

Supporting Information

Poly-acrylamide protected gold nanoparticles for determination of manganese ions

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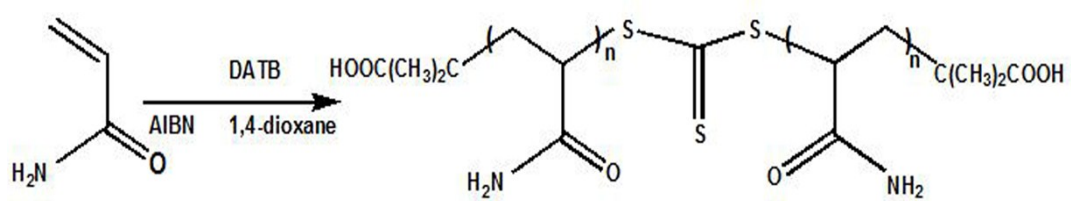


Figure S1. Synthesis route of PAM.

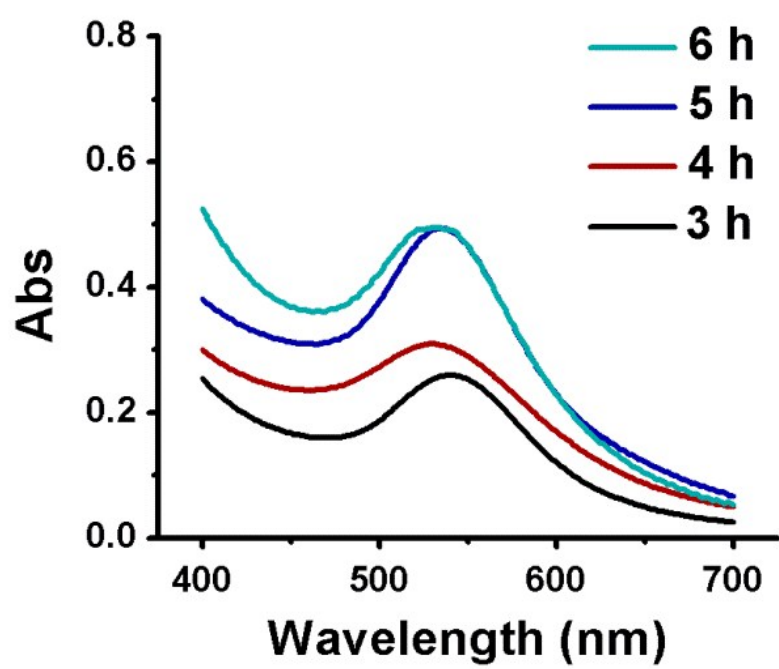


Figure S2. Optimization of synthesis time for obtaining the PAM-AuNPs.

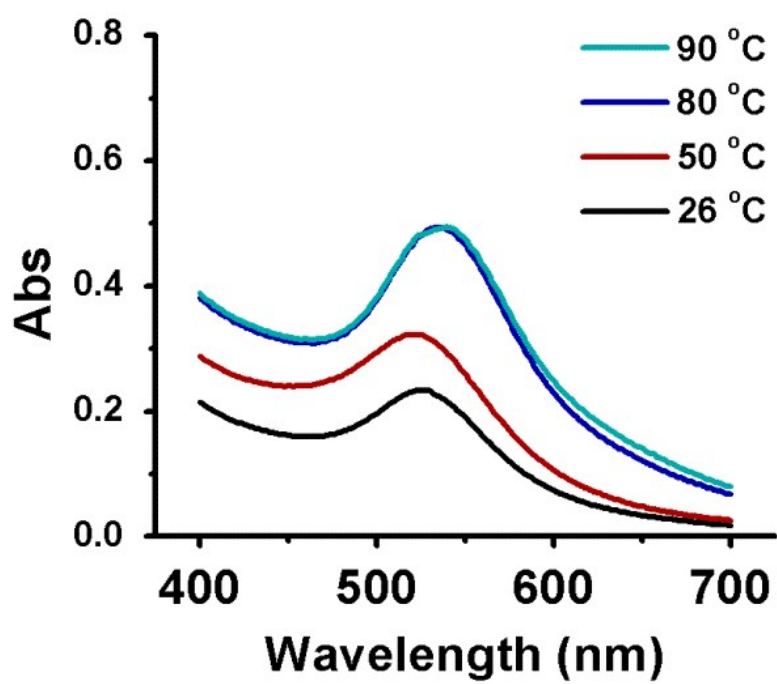


Figure S3. Optimization of synthesis temperature for getting the PAM-AuNPs.

