

Colorimetric detection of Ba²⁺, Cd²⁺ and Pb²⁺ Based on a Multifunctionalized Au NPs Sensor

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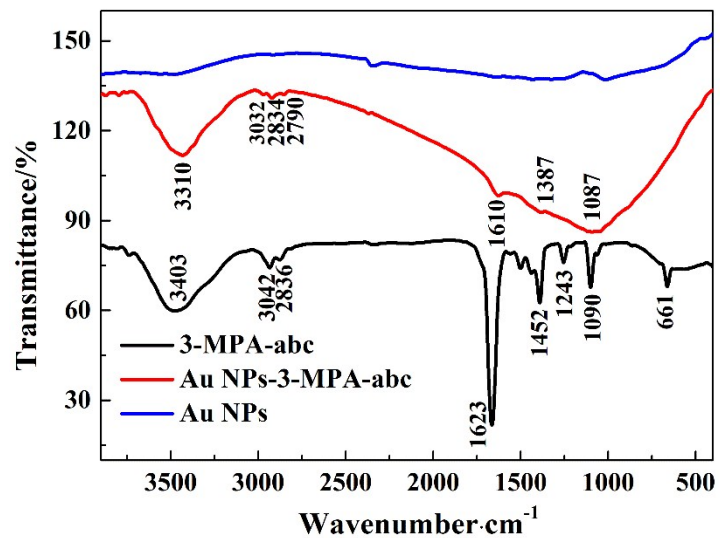


Fig. S1 The FT-IR spectra of Au NPs, 3-MPA-abc modified Au NPs and 3-MPA-abc.

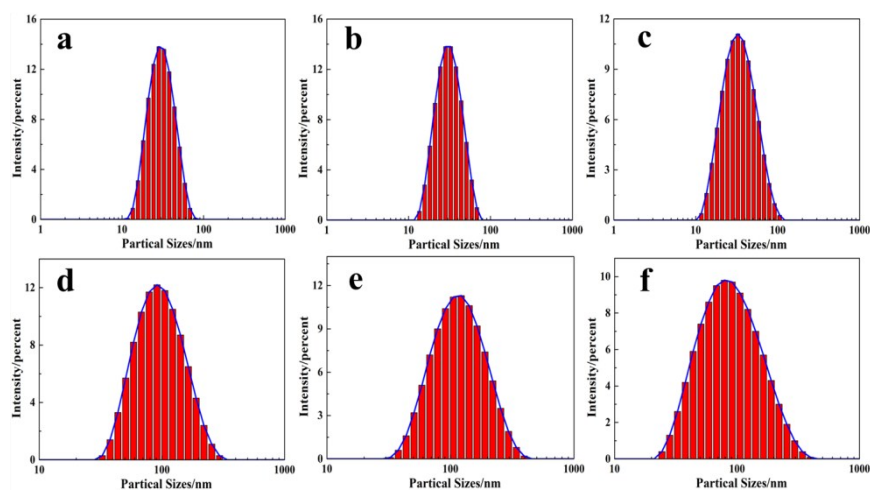


Fig. S2 The size dispersion of Au NPs under different conditions. (a) Au NPs(control); (b) Au NPs with 10 μM 3-MPA-abc; (c) Au NPs with $\text{Ba}^{2+}/\text{Cd}^{2+}/\text{Pb}^{2+}$; (d) Au NPs with 3-MPA-abc in the presence of Ba^{2+} ; (e) Au NPs with 3-MPA-abc in the presence of Cd^{2+} ; (f) Au NPs with 3-MPA-abc in the presence of Pb^{2+} .

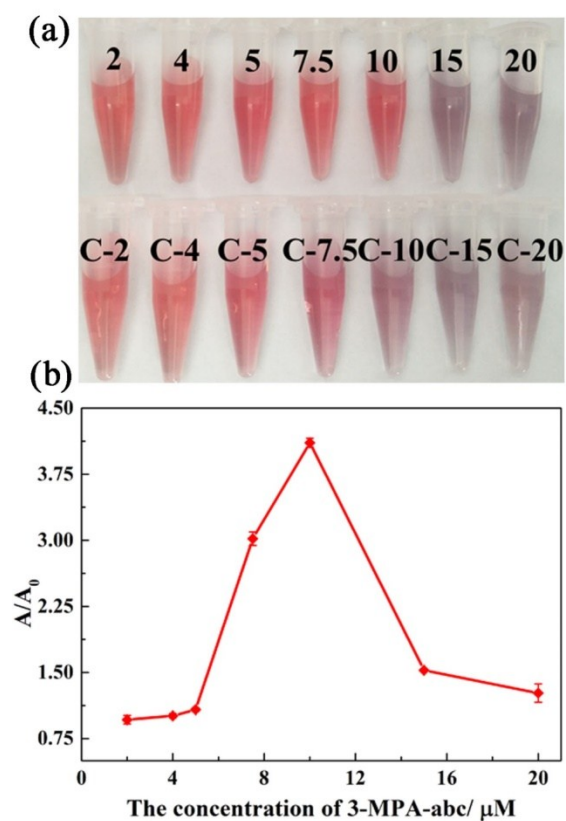


Fig. S3 Effect of 3-MPA-abc concentration (2, 4, 5, 7.5, 10, 15, and 20 μM) on the detection of Ba^{2+} by the functionalized Au NPs. (a) Photograph of the colorimetric detection effect (up: control samples, down: samples with Ba^{2+}); (b) UV-vis absorption intensity ratio A/A_0 of Au NPs solutions (A represents the absorption intensity ratio of functionalized Au NPs containing Ba^{2+} at 685 nm and 525 nm, A_0 represents the absorption intensity ratio of the blank one).

