Supporting Information

Colorimetric Visualization of Glucose at Submicromole Level in Serum by Homogenous (Silver Nanoprism)-(Glucose Oxidase) System

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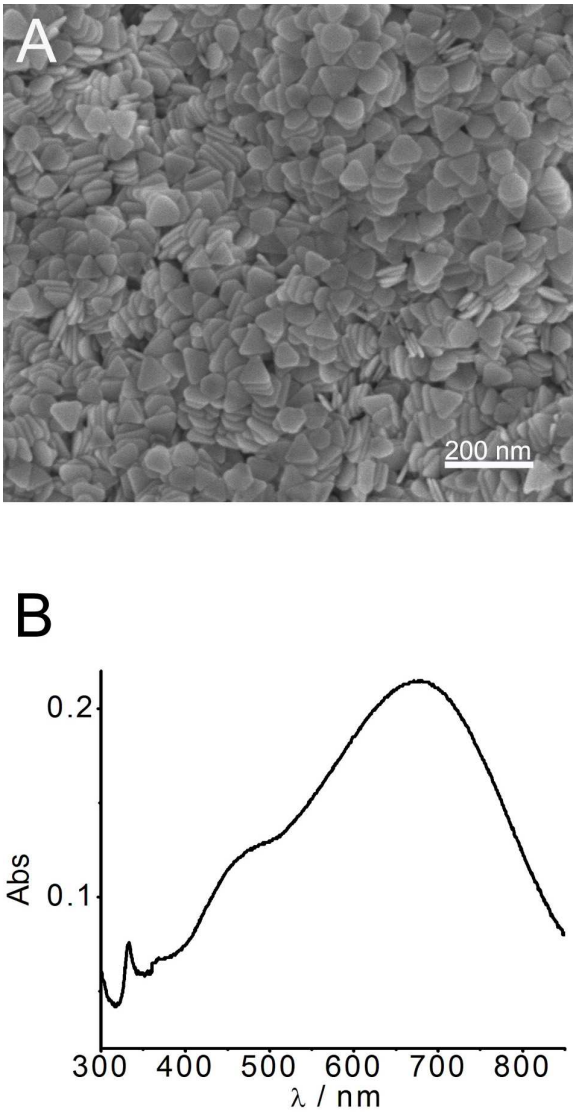


Figure S1. SEM image (A) and SPR absorption spectrum (B) of the Ag nanoprisms.

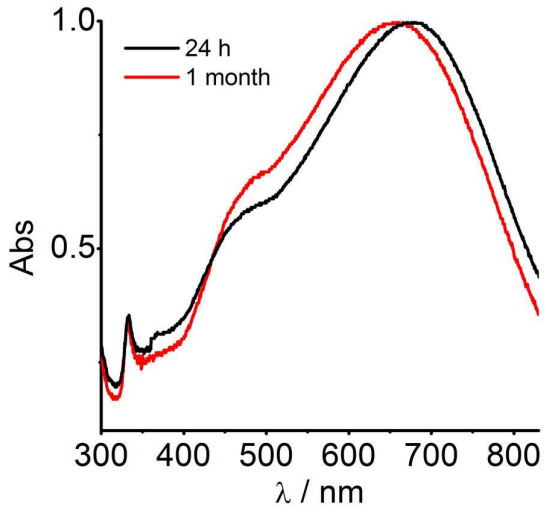


Figure S2. SPR absorption spectra of Ag nanoprisms after synthesis 24 hours and 1 month. The Ag nanoprism solution was kept in 4 °C.

