

# Dual-mode sensing of hydrogen peroxide on self-assembled Ag nanoparticles anchored on polydopamine wrapping 2D Cu-MOF

Tonglei Zhang,<sup>a</sup> Wanzhu Wang,<sup>a</sup> Yuyao Zou,<sup>a</sup> Lingnan Li,<sup>b</sup> Danhua Ge,<sup>\*a</sup> Xiaojun Chen<sup>\*a</sup>

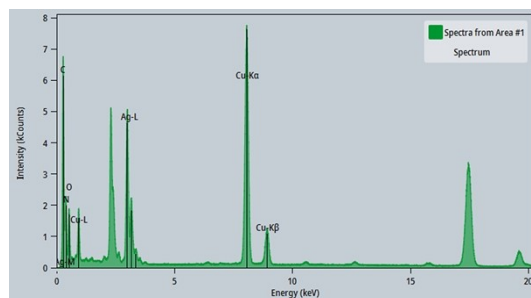


Fig. S1 EDS spectrum of Cu-MOF@PDA-Ag composite.

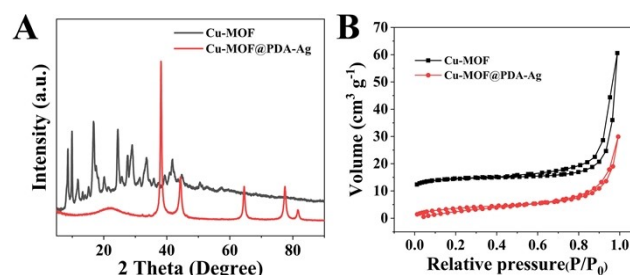


Fig. S2 (A) XRD patterns and (B) N<sub>2</sub> adsorption-desorption isotherms of Cu-MOF and Cu-MOF@PDA-Ag.

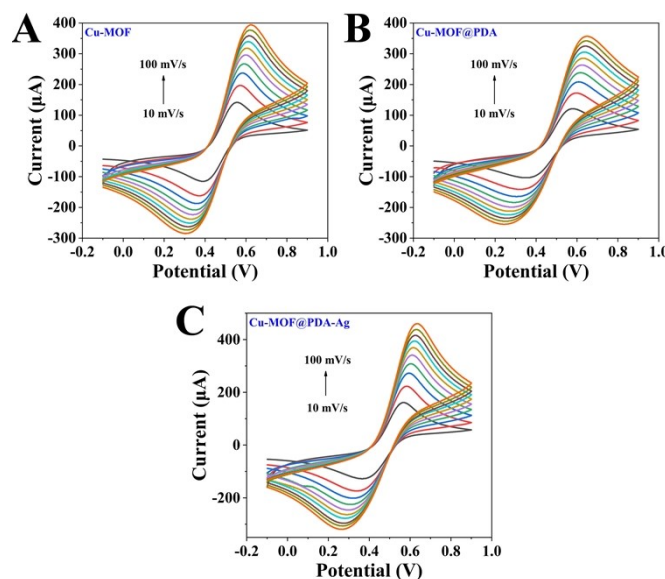
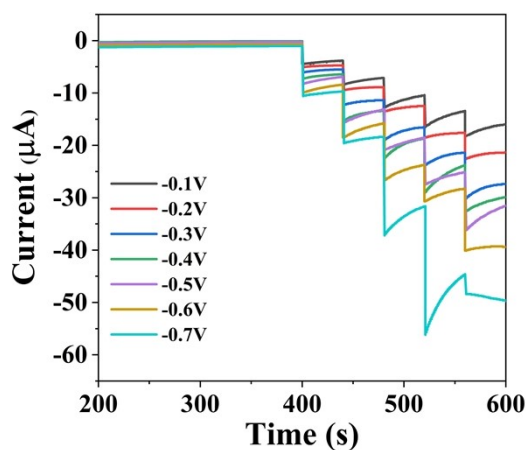


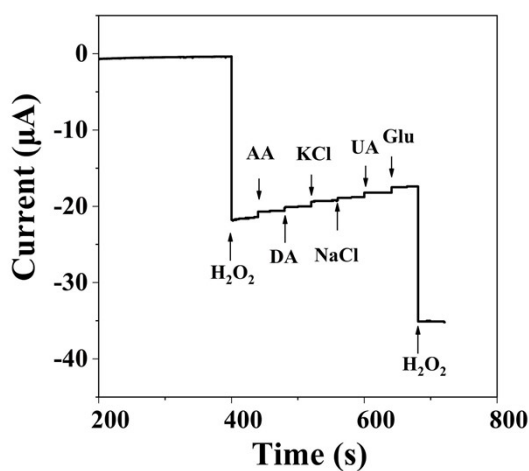
Fig. S3 The scan rate study of Cu-MOF, Cu-MOF@PDA and Cu-MOF@PDA-Ag in 0.1 M KCl solution containing 5 mM K<sub>3</sub>[Fe(CN)<sub>6</sub>].



