

## Supporting informations for

### **Etching of unmodified Au@Ag nanorods: a tunable colorimetric visualization for rapid and high selective detection of Hg<sup>2+</sup>**

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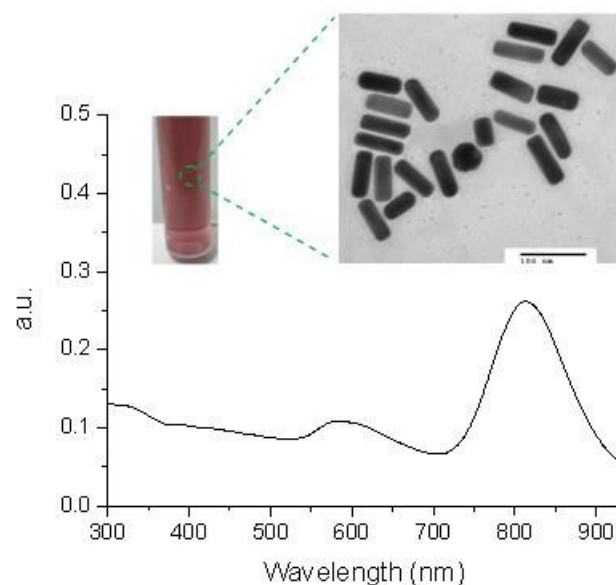


Figure S1. The adsorption spectrum of Au nanorods. Insets: the photo of Au nanorods colloid and TEM images of Au nanorods.

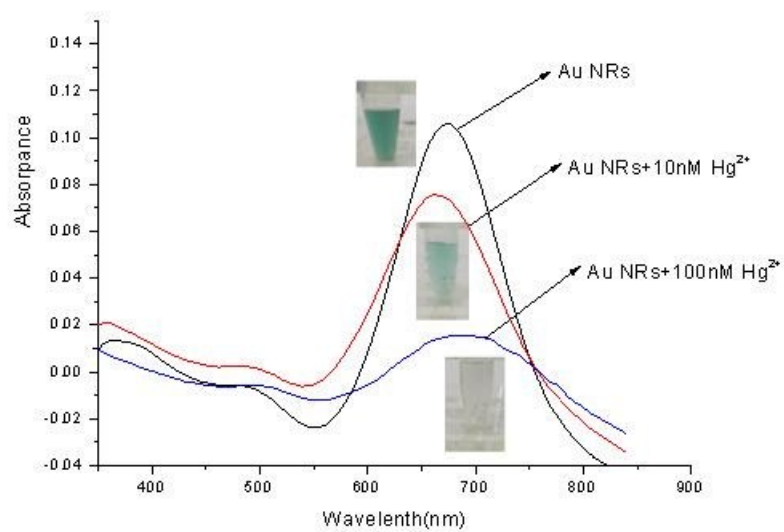
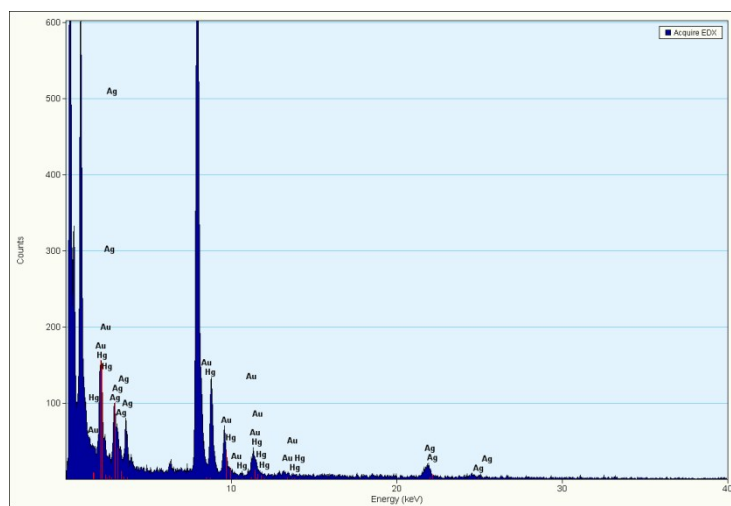
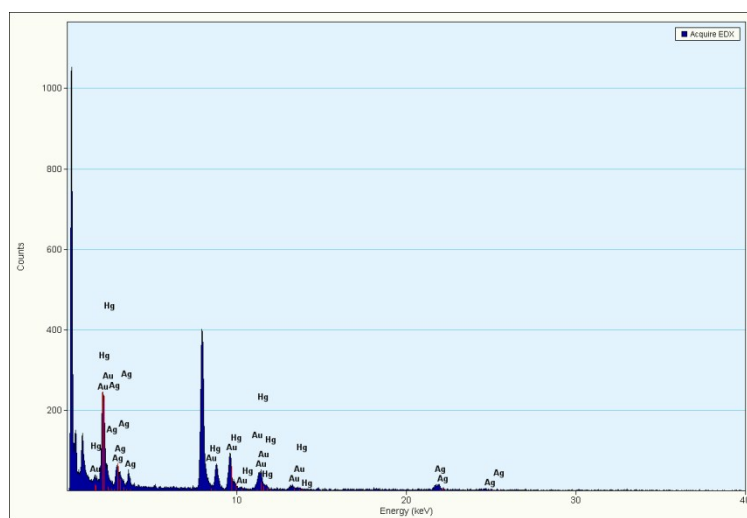