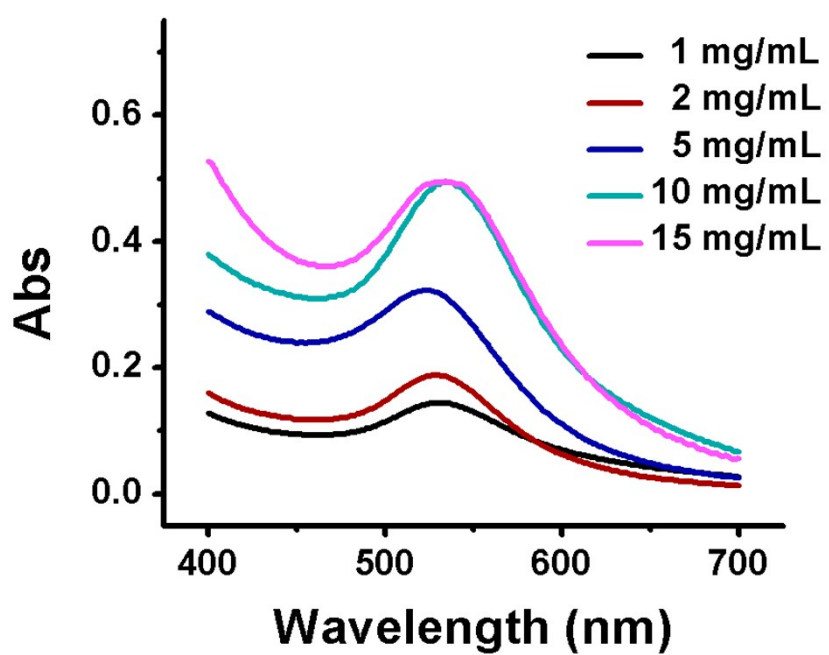


Figure S4. The effect of concentration of PAM on the synthesis of PAM-AuNPs.

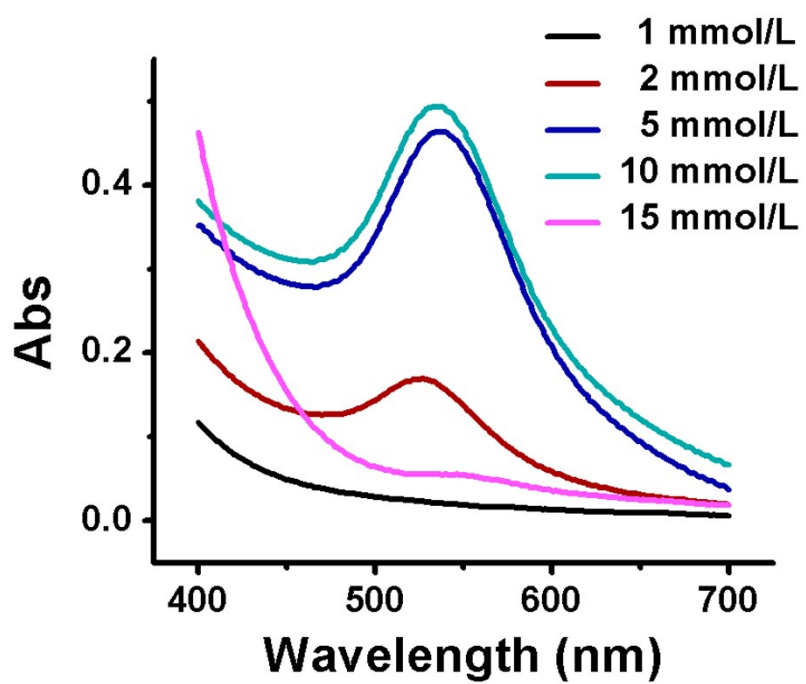


Figure S5. The effect of concentration of HAuCl₄ solutions on the synthesis of PAM-AuNPs.

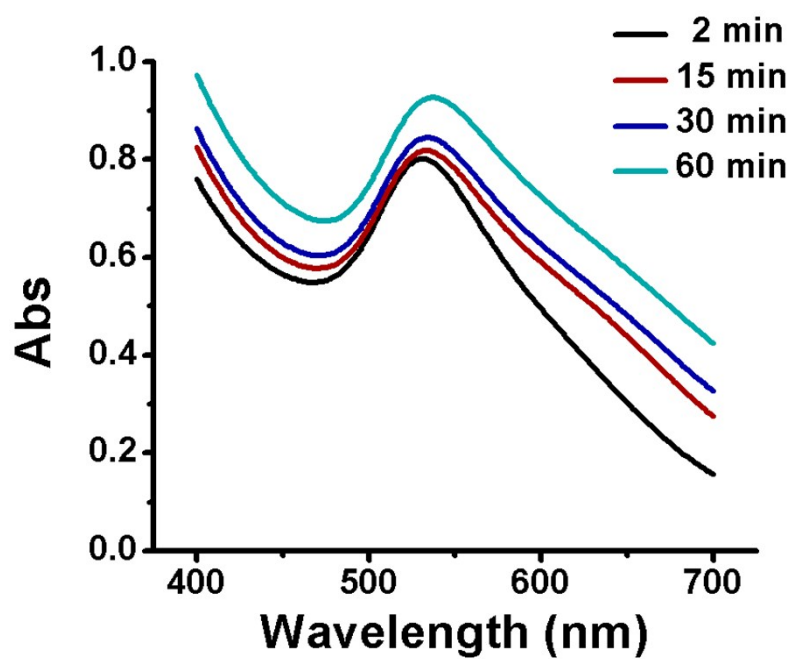


Figure S6. UV-vis spectra of PAM-AuNPs after addition of Mn^{2+} (1.0 mM) at different sensing reaction time.

