Supporting Information

A colorimetric nitrite detection system based on Ag@Au nanoparticles
with excellent selectivity and high sensitivity

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**Figure S1.** Influence of pH value on the color change of the Ag@AuNP dispersions incubated with NO$_2^-$ (0.1-1000 µM), Fe$^{3+}$ (10 µM) or Cu$^{2+}$ (10 µM) for 15 min.
Figure S2. (a) Photographic image of the Ag@AuNPs incubated without or with 10 μM of NO₂⁻ in the presence of CTAB ranging from 5 to 100 mM. The pH value of the Ag@AuNP dispersions is controlled to be 1.3. (b) Plot of $A/A_0$ versus the concentration of CTAB. $A$: the absorbance value at 526 nm in the UV-vis spectra of Ag@AuNP dispersions incubated with 10 μM of NO₂⁻ in the presence of CTAB. $A_0$: the absorbance value at 536 nm in the UV-vis spectra of Ag@AuNP dispersions without NO₂⁻ incubation in the presence of CTAB.
Figure S3. Plot of $A/A_0$ as a function of the incubation time. $A$: the absorbance value at 526 nm in the UV-vis spectra of Ag@AuNP dispersions incubated with 10 μM of NO$_2^-$ in the presence of CTAB (100 mM). $A_0$: the absorbance value at 536 nm in the UV-vis spectra of Ag@AuNP dispersions without NO$_2^-$ incubation in the presence of CTAB (100 mM). The pH value of the Ag@AuNP dispersions is controlled to be 1.3.
Figure S4. Selectivity of the Ag@AuNPs-based detection system for NO$_2^-$ compared with other ions. (a): Photograph of the detection systems incubated with 20 μM of NO$_2^-$ and 20 μM of other single ion; (b): UV-vis absorption spectra of the detection systems incubated with 20 μM of NO$_2^-$ and 20 μM of other single ion. The Ag@AuNPs-based detection system without incubation with NO$_2^-$ or any other ions is used as a control.