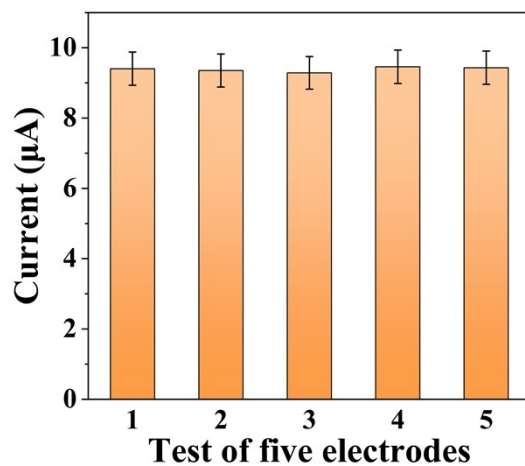
**Fig. S4** The effect of the applied potential on amperometric responses of Cu-MOF@PDA-Ag/ITO toward the successive addition of 1 mM H<sub>2</sub>O<sub>2</sub>.

**Table S1.** The comparison of seven H<sub>2</sub>O<sub>2</sub> sensors.

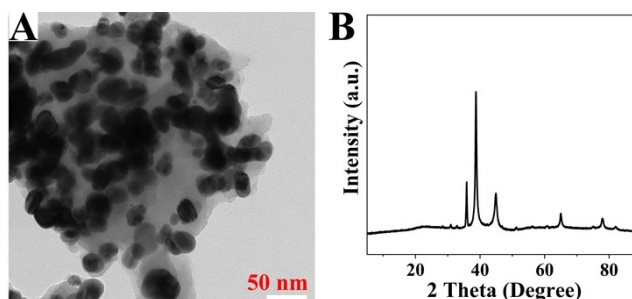
Sensors	Sensitivity ( $\mu\text{A mM}^{-1} \text{cm}^{-2}$ )	Detection limit ( $\mu\text{M}$ )	Linear range (mM)	Ref.
FeOOH/Ag/PGE	8.07	22.8	0.03–15	1
FeOOH@/PDA-Ag/GCE	11.8	2.5	0.0075–18.8	2
Cu <sub>2</sub> O/GNs/GCE	-	20.8	0.3-7.8	3
Cu <sub>2</sub> O-rGO <sub>pa</sub> /GCE	20.7	21.7	0.03-12.80	4
<b>Cu-MOF@PDA-Ag/ITO</b>	<b>103.7</b>	<b>2.3</b>	<b>0.001-35</b>	<b>This work</b>



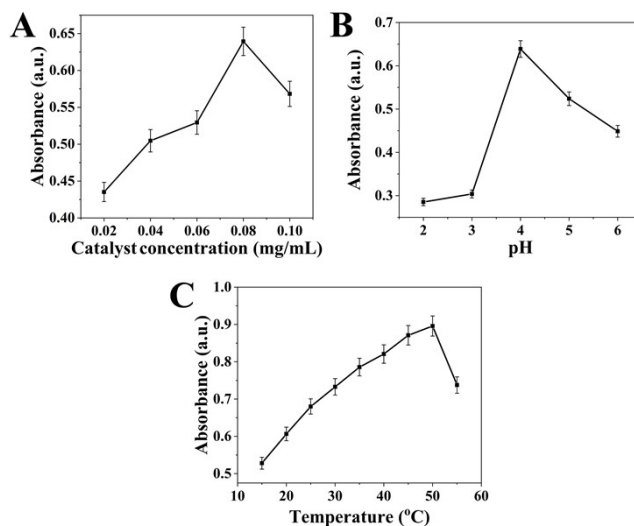
**Fig. S5** Amperometric responses of Cu-MOF@PDA-Ag/ITO toward the addition of 2 mM H<sub>2</sub>O<sub>2</sub> and interferences of UA, AA, DA, KCl, NaCl and Glu.



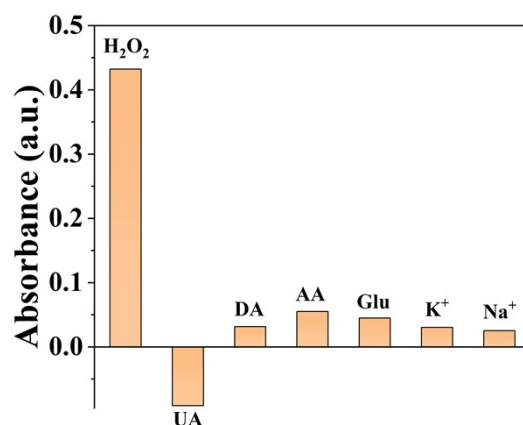
**Fig. S6** The reproducibility of Cu-MOF@PDA-Ag/ITO.



**Fig. S7** (A) TEM image and (B) XRD pattern of Cu-MOF@PDA-Ag after electrocatalysis.



**Fig. S8** The influences of (A) Cu-MOF@PDA-Ag concentrations, (B) pH values and (C) temperatures on the absorbance of oxTMB at 652 nm.



**Fig. S9** The Selectivity of Cu-MOF@PDA-Ag for 0.5 mM H<sub>2</sub>O<sub>2</sub> in comparison with 5 mM of UA, DA, AA, Glu, K<sup>+</sup> and Na<sup>+</sup>, respectively.

#### Reference

- [1] J. Zhang, J. B. Zheng, *Anal. Methods*, **2015**, 7, 1788-1793.
- [2] N. Zhang, Q. Sheng, Y. Zhou, S. Dong, J. Zheng, *J Electroanal. Chem.*, **2016**, 781, 315-321.
- [3] M. Liu, R. Liu, W. Chen, *Biosens. Bioelectron.*, **2013**, 45, 206-212.
- [4] F. Xu, M. Deng, G. Li, S. Chen, L. Wang, *Electrochim. Acta*, **2013**, 88, 59-65.