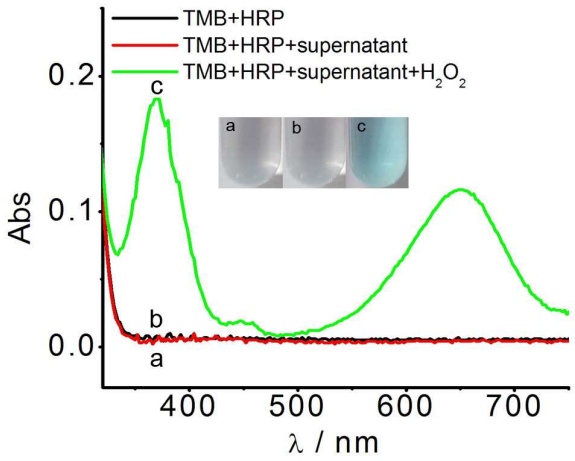


Figure S3. H_2O_2 test for as-prepared Ag nanoprisms. At (TMB+HRP) system, as supernatant of Ag nanoprisms was added, no absorption enhancement was observed at 500-750 nm, which indicated no H_2O_2 was residual in Ag nanoprism solution (As 10μM of H_2O_2 was added, an obvious absorption increase in 500-700 nm was detected, which could even be observed by naked eyes. These results indicated the TMB+HRP system was effective for H_2O_2 detection.). The concentrations of TMB and HRP were 50 μM and 1ng/ml, respectively. The colorimetric reaction was performed in HAc-NaAc buffer solution with pH 3.51.

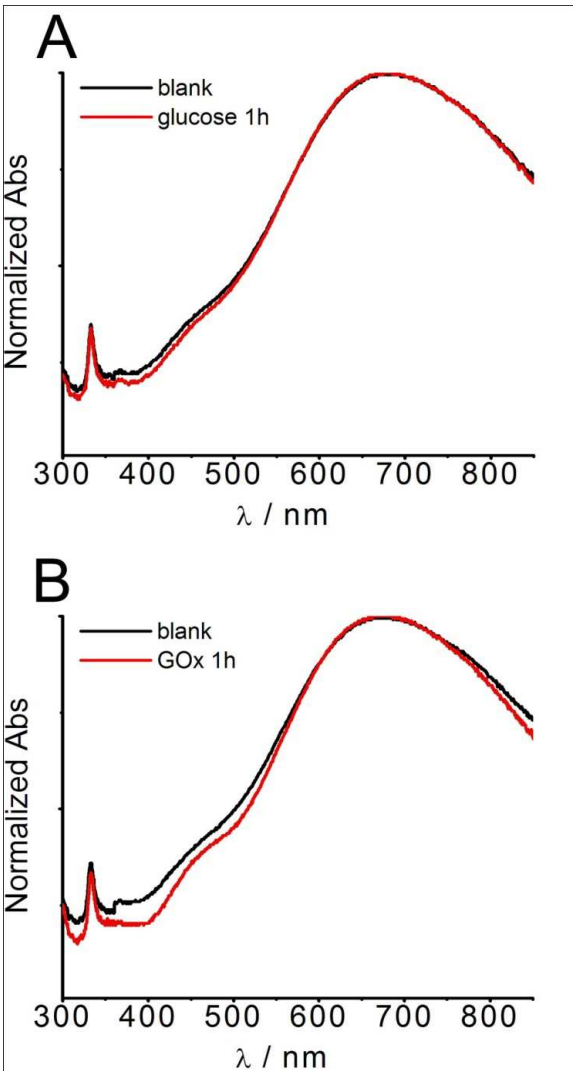


Figure S4. SPR absorption spectra of Ag nanoprisms before and after incubation with either glucose (A) or Gox (B) for 1 h.

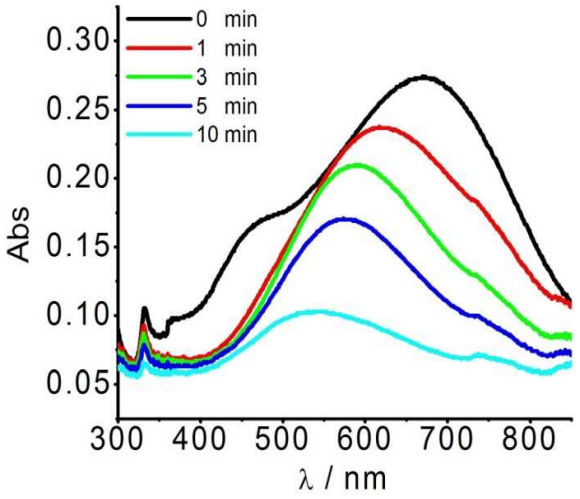


Figure S5. Representative time-dependent SPR absorption spectra of Ag nanoprisms upon incubating with H_2O_2 (1 mM).

