

A Sensitive Electrochemical Sensor for Direct Determination of Phoxim in Food Samples Based on Electrodeposition of Reduced Graphene Oxide-Gold Nanocomposite on Glass Carbon Electrode

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Supplementary Materials

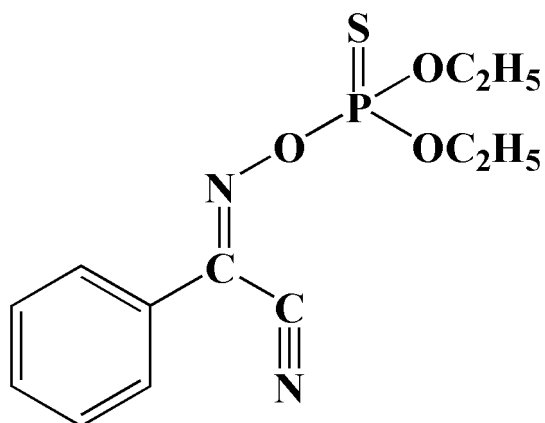


Figure S1. Molecular formula of phoxim.

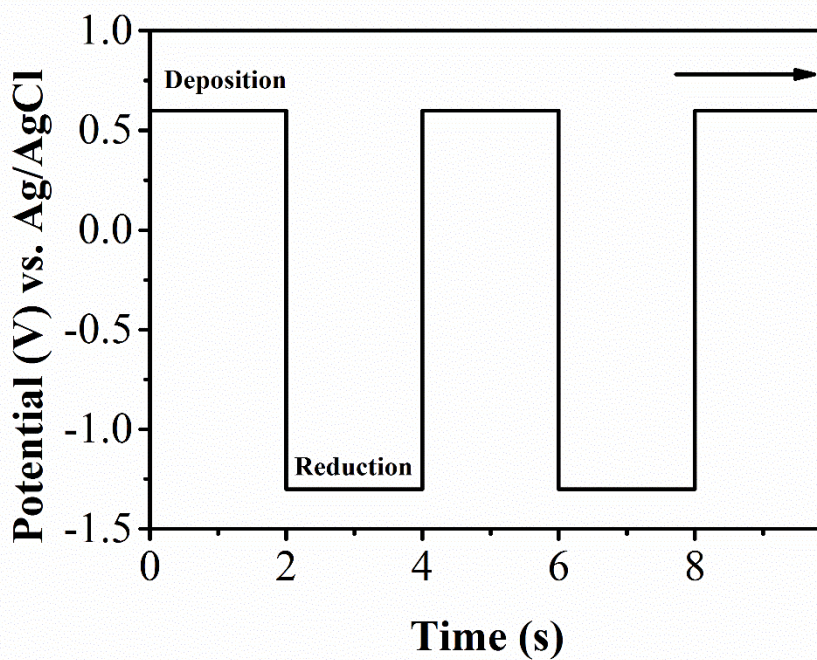


Figure S2. Pulsed electrodeposition mode for the deposition of RGO on GCE.