Figure S2. The adsorption spectra of Au@Ag NRs with moderate Ag nanoshell upon the addition of different concentration of  $Hg^{2+}$ . The insets: The color of Au@Ag NRs with moderate Ag nanoshell and different concentration of  $Hg^{2+}$



(a)



(b)

Figure S3. (a) and (b) were the EDS elemental analyses of Au@Ag NRs after addition of  $\text{Hg}^{2+}$  of low concentration (1  $\mu\text{M}$ ) and high concentration (30  $\mu\text{M}$ ), respectively.

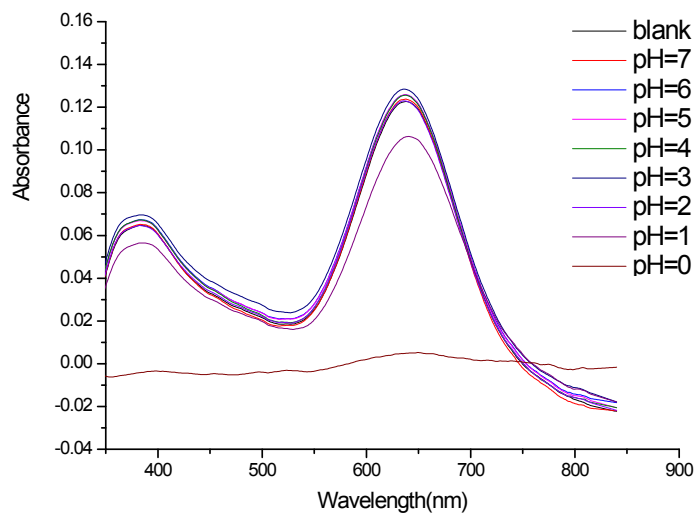


Figure S4 The effect of pH on the absorption spectra of the Au@Ag NRs

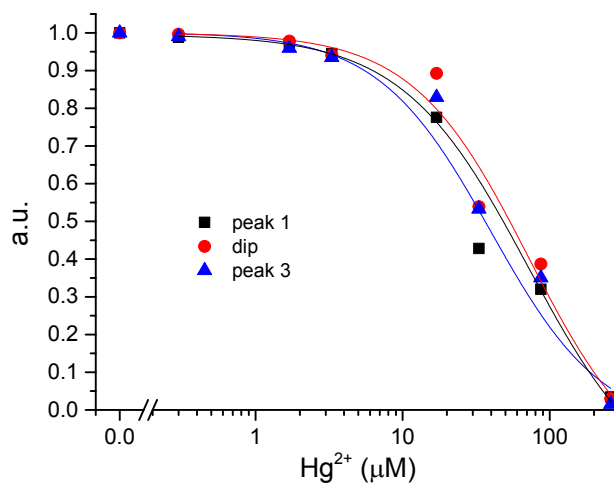


Figure S5. The absorbance intensity of 412 nm, dip and 580 nm was related with  $\text{Hg}^{2+}$  concentration ranging from 0 to 267  $\mu\text{M}$ .