

Supporting Information

Colorimetric recognition and sensing of nitrite with unmodified gold nanoparticles based on a specific diazo reaction with phenylenediamine

Jia Zhang, Cheng Yang, Xiaolei Wang, and Xiurong Yang*

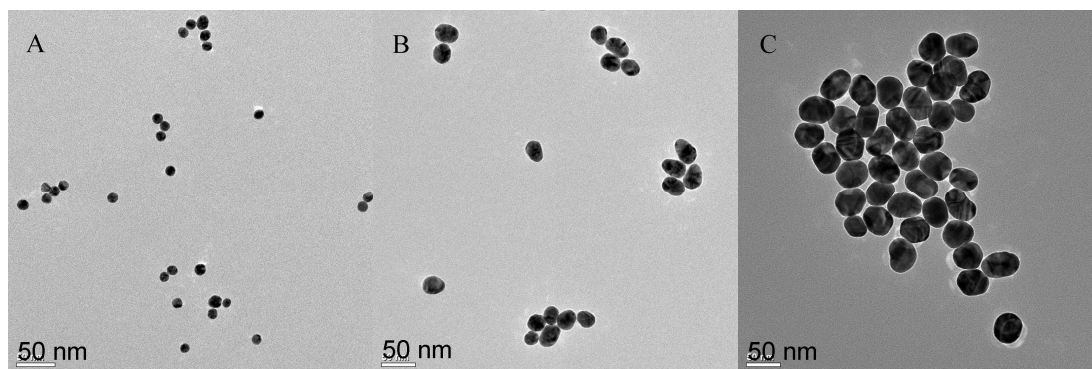


Fig. S1 TEM images of the Au nanoparticles of average 13 (A), 28 (B), and 43 nm (C) diameters.

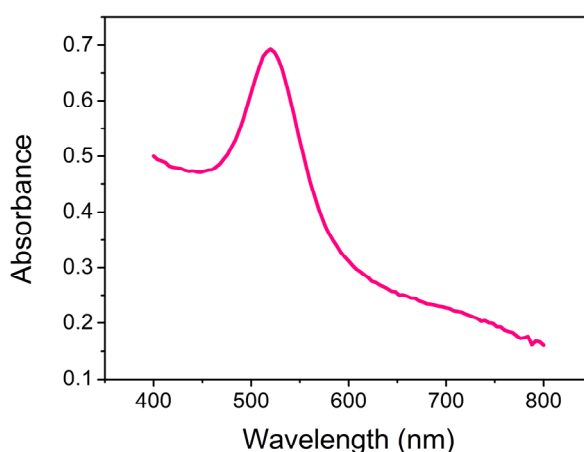


Fig. S2 Absorption spectra for the citrate-capped Au NP (13 nm) solution (50 μ L Au + 50 μ L water) in the presence of 2.5 μ M PPD and 30 mM H_3PO_4 .

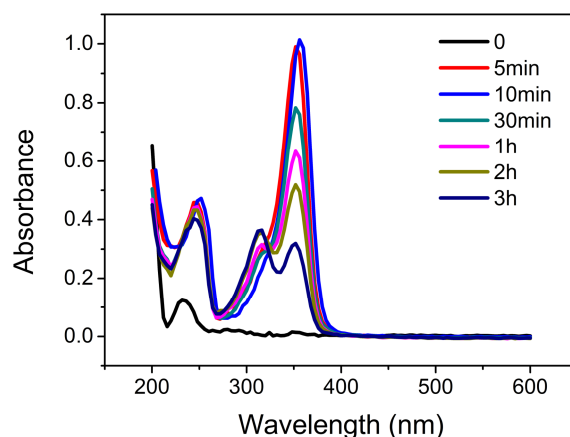


Fig. S3 UV-vis spectra for the solution of PPD + H₃PO₄ + NO₂⁻ as a function of reaction time. Conditions: 5 mM H₃PO₄; 50 μM PPD; 0.5 mM NO₂⁻ and 18 °C for the diazo reaction.

