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Supplementary Information

A label-free visual platform for self-correcting logic gate construction and sensitive biosensing based on enzyme-mimetic coordination polymer nanoparticles

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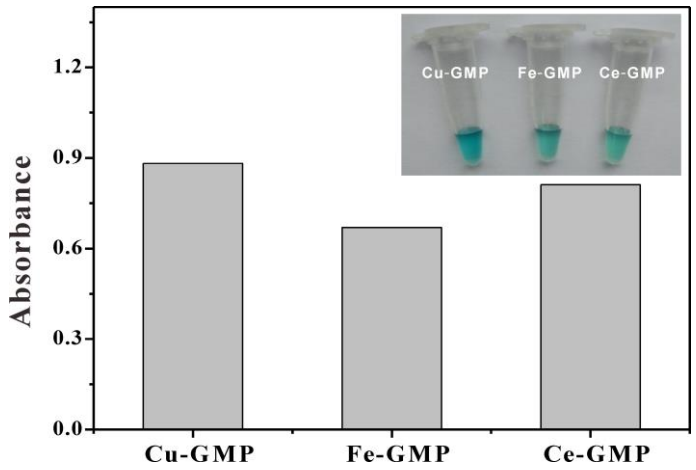


Fig. S1. Absorbance at 652 nm of H_2O_2-TMB system in the presence of different metal-GMP CPNs in Tris-HCl (pH 4.0); inset shows the photographs of the corresponding reaction solution.

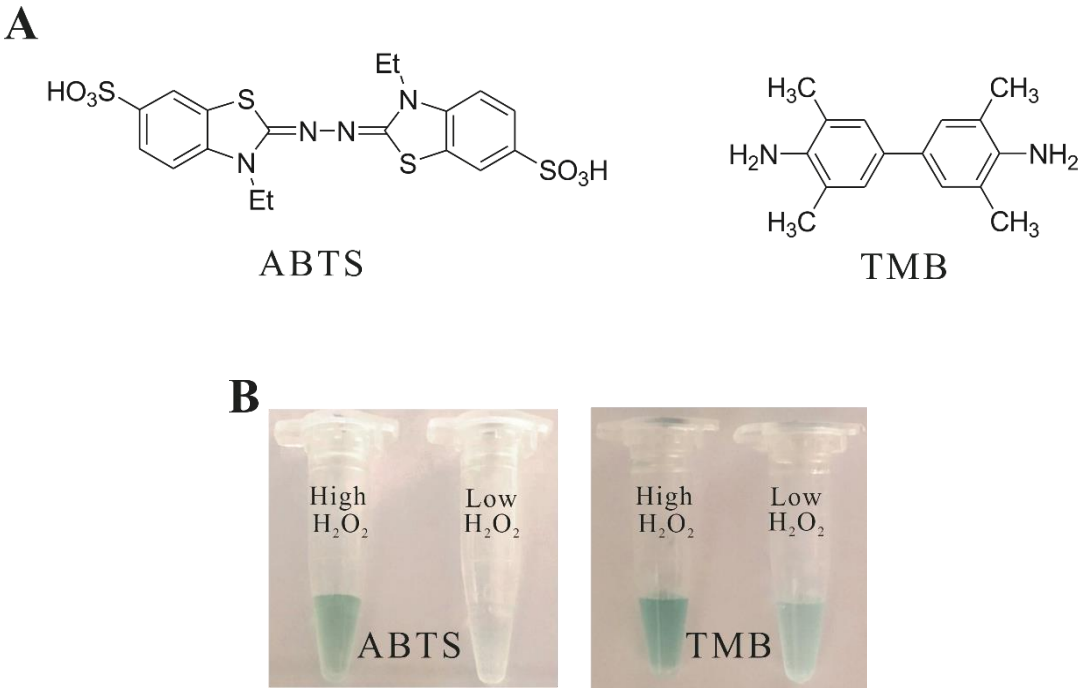


Fig. S2. (A) The chemical structures of 2,2′-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) and 3,3′,5,5′-tetramethyl-benzidine (TMB). (B) Photographs of Cu-GMP CPNs-catalyzed reaction products using different substrates (TMB and ABTS) in the presence of 100 μM (high) and 10 μM (low) H_2O_2, respectively.

