

Supplementary information (ESI)

Ultrasensitive detection of sulfide ions through interactions between sulfide ions and Au(III) quenching the fluorescence of chitosan microspheres functionalized with rhodamine B and modified with Au(III)

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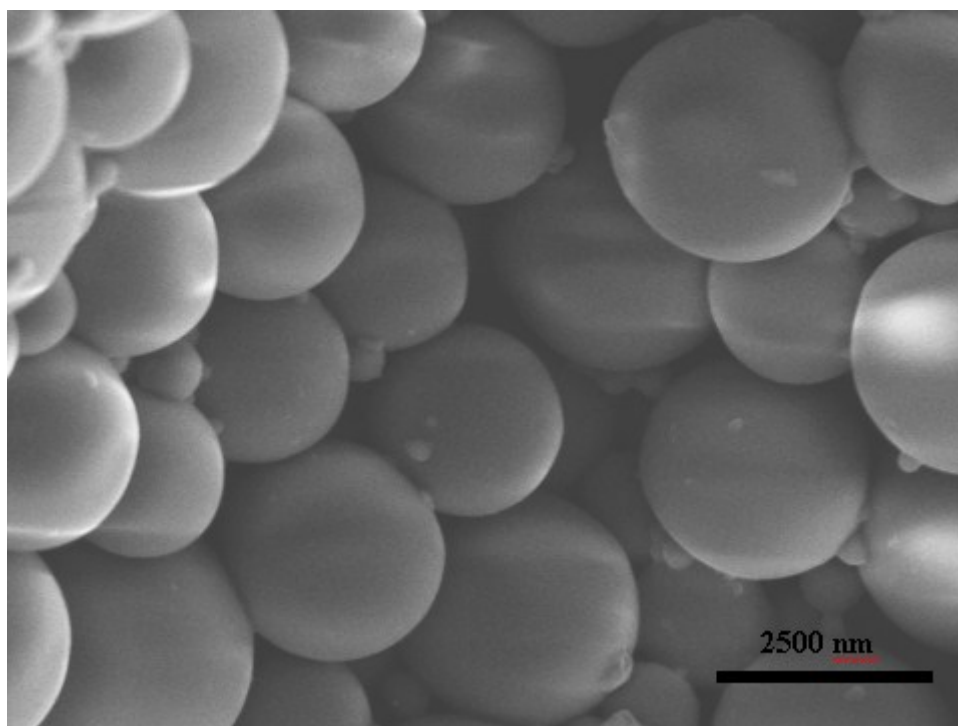


Fig. S1 Scanning electron microscopy images of the chitosan microspheres (CSM)

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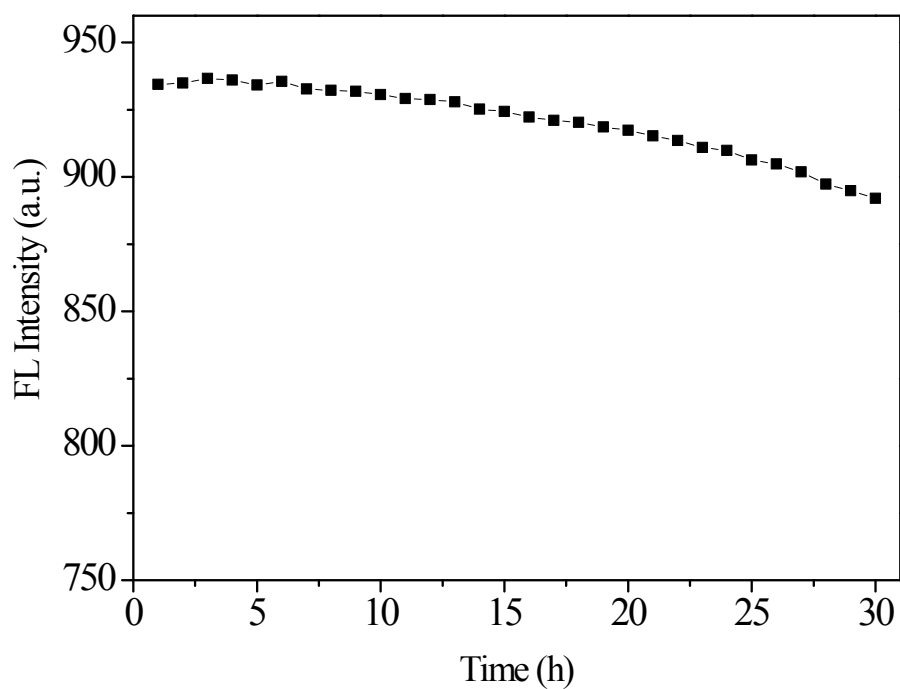