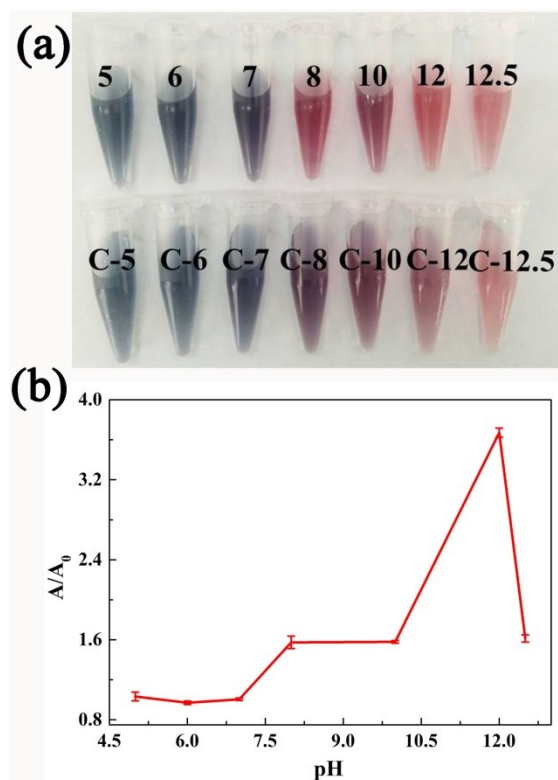


Fig. S4 The influence of pH values (5, 6, 7, 8, 10, 12, 12.5) on the detection effect of Ba^{2+} by modified Au NPs. (a) Photograph of the detection effect (up: control samples, down: samples with Ba^{2+}); (b) UV-vis absorption intensity ratio A/A_0 of Au NPs (A represents the absorption intensity ratio of functionalized Au NPs containing Ba^{2+} at 685 nm and 525 nm, A_0 represents the absorption intensity ratio of the blank one).

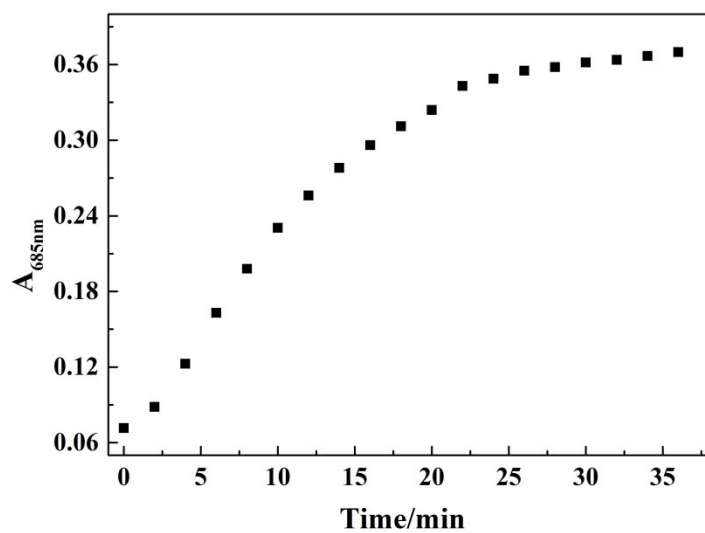


Fig. S5 Effect of reaction time on the detection of Ba²⁺ according to the absorption intensity of functionalized Au NPs at 685nm.

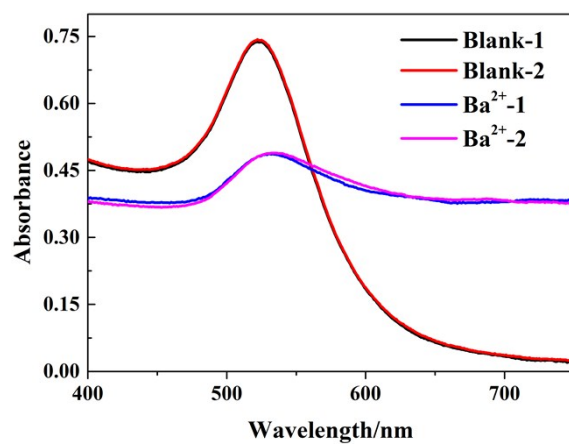


Fig. S6 UV-vis absorption spectra of blank groups and functionalized Au NPs solutions containing Ba²⁺ (5 μM).