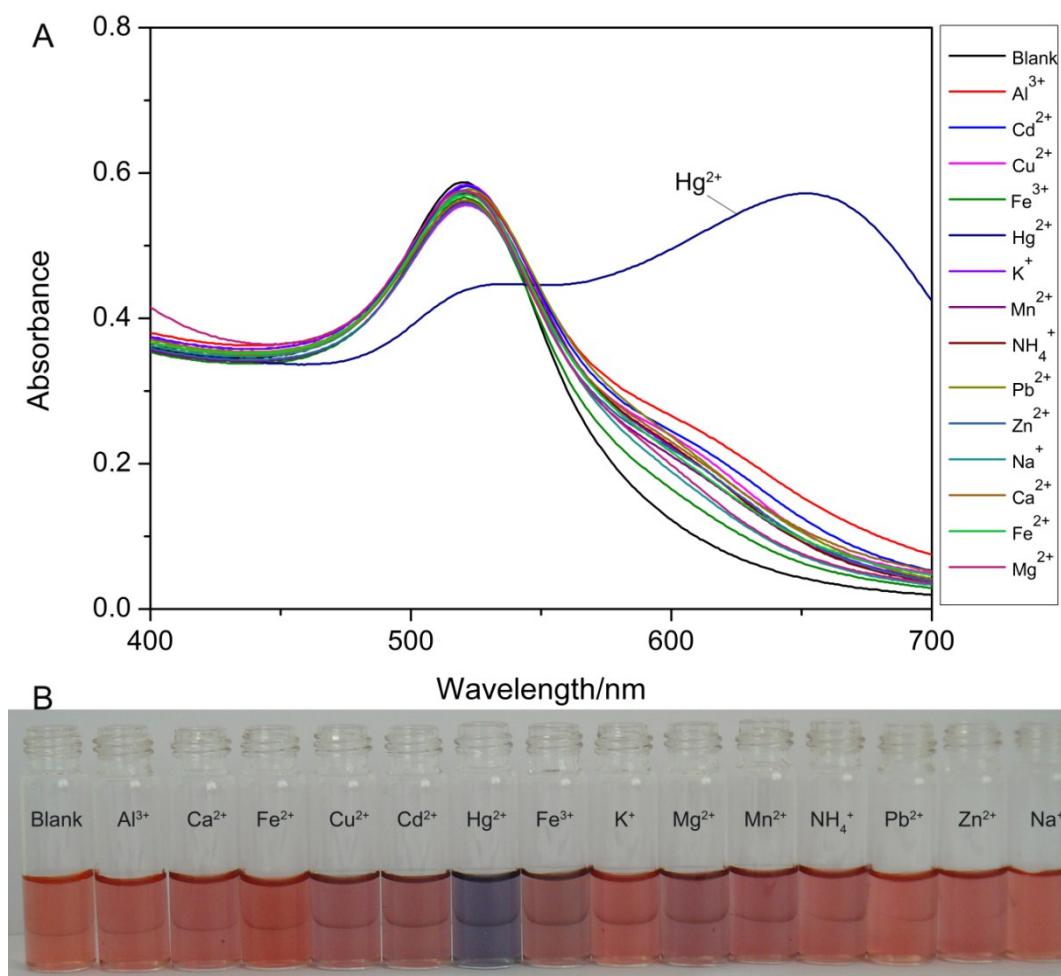
**Fig. S-3**  $A_{650}/A_{520}$  values of P-PDCA-AuNPs with the changes of time in the presence of 1 mM  $Hg^{2+}$ . When the time was increased to 15 min, the  $A_{650}/A_{520}$  values of P-PDCA-AuNPs began to level off, suggesting that the optimal incubated time was 15 min. Error bars were obtained from three experiments.



**Fig. S-4**  $A_{650}/A_{520}$  of P-PDCA-AuNPs with different pH (6, 7, 8, 9) in the presence of 1 mM  $Hg^{2+}$ . Error bars were obtained from three experiments.



**Fig. S-5**  $A_{650}/A_{520}$  of P-PDCA-AuNPs with different temperatures (10, 20, 30, 40, 50, 60, 70, 80, 90 °C) in the presence of 1 mM  $Hg^{2+}$ . Error bars were obtained from three experiments.



**Fig. S-6** (A) UV-Vis absorption spectra of P-PDCA-AuNPs in the presence of different kinds of ions. (B) Color changes of P-PDCA-AuNPs in the presence of different kinds of ions. Concentration of  $\text{Hg}^{2+}$  was 1 mM, while others were 20 mM.