Fig. S2 Photostability of 0.04 g L^{-1} chitosan microspheres functionalized with rhodamine B (RB-CSM) in solution at pH 5.3

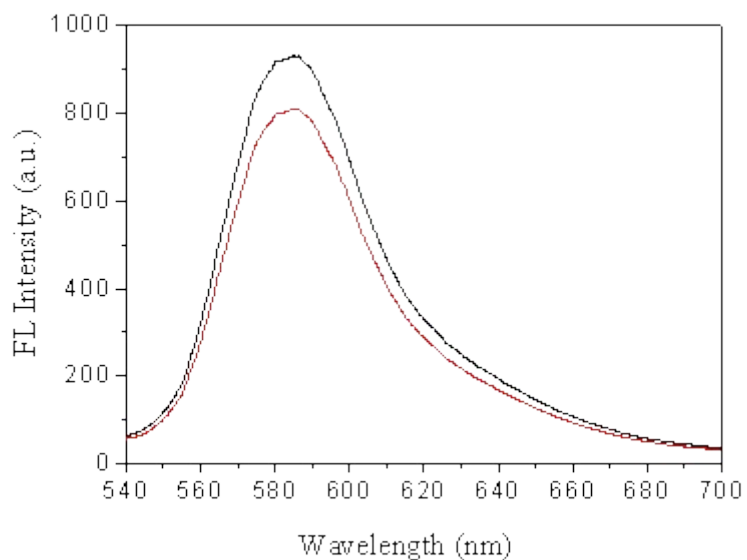


Fig. S3 Fluorescence emission spectra of 0.04 g L^{-1} chitosan microspheres functionalized with rhodamine B (RB-CSM) in solution at pH 5.3 in (a) the absence of Au(III) and (b) $4.0 \mu\text{mol L}^{-1}$ Au(III)

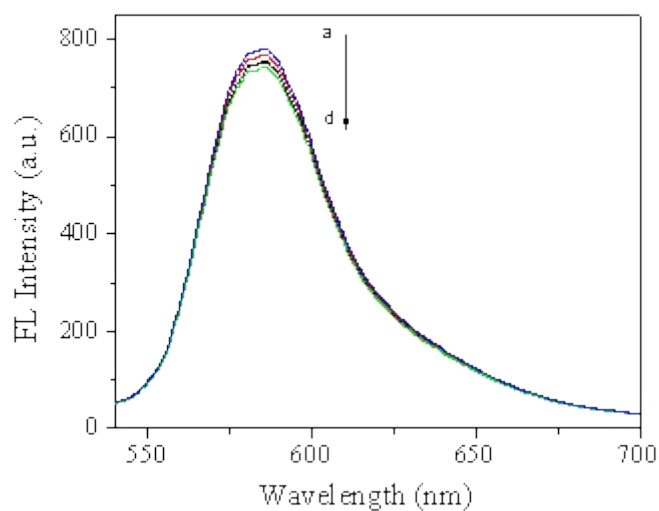


Fig. S4 Fluorescence emission spectra of 0.04 g L⁻¹ chitosan microspheres functionalized with rhodamine B (RB-CSM) in PBS at pH 5.3 with sulfide ions at (a) 0 μmol L⁻¹, (b) 0.01 μmol L⁻¹, (c) 1.0 μmol L⁻¹, and (d) 100 μmol L⁻¹

