Electronic Supplementary Material

Colorimetric detection of glucose by the hybrid nanomaterial based on amplified peroxidase-like activity of ferrosoferric oxide modified with gold-platinum heterodimer

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Fig. S1. The zeta potential of Fe_3O_4 NPs and the Fe_3O_4@Au-Pt hybrid nanomaterial in acetate buffer solutions,

Fig. S2. Magnetization curves of Fe_3O_4 NPs and the Fe_3O_4@Au-Pt hybrid nanomaterial.

Fig. S3. Cyclic voltammetry curves of electrodes in acetate buffer solution (pH 4.0, 0.2 mM KCl) containing 1 mM TMB and 2.5 μM H_2O_2, using a scan rate of 100 mV s^{-1}. (a) GCE electrode; (b) Fe_3O_4@Au-Pt/ GCE electrode.

Fig. S4. (a) Dependence of absorbance at 652 nm on H_2O_2 concentration. (b) The corresponding linear calibration plot. The error bars symbolize the standard deviation of three surveys.

Fig. S1.

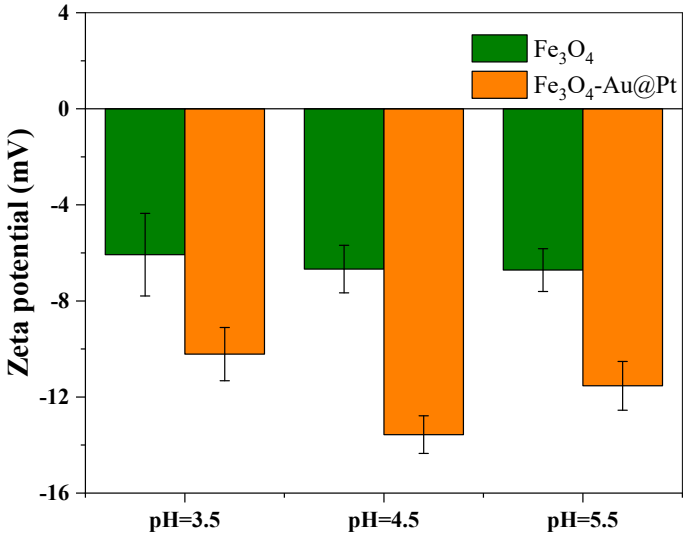

Fig. S2.

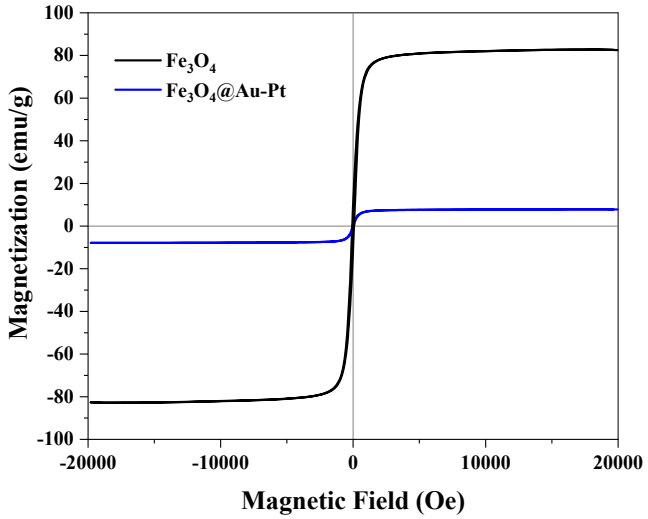
Fe3O4
Fe3O4@Au-Pt
Magnetization (emu/g)
Magnetic Field (Oe)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-20000
-10000
0
10000
20000

Fig. S3.

