Supporting Information

Facile colorimetric detection of nitrite based on anti-aggregation of gold nanoparticles

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For the preparation of SERS substrate, AuNPs were synthesized according to the method described in the manuscript. And then colloid of AuNPs were deposited and air-dried on a cleaned silica slide. The mixtures of 25 μM 4-ATP, 100 mM H_2SO_4 and different concentrations of NO_2^- were mixed at 50 °C. After 15 min, the reaction solution was dropped on the AuNPs substrates and then air-dried. Raman spectra were collected on an HR 800 Raman spectroscope (J Y, France) equipped with a synapse CCD detector and a confocal Olympus microscope. Experiments were conducted in a 632.8 nm frequency-doubled He/Ne laser used as the Raman excitation source. SERS spectra were collected at 50× objective with a numerical aperture of 0.90 and an accumulation time of 1 s.

As shown in Fig. S1, we measured the SERS spectra of 4-ATP with the acidic NO_2^- at various concentrations from 0 to 100 μM. The obtained SERS of 4-ATP in the absence of NO_2^- displayed predominant peaks, for instance, at 998, 1076, 1143, 1176, 1387, 1431 and 1575 cm^{-1},[1, 2] At the beginning, the spectrum was featureless with the concentration of NO_2^- at 1μM. When NO_2^- concentration increased to 10 μM, a new band was identified at 1024 cm^{-1}. The latter band together with the bands at 998, 1076 and 1575 cm^{-1} could be assigned to the vibrational mode of thiophenol.[3, 4] In fact, intensities of the new band depended on the concentration of NO_2^-. At concentrations below 10 μM, it was difficult to identify the band. However, the band intensified as the concentration of NO_2^- increased to 100 μM, which shows that maybe more thiophenol were generated at the high concentration of NO_2^-.

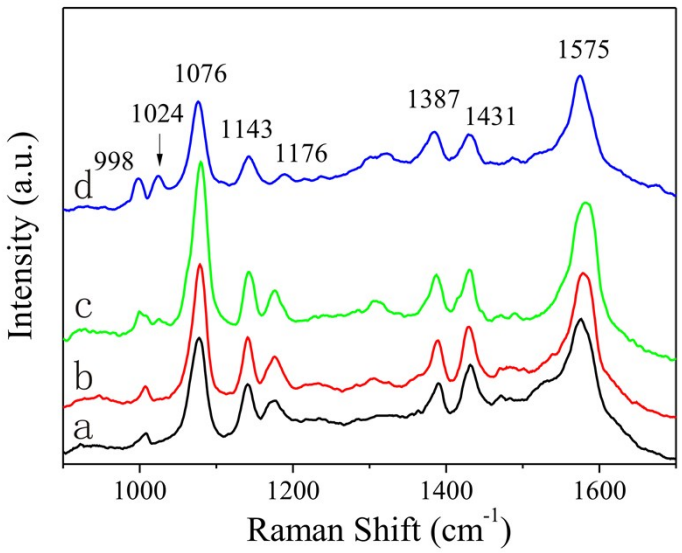

Fig. S1. SERS spectra of 4-ATP reacted with NO_2^-, from the bottom to the top, the NO_2^- concentrations were 0, 1, 10, and 100 μM, respectively.

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