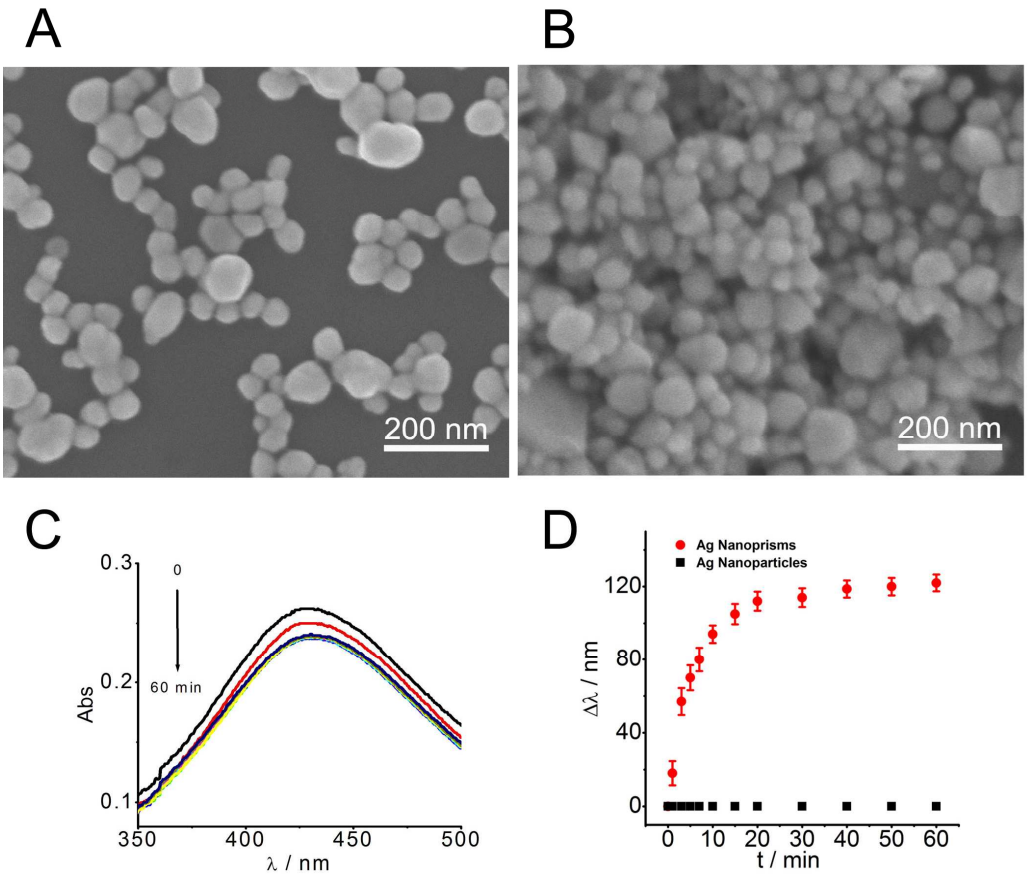


Figure S6. SEM images of spherical Ag NPs before (A) and after (B) incubation with GOx and glucose for 60 min. (C) Representative time-dependent SPR absorption spectra of spherical Ag NPs upon incubating with GOx and glucose (0.1 mM). (D) Plots of SPR peak shift (Δλ) *vs.* incubating time for Ag nanoprisms and spherical Ag NPs, respectively.