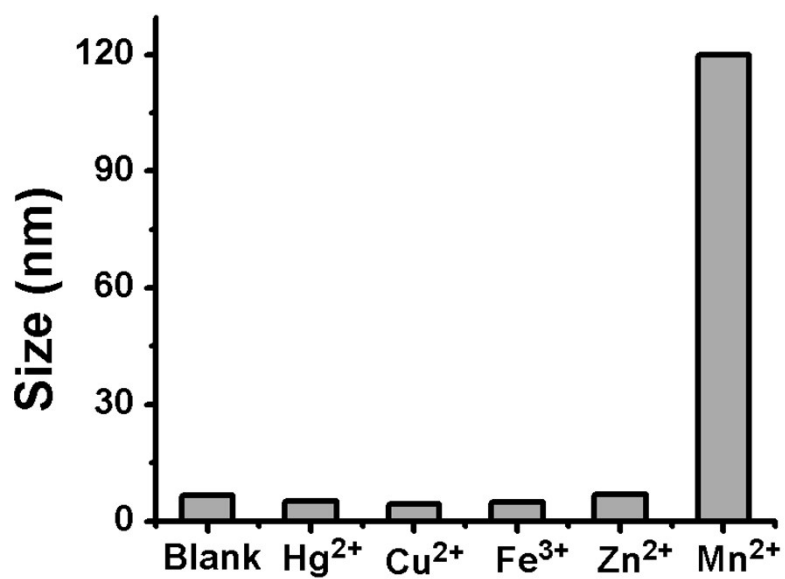


Figure S7. DLS of PAM-AuNPs after addition of different cations (each metal cation was 1.0 mmol/L).

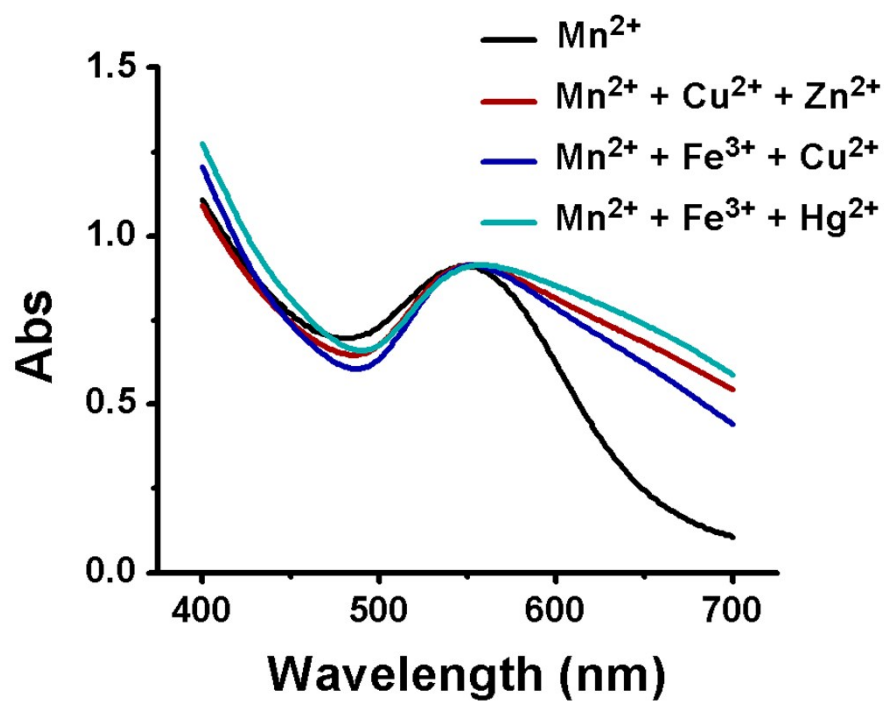


Figure S8. UV-vis spectra of PAM-AuNPs with Mn^{2+} (1.0 mM) and co-exist other metal cations (each metal cation was 1.0 mmol/L).

Table S1. Comparison between our proposed work and the previous works for sensing Mn²⁺ ions in water samples

Species	Nano-particles	LOD (μmol/L)	Sensing ranging (μmol/L)	Samples	Ref.
Small molecules protected AuNPs/AgNPs	L-Dopa@AuNPs	0	0-100	pure water samples	Narayanan et al, Spectrochim. Acta A: Mol. Biomol. Spectrosc 2014, 131, 132-137
	P ₃ O ₁₀ ⁵⁻ @ AgNPs	0.1	1.8-20	lake and tap water samples	Gao et al, Sens. Actuators B 2013, 181, 288-293
	4-NBA-MA@ AgNPs	0.05	0.5-10	drink water samples	Zhou et al, Talanta 2012, 97, 331-335
Polymer protected AuNPs	PAM@AuNPs	5.0	8.0-500	lake and tap water samples	This work