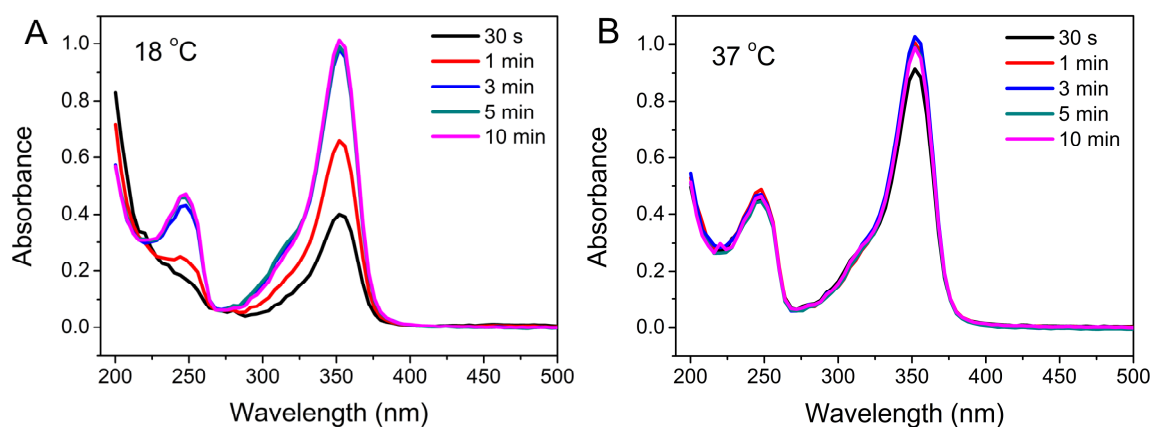


Fig. S4 UV-vis spectra for the solution of PPD + H₃PO₄ + NO₂⁻ within 10 min of reaction as a function of operating temperature. Conditions: 5 mM H₃PO₄; 50 μM PPD and 0.5 mM NO₂⁻.

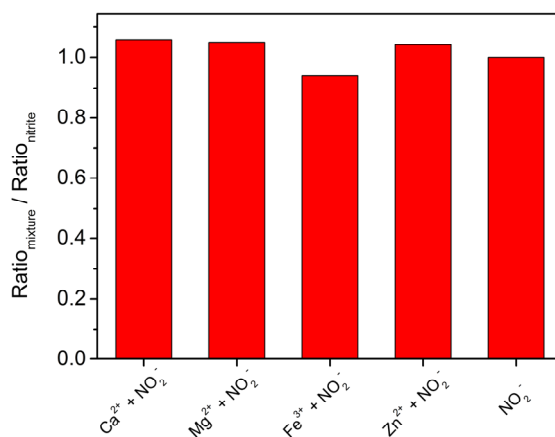


Fig. S5 Interference study of the sensor in the presence of a mixture of nitrite (10 μM) and one other metallic ion (0.1 mM). All data are based on the average of two measurements.

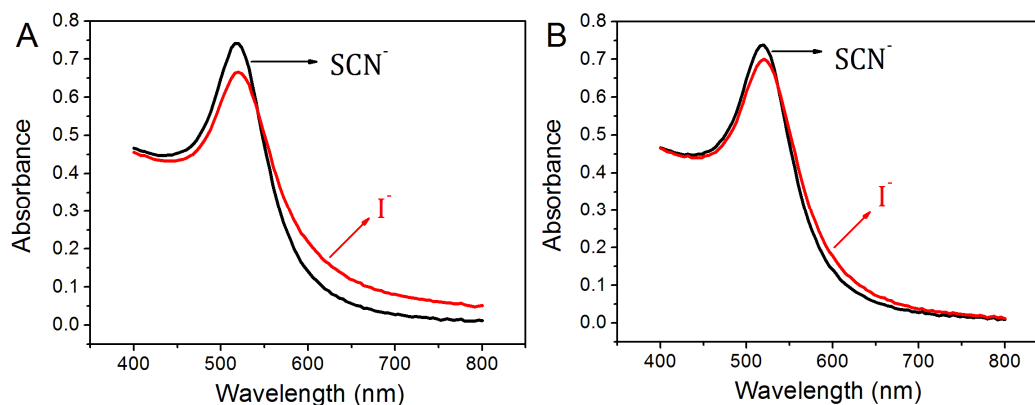


Fig. S6 (A) Absorbance spectra for the Au NP (13 nm) buffered solution after the addition of the reaction solution of $\text{H}_3\text{PO}_4 + \text{PPD} + \text{NO}_2^-$ in the presence of thiocyanate or iodide. Conditions: 50 μL Au + 50 μL PBS (30 mM, pH 9.0); 5 μL H_3PO_4 (0.01 M); 2.5 μM PPD; 10 μM for anions; and 37 $^\circ\text{C}$, 10 min for the diazo reaction as well as 1 min for the colorimetric response. (B) Absorbance spectra for the Au NP (13 nm) buffered solution after the addition of PPD in the presence of thiocyanate or iodide. Conditions: 50 μL Au + 50 μL PBS (30 mM, pH 9.0); 2.5 μM PPD; 10 μM for anions; and 1 min for the colorimetric response.