Electronic Supplementary Material (ESI) for Analyst.

Supporting information

Nanozyme catalysis based ratiometric electrochemical sensor for generally applicable detection of Cd^{2+}

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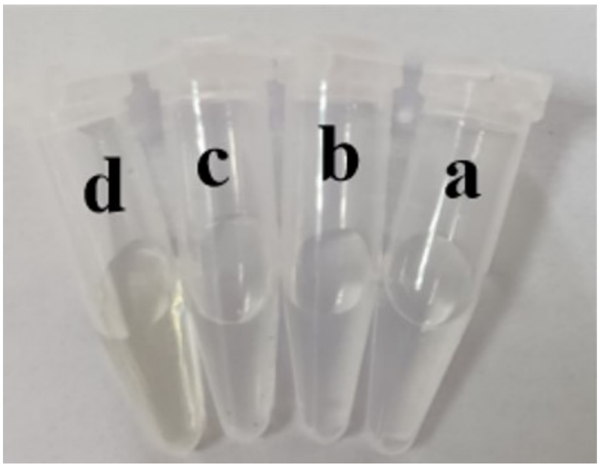

Fig. S1 The optical photograph of OPD (a), OPD + H_2O_2 (b), OPD + H_2O_2 + rGO (c), and OPD + H_2O_2 + AuPt-rGO (d). (0.05 mol·L^{-1} N_2-saturated Tris-HCl buffer solution (pH 7.5), OPD (10 mmol·L^{-1}), H_2O_2 (10 mmol·L^{-1})).

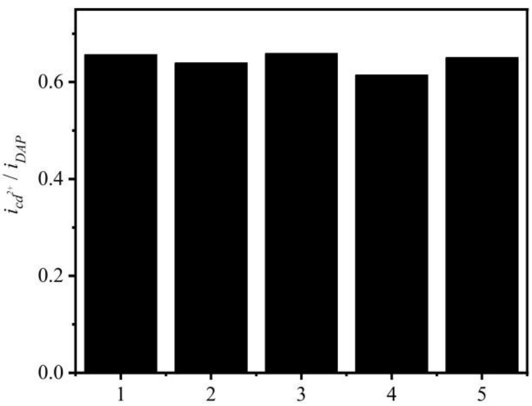

Fig. S2 The reproducibility of AuPt-rGO/GCE.

Table S1 Comparison the electrochemical abilities between AuPt-rGO/GCE and other sensors for Cd^{2+} detection.

Electrochemical sensors	Method	Linear range (μmol/L)	LOD (nmol/L)	References
CS/AuNPs/GR/GCE	DPV	0.1–0.9	0.162	[1]
Co_3O_4/GO/Nafion/GCE	DPASV	1.4–6.4	57	[2]
NCQDs-GO/GCE	ASV	0.1–100	66.3	[3]
CNT-SO_3H/RhB-LB/GCE	SWASV	0.1–1.2	80	[4]
g-C_3N_4 nanosheet/GCE	SWASV	0.05–0.7	3.97	[5]
trGNO/Fc-NH_2-UiO-66/GCE	DPASV	0.01–2	8.5	[6]
polyPCA/GE	SWASV	0.36–8.9	137	[7]
NCO/N, S-rGO/GCE	DPASV	0.3–3.0	123	[8]
BOC/GCE	DPASV	0.089–0.44	37.7	[9]
AuPt-rGO/GCE	DPV	0.05–100	31	This work

References

[1] S. Wu, K. Li, X. Dai, Z. Zhang, F. Ding, S. Li, *Microchem. J.*, **2020**, 155, 104710.

[2] Y. Hao, C. Zhang, W. Wang, J. Wang, S. Chen, H, Xu, S. Zhuiykov, *J. Electrochem. Soc.*, **2021**, 168, 083503.

[3] L. Li, D. Liu, A. Shi, Sens. *Actuators B-Chem.*, **2018**, 255, 1762-1770.

[4] K. Chen, J. Li, L. Zhang, R. Xing, T. Jiao, F. Gao and Q. Peng, *Nanotechnology*, **2018**, 29, 445603.

[5] Y. Liu, G. L. Wen, X. Chen, R. Weerasooriya, Z. Y. Hong, L. C. Wang, Z. J. Huang, Y. C. Wu, *Anal. Bioanal. Chem.*, **2020**, 412, 343-353.

[6] X. Wang, Y. Qi, Y. Shen, Y. Yuan, L. Zhang, C. Zhang, Y. Sun, *Sens. Actuators B-Chem.*, **2020**, 310, 127765.

[7] T. M. Lima, P. I. Soares, L. A. Do Nascimento, D. L. Franco, A. C. Pereira, L. F. Ferreira, *Microchem. J.*, **2021**, 168, 106406.

[8] J. Pang, H. Fu, W. Kong, R. Jiang, J. Ye, Z. Zhao, J. Hou, K. Sun, Y. Zheng, L. Chen, *Chem. Eng. J.*, **2022**, 433, 133854.

[9] Y. Zhang, C. Li, Y. Su, W. Mu, X. Han, *Inorg. Chem. Commun.*, **2020**, 111, 107672.

Table S2 Determination of Cd^{2+} in different real samples.

Samples	Added (μmol/L)	Found[a] (μmol/L)	Recovery (%)	RSD (%)
Wastewater 1	5.0	4.96	99.41	3.26
	10.0	9.56	95.71	1.32
Wastewater 2	5.0	4.92	98.63	3.44
	10.0	10.48	104.87	2.09
Yangtze River water	5.0	4.82	96.59	3.36
	10.0	10.01	100.19	3.27
Huajin Lake water	5.0	4.84	96.89	1.60
	10.0	10.49	104.80	2.02
Tap water	5.0	4.85	97.18	3.39
	10.0	9.87	98.76	2.93
Mineral water	5.0	4.79	96.01	3.21
	10.0	10.21	102.23	3.95

[a] Average value of three determinations.