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Journal Name

ARTICLE

Electronic Supplementary Information

Ratiometric Fluorescent Paper Sensor for Consecutive Color Change-based Visual Determination of Blood Glucose in Serum

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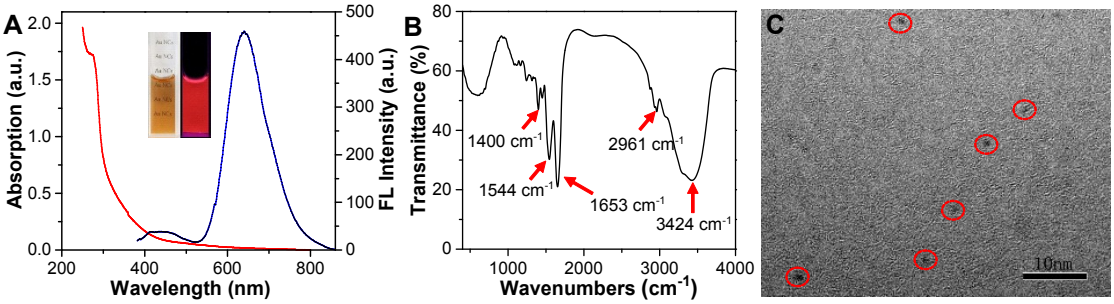

Fig. S1. (A) The UV absorption (red line) and fluorescent emission (blue line) spectra of the as-prepared BSA stabilized Au NCs dissolved in PBS (10mM, pH=7.0). Photos inserted were taken under a 365 nm UV lamp. (B) FT-IR spectra of the Au NCs. (C) TEM photo of the Au NCs.

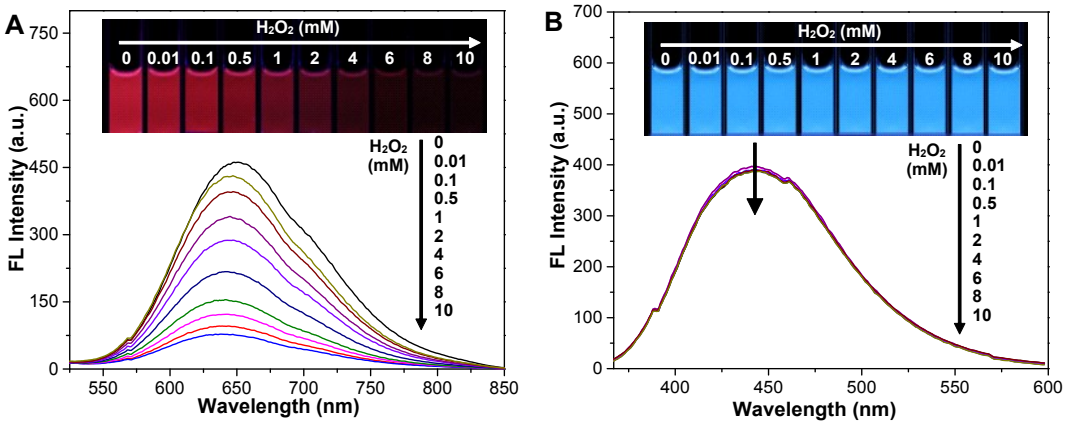

Fig. S2. (A) The fluorescent spectra of the BSA-Au NCs with the addition of different concentration of H_2O_2. The photographs inserted display colors varying resulting from fluorescence quenching of red emission from BSA-Au NCs under a 365 nm UV lamp. (B) Fluorescent spectra of FGO adding different concentration of H_2O_2. The inserted photographs shows fluorescent stability against H_2O_2 of FGO under a 365 nm UV lamp.