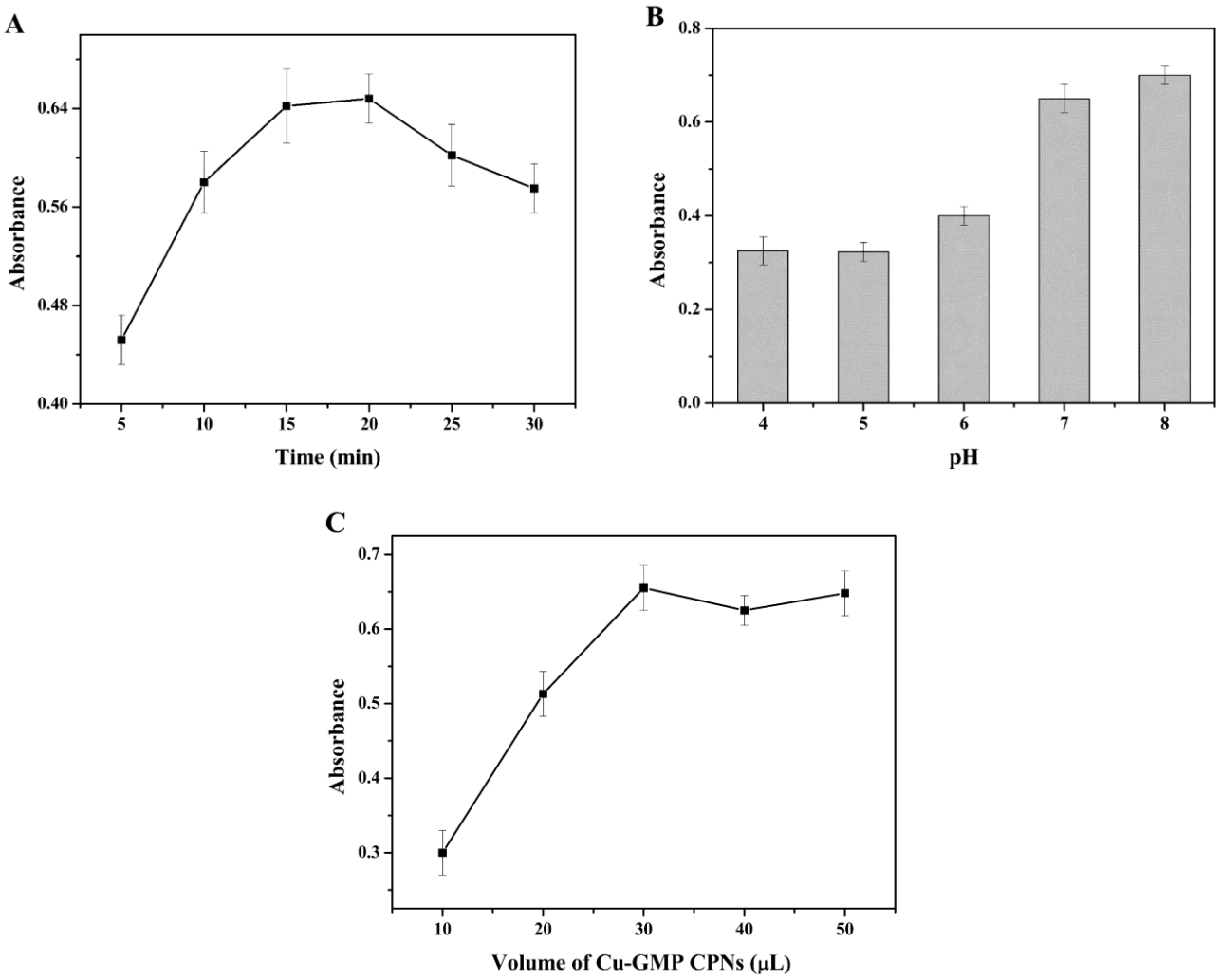


Fig. S3. Absorbance at 652 nm versus the reaction time (A), under different pH (B), and versus the volume of Cu-GMP CPNs stock solution (C). The error bars represent the standard deviation of three repetitive measurements.