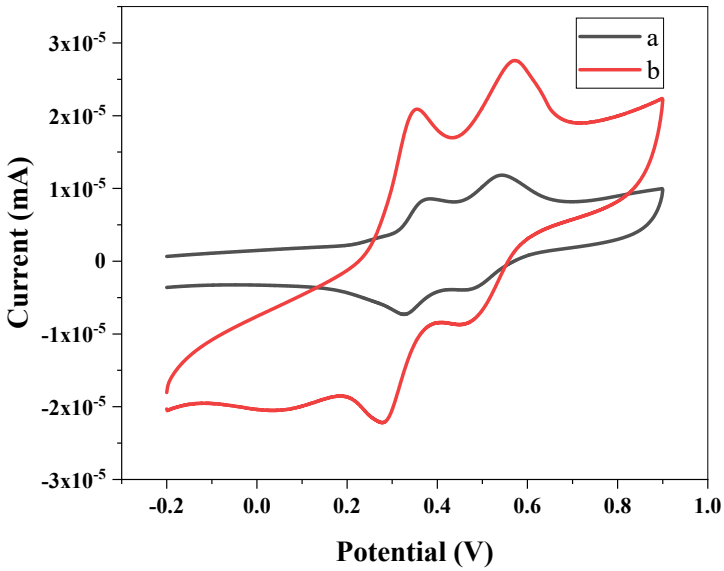
a
b
Current (mA)
Potential (V)
3x10-5
2x10-5
1x10-5
0
-1x10-5
-2x10-5
-3x10-5
-0.2
0.0
0.2
0.4
0.6
0.8
1.0

Fig. S4.

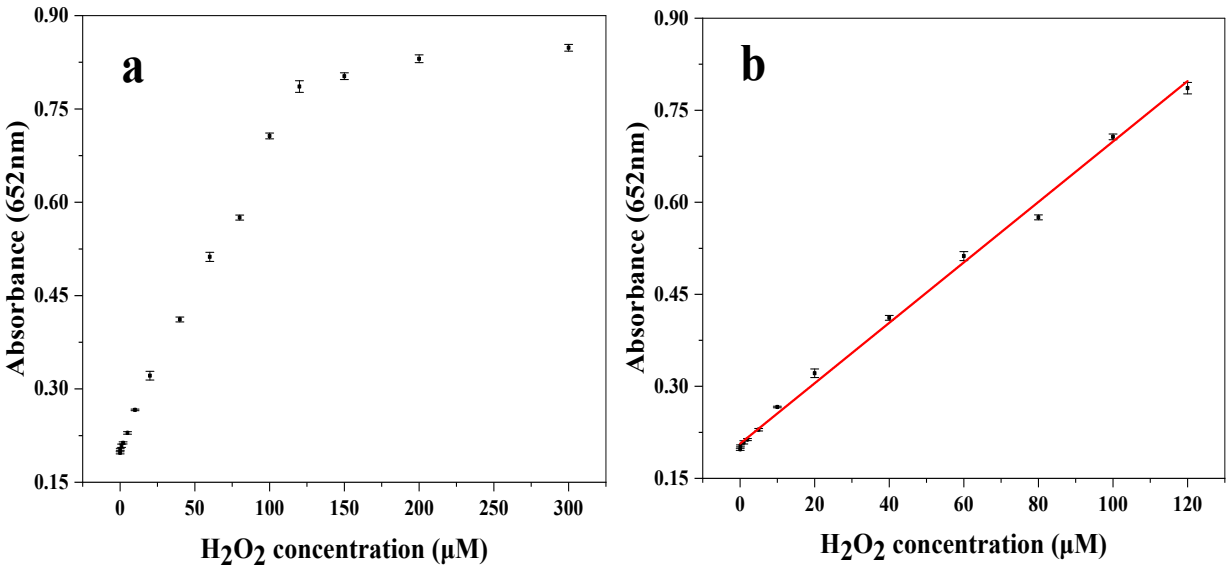

Table S1. The atomic percentage of different element in the Fe_3O_4@Au-Pt hybrid nanomaterial.

Element name	Fe 2p	O 1s	C 1s	Au 4f	Pt 4f
Atomic %	20.91	46.52	24.34	6.83	1.39

Table S2. Different chemical agents added to four different reaction systems.

Chemical agents	a	b	c	d
Fe_3O_4@Au-Pt	√		√	
H_2O_2	√	√		
TMB	√	√	√	√
HAc-NaAc buffer	√	√	√	√

Table S3. Comparison of the linear range and the limit of detection for H_2O_2 detection by different nanozyme catalysts.

Nanozyme	Linear range (μM)	LOD (μM)	Ref
Fe-Ag_2S	10-150	7.82	[66]
Fe_3O_4@C/Ni nanotubes	1-50	0.048	[67]
FeS_2@C NSs	0.5-40	0.17	[68]
Pal@Co_3O_4	1-60	0.70	[69]
0.15Fe-CoO NCs	6-20	4.40	[70]
Fe_3O_4@CP	0.2-300	0.11	[71]
Fe_3O_4@Au-Pt	0.05-120	0.018	this work