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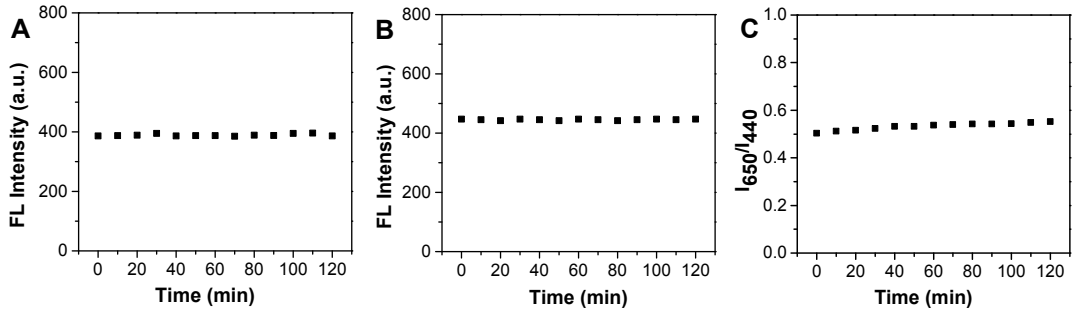

Fig. S3. The fluorescent intensity stability of (A) the fluorescent grapheme oxide of blue fluorescence, (B) the BSA-Au NCs of red fluorescent emission, (C) and the colorimetric probes consisted of the two components at the fluorescent intensity ratio of 2:1. All the fluorescent intensity (or relative intensity, I_{650}/I_{440}) shows no significant change in 2 hours.

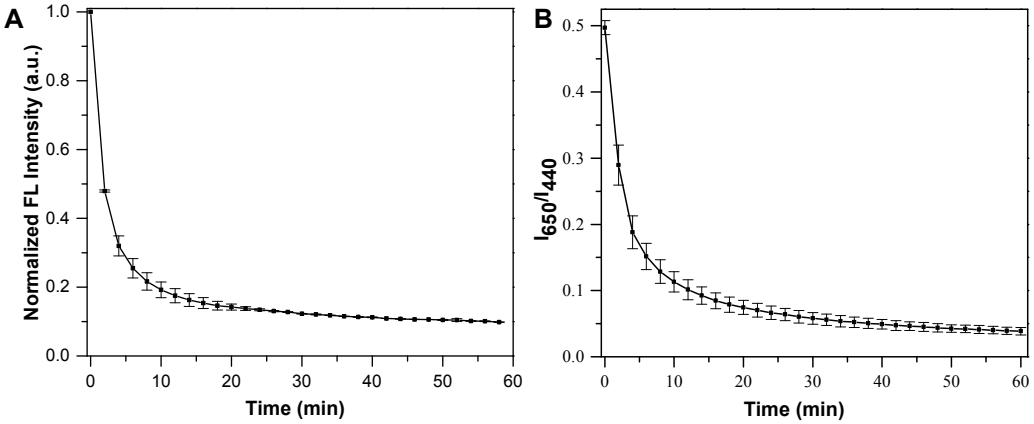

Fig. S4. (A) Time-dependent relative fluorescent intensity (I/I_0) of the as-prepared BSA-Au NCs after adding 10mM H_2O_2. (B) Time-dependent relative intensity (I_{650}/I_{440}) of the colorimetric sensors after adding 10mM H_2O_2. All the experiments were repeated three times.

