Electronic Supplementary Material (ESI) for Analytical Methods.


# A dual-mechanism-driven electrochemiluminescence aptasensor for sensitive detection of *β*-amyloid peptide

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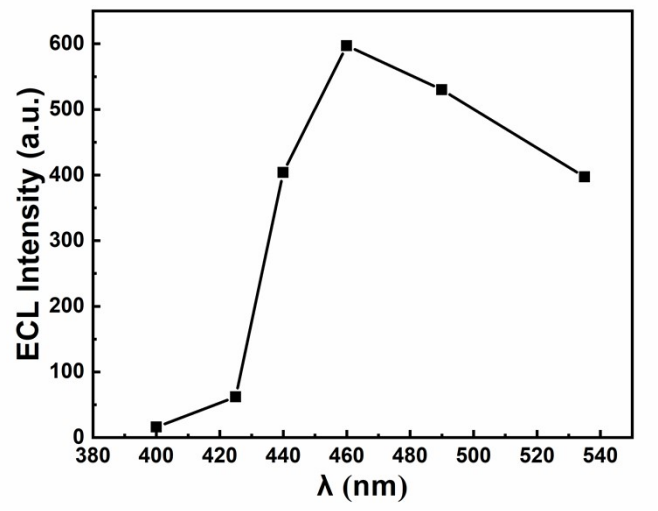


**Fig. S1.** ECL spectrum of heme-$Cu^{2+}$-A$\beta$/aptamer/BSA/-g-$C_3N_4$ in PBS buffer (0.1 M, pH=7.4) containing 0.1 M $K_2S_2O_8$ solution.

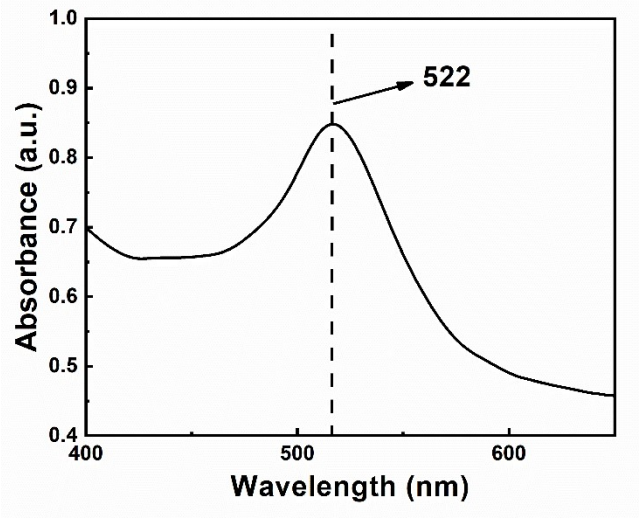


**Fig. S2.** UV−visible spectrum of the Au NPs

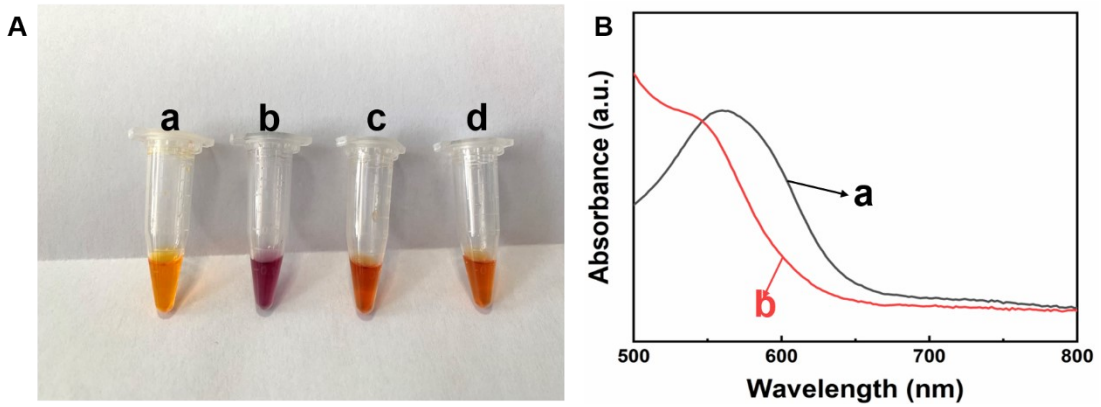


**Fig. S3.** (A) Photographic images of xyenol solution in the absence of $H_2O_2$ (a) and in the presence of $H_2O_2$ (10 mM) (b), $H_2O_2$ (0.2 mM) (c), and Aβ incubation with heme $Cu^{2+}$ (d), respectively. (B) UV-vis spectrum of xyenol solution in the presence of $H_2O_2$ (0.2 mM) (curve a), and Aβ incubation with heme and $Cu^{2+}$ (curve b).

***Table S1*** *Comparison of Sensing Performance of Several Aβ Sensors*

| *detection method* | *fabrication strategy* | *linear range* | *detection limit* | *reference* |
|---|---|---|---|---|
| *photoelectrochemistry* | *$Bi_2WO_6$/CdS Aβ/Mn:CdSe* | *0.2-50 ng $mL^{-1}$* | *0.068 ng $mL^{-1}$* | *1* |
| *Colorimetric assay* | *Aβ/$Cu^{2+}$/AuNPs* | *10.5-313.5 nM* | *0.6 nM* | *2* |
| *fluorescence* | *$Aβ_O$/$PrP^C$/CdTe/AuNPs* | *0.5 nM-0.1 μM* | *0.2 nM* | *3* |
| *Cyclic voltammetry* | *$Aβ_O$/ZIF-8-ferrocene* | *$10^{-5}$-$10^{2}$ μM* | *$10^{-5}$μM* | *4* |
| *ECL* | *Aβ/$Cu^{2+}$/luminol* | *0.1 pM-$10^{-2}$ μM* | *3.5× $10^{-14}$ M* | *5* |
| *ECL aptasensor* | *g-$C_3N_4$-heme-$Cu^{2+}$-Aβ* | *$10^{-13}$-$10^{-11}$ M* | *0.24 pM* | *This work* |
| | | *$10^{-11}$-$10^{-8}$ M* | | |

References


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