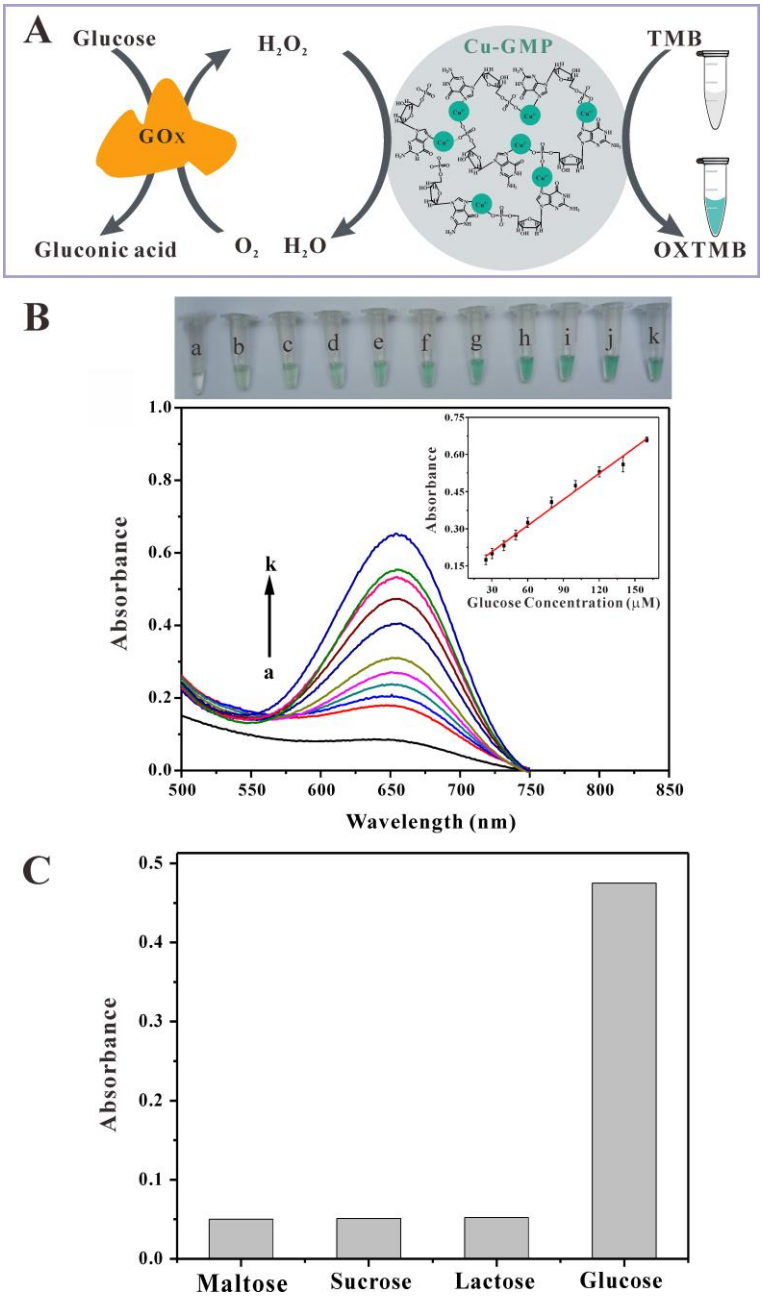
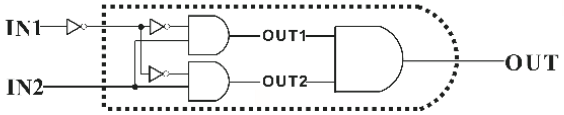


Fig. S4. (A) Schematic illustration of the principle of the colorimetric assay for glucose. (B) Photographs and UV−vis absorption spectra of the reaction system in the presence of glucose with different concentrations: (a) 0, (b) 25, (c) 30, (d) 40, (e) 50, (f) 60, (g) 80, (h) 100, (i) 120, (j) 140 and (k) 160 μM. Inset shows the linear relationship between the absorbance at 652 nm and the glucose concentration ranging from 25 to 160 μM. (C) Comparison of the absorbance at 652 nm of the sensing platform in the presence of glucose, maltose, sucrose and lactose, respectively, whose concentrations were all 100 μM. The error bars represent the standard deviation of three repetitive measurements.