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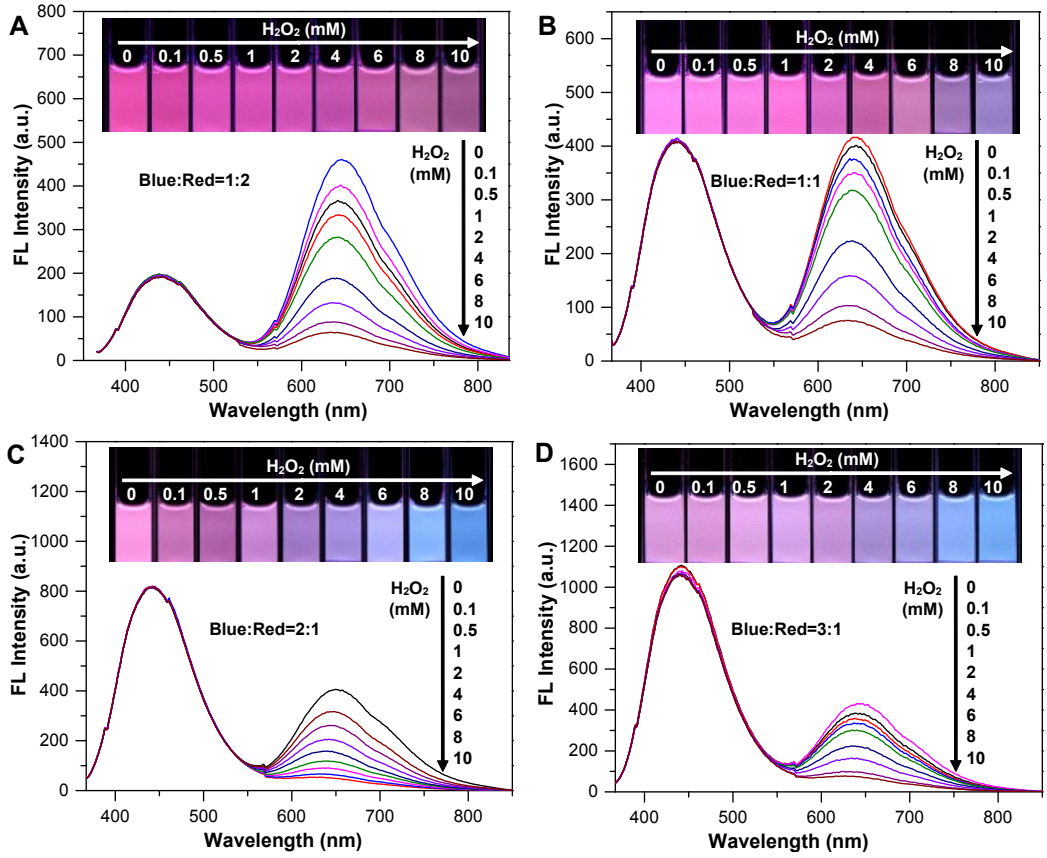

Fig. S5. The diagrams of different fluorescent intensity ratio of FGO and BSA-Au NCs, (A) 1:2, (B) 1:1, (C) 2:1, (D) 3:1. The photographs inserted were taken under a 365 nm UV lamp.

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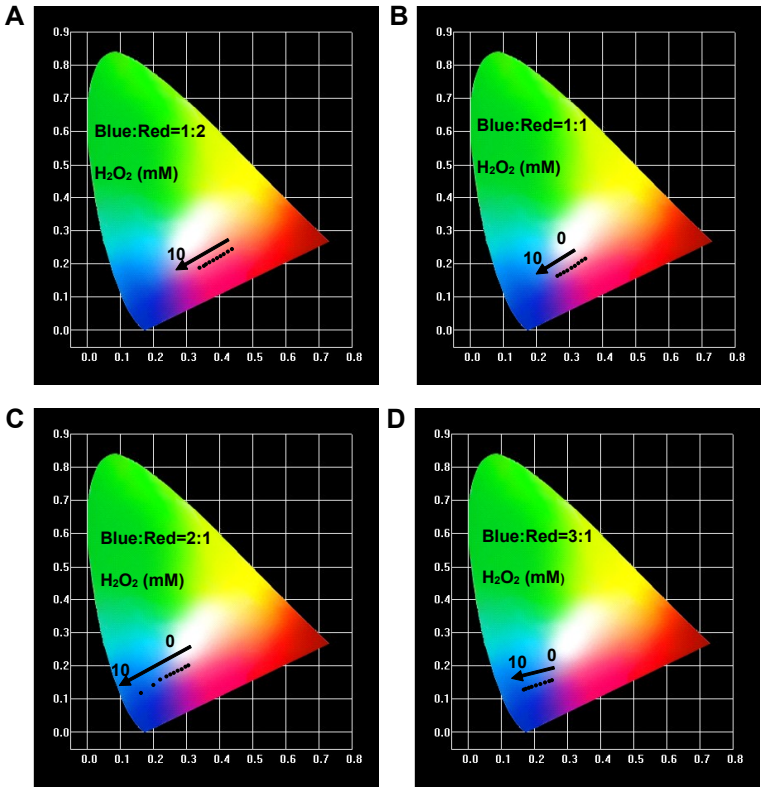

Fig. S6. The color variation resulted from adding hydrogen peroxide displayed on the CIE diagram for colorimetric sensors composed different fluorescent intensity ratio of (A) 1:2, (B) 1:1, (C) 2:1, (D) 3:1.The concentration of H_2O_2 is varying from 0 to 10 mM.

