Supporting Information

A Novel Ultrasensitive Surface Plasmon Resonance-Based Nanosensor for Nitrite Detection

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Traditional method for detecting NO_2^- (colorimetric method)：

The p-aminobenzenesulfonic acid undergoes diazotization reaction with NO2- or naphthylethylenediamine under acidic conditions to form dye molecules, and the color depth is positively correlated with the concentration of NO_2^-. in short, 0.2 mL, 4 g/L p-aminobenzenesulfonic acid solution was added to 4.7mL 0-20μg / mL concentration gradient standard solution, mixed, and allowed to stand for 3 min,and then add 0.1 mL, 2 g/L naphthylethylenediamine hydrochloride solution, and mix and let stand for 10 min. The zero point was adjusted with a zero tube, and the absorbance was measured at a wavelength of 538 nm to draw a standard curve.

0.2 mL of 4 g/L p-aminobenzenesulfonic acid solution was added to 4.7 mL of sample solution, mixed and stand for 3 min，then add 0.1 mL, 2 g/L naphthylethylenediamine hydrochloride solution, mixed and stand for 10 min. The absorbance was measured at a wavelength of 538 nm, and the concentration of the NO_2^- of the sample liquid was obtained in combination with a standard curve.

The TEM image of NG-AuNPs was shown in Fig. S1A, we could see the NG-AuNPs was sphere morphology, and the diameter of NG-AuNPs was around 10 nm. When the NG-AuNPs reacted with ATP-AuNPs and nitrite to form color chromophore aggregates, a shell was formed outside the NG-AuNPs sphere (Fig. S1B), and the shell thickness was around 3-5 nm. The shell thickness was similar with the diameter of ATP-AuNPs. After coupling with ATP-AuNPs, we could observe the great aggregate of the AuNPs. And we speculated that the shell was formed by the ATP-AuNPs connected to NG-AuNPs via the diazotization coupling reaction in presence of nitrite.

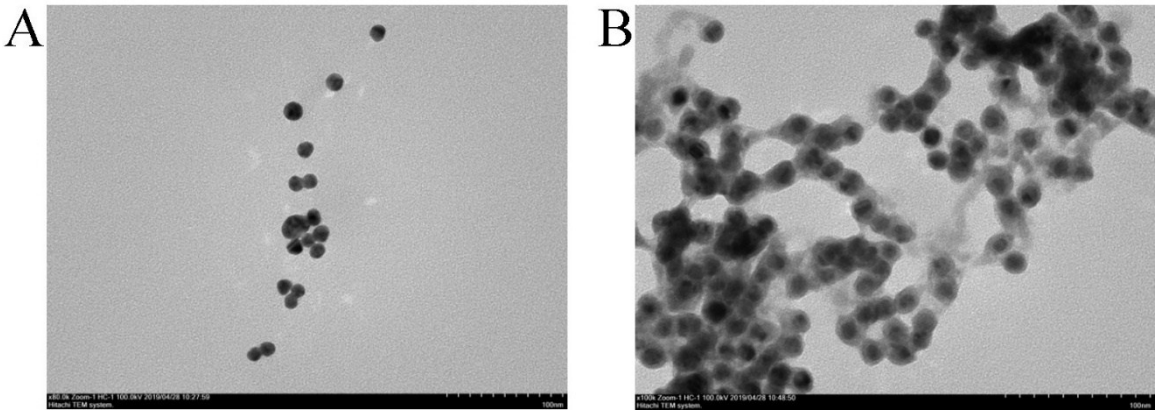

Fig. S1：TEM images of AuNPs. A. TEM image of NG-AuNPs; B. TEM image of gold aggregate formed by the ATP-AuNPs connected to NG-AuNPs in presence of nitrite.