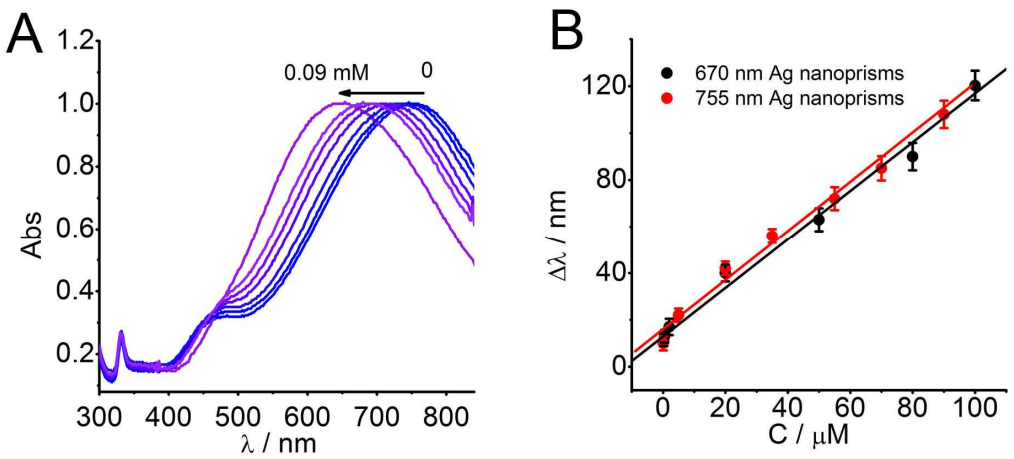
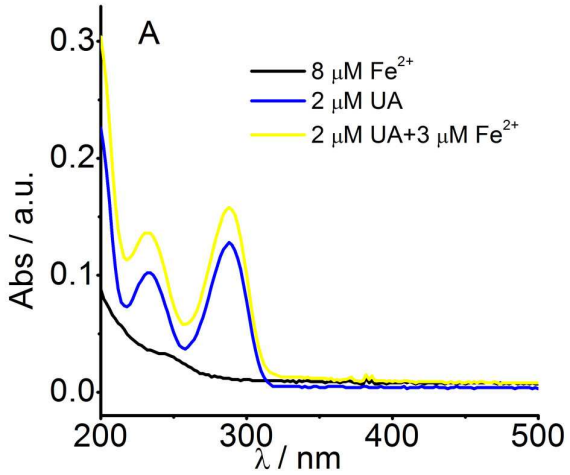
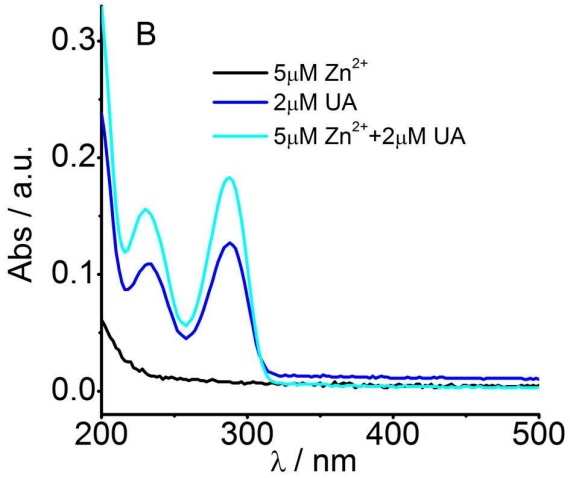


Figure S7. (A) Normalized SPR absorption spectra of (Ag nanoprism)-GOx after incubation with glucose in various concentrations for 40 min. The main SPR peak of the studied Ag nanoprisms is 755 nm. (B) Comparison of the calibration curves of the two batches of Ag nanoprisms with different SPR bands.