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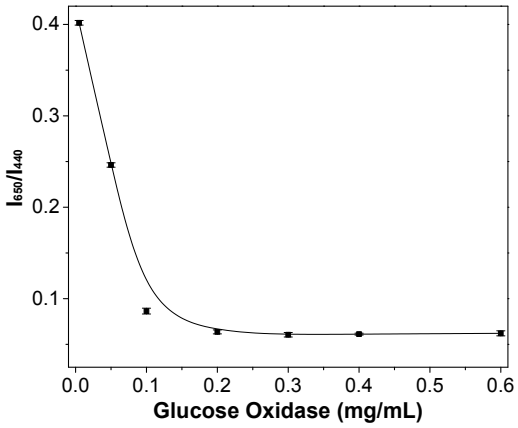

Fig. S7. The fluorescence quenching of the ratiometric probe versus the concentrations of glucose oxidase. I_{650}/I_{440} is the ratio of fluorescence intensities of BSA-Au NCs to FGO, and the intensity ratio is 1:2.

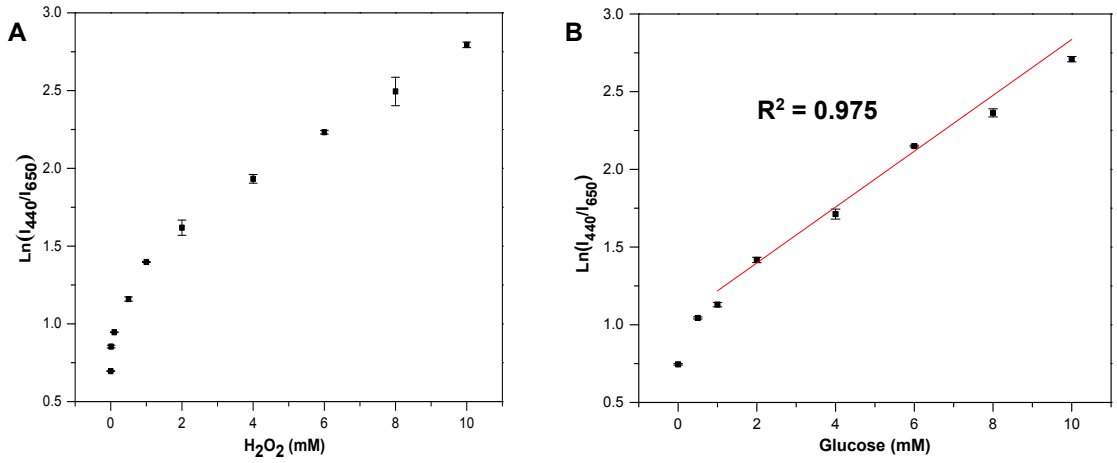

Fig. S8. (A) The scatter diagram of fluorescent intensity ratio, $Ln(I_{440}/I_{650})$, versus H_2O_2 concentration, (B) The scatter diagram of fluorescent intensity ratio, $Ln(I_{440}/I_{650})$, versus glucose concentration. The error bar resulted from three separated measurements and linear relationship is at 1-10 mM range.

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Table S1. Compared to reported methods

Nanomaterial	Linear Range	Limit of Detection	Paper Sensors	Reference
PHPMA@ PMAETMA	0.1 mM-1 mM	0.1 mM	\	1
ZnS:Mn2+	\	0.6 mM	\	2
g-C3N4	0.005-0.1 mM	0.4 μM	\	3
dual-emission carbon nanodots	0.1-30 μM	0.03 μM	\	4
Rox-DNA-CdZnTeS QDs	0.33-5.0 μM 2-100 μM	0.042 μM	\	5
Au NCs@FGO	1-10 mM	0.16 mM	Directly detect H_2O_2	Our work

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