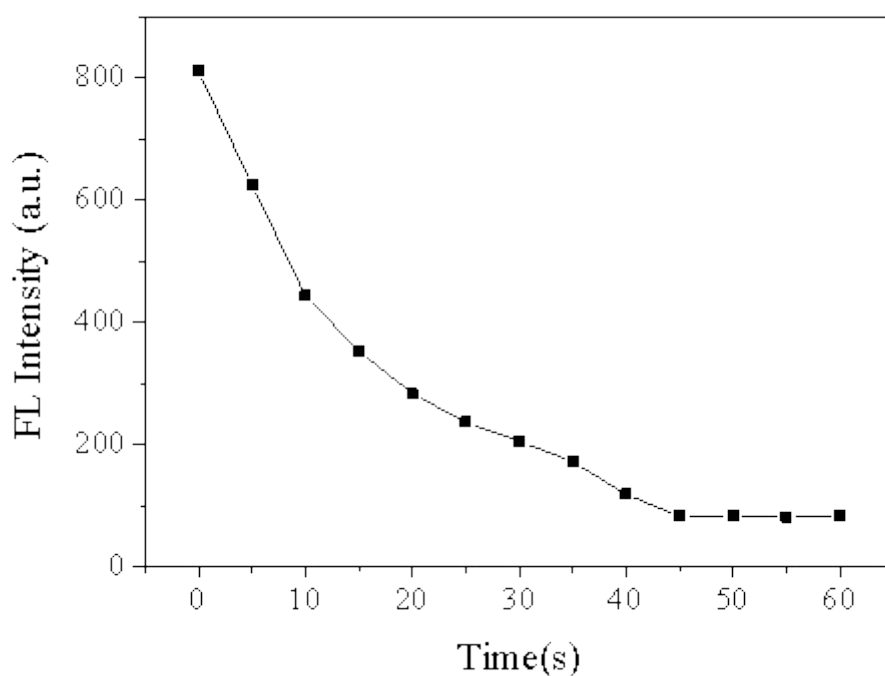


Fig. S5 Fluorescence quenching of 0.04 g L⁻¹ chitosan microspheres functionalized with rhodamine B (RB-CSM) with 4.0×10^{-6} mol L⁻¹ AuCl₄⁻ and 20 nmol L⁻¹ sulfide ions in PBS at pH 5.3 as a function of time

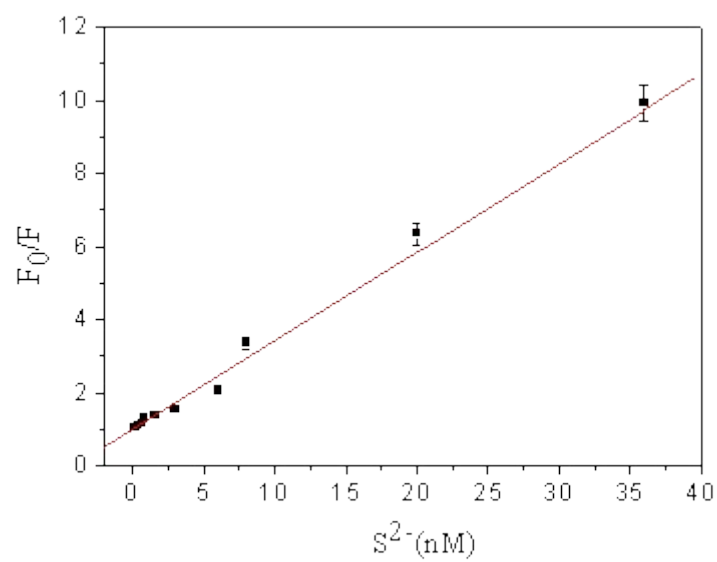


Fig. S6 Fluorescence intensity plotted against the sulfide ion concentration. The calibration equation was $F_0/F = 0.9864 + 0.24322 [S^{2-}]$, and the correlation coefficient (R^2) was 0.982.