A
8 μM Fe2+
2 μM UA
2 μM UA+3 μM Fe2+
Abs / a.u.
0.0
0.1
0.2
0.3
200
300
400
500
λ / nm


B
5μM Zn2+
2μM UA
5μM Zn2++2μM UA
Abs / a.u.
0.0
0.1
0.2
0.3
200
300
400
500
λ / nm

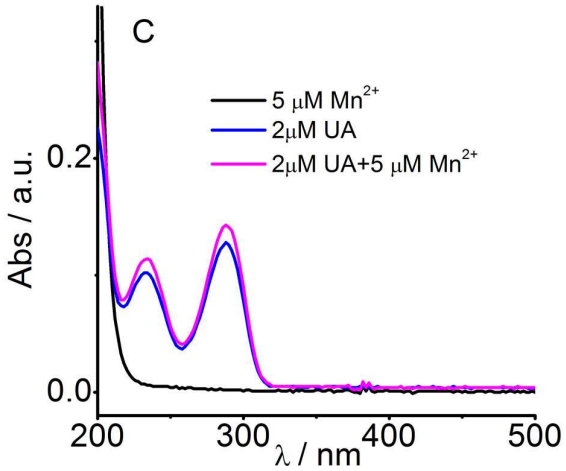


Figure S8 Absorption spectra of three kinds of metal ions and UA before and after reaction. The absorption spectra of (metal ion + UA) were not equal to the simple line relation of the spectra of UA and metal ions, indicating the interaction (coordination effect) of the two mixed substances.

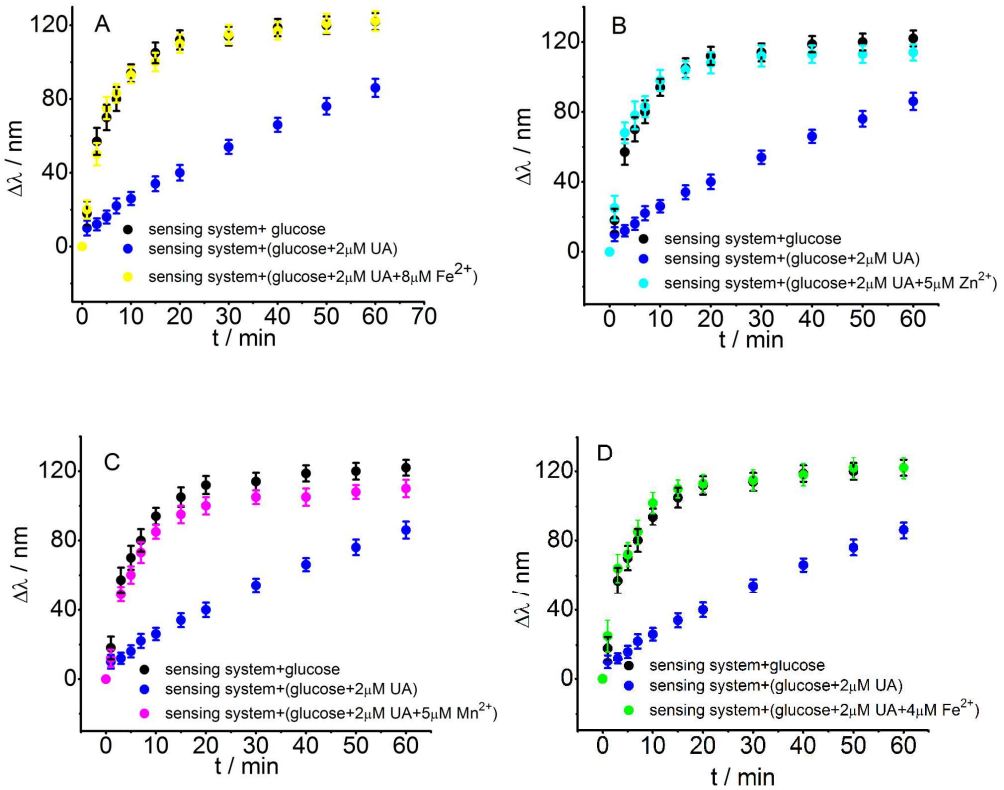


Figure S9. Plots of SPR peak shift (Δλ) *vs.* incubation time at different conditions.