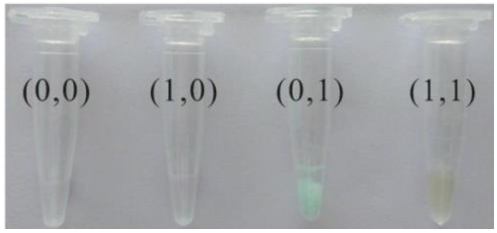
A

System	Inputs		Intermediate Outputs		Final Output
	IN1 (L-Cysteine)	IN2 (Cu^{2+})	OUT1 (Precipitate)	OUT2 (Blue Color)	OUT
GMP	0	0	0	0	0
	1	0	0	0	0
	0	1	1	1	1
	1	1	0	0	0



INHIBIT

B



C

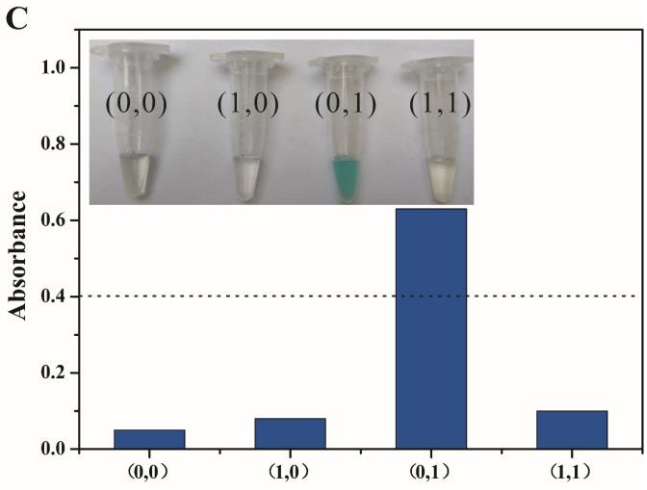
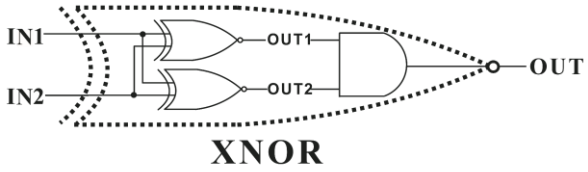


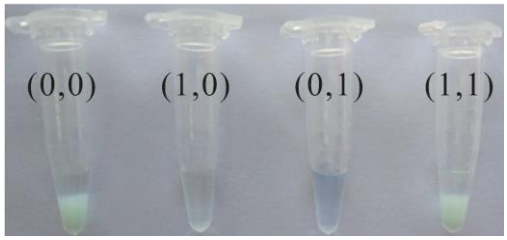
Fig. S5. INHIBIT logic gate: (A) truth table and logic symbol, (B) photographs indicating the precipitate formation, and (C) UV-vis responses and photographs indicating the color changes.

A

System	Inputs		Intermediate Outputs		Final Output
	IN1 (HCl)	IN2 (NaOH)	OUT1 (Precipitate)	OUT2 (Blue Color)	OUT
Cu-GMP	0	0	1	1	1
	1	0	0	0	0
	0	1	0	0	0
	1	1	1	1	1



B



C

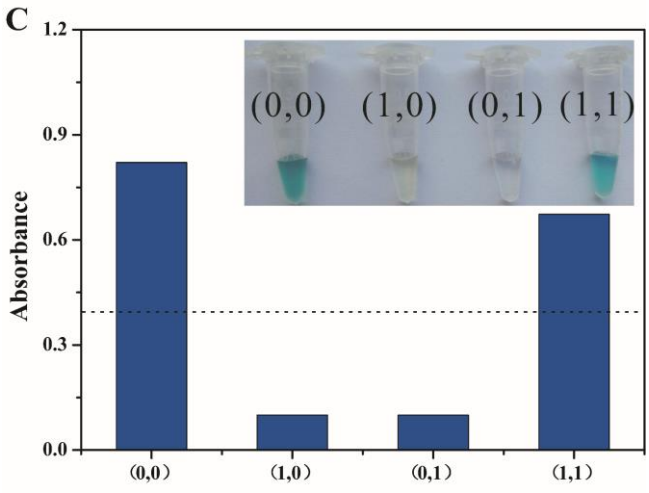


Fig. S6. XNOR logic gate: (A) truth table and logic symbol, (B) photographs indicating the precipitate formation, and (C) UV-vis responses and photographs indicating the color changes.