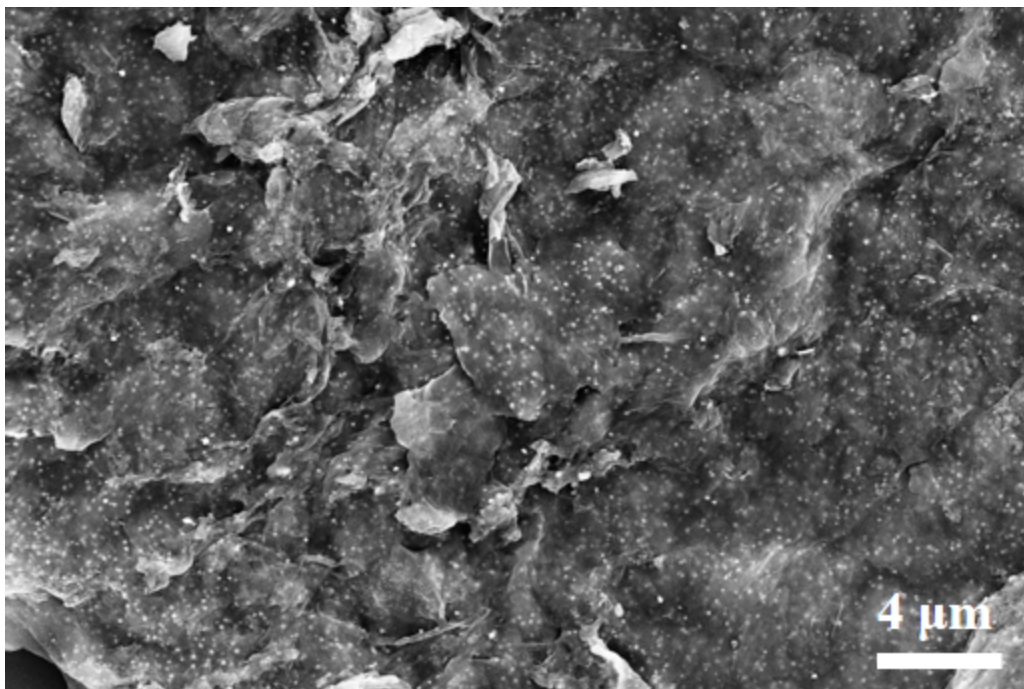


Figure S3. SEM image of RGO/Au nanocomposite with lower magnification.

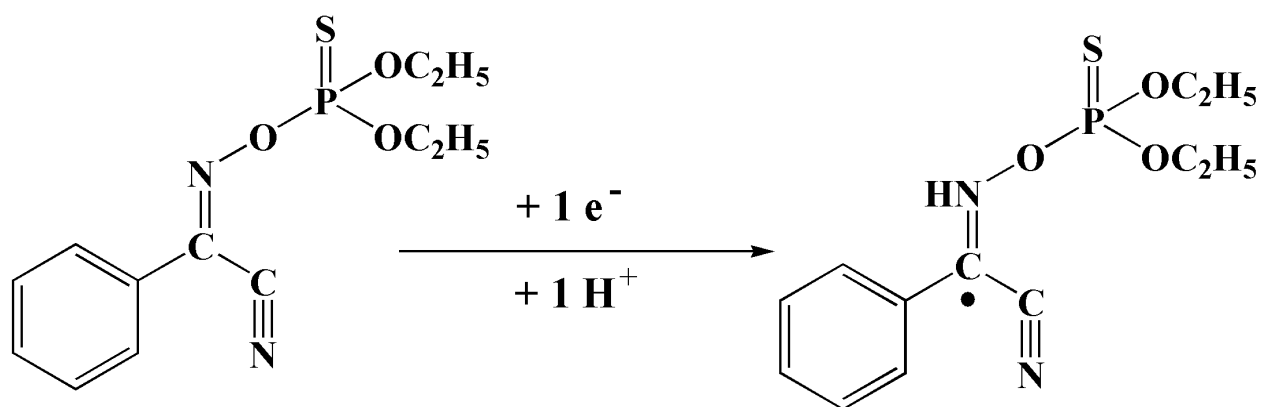


Figure S4. A possible electrochemical reaction mechanism of phoxim at the RGO/Au/GCE.

Table S1. Comparison of the analytical performance of RGO/Au/GCE with previously reported phoxim determination method.

Method	LOD (μM)	Linear range (μM)	Reference
AChE/ZrO ₂ /CHIT/GCE	1.3	6.6-440	1
Graphene/GCE	0.008	0.02-2	2
P3MT/NGE/GCE	0.0064	0.2–2.0	3
RGO/Au/GCE	0.003	0.01–10	This work

Table S2. Summary of interference study of phoxim determination using RGO/Au/GCE.

Interference species	RSD(%)	Interference species	RSD(%)
Na ⁺	0.66	Ascorbic acid	4.18
Zn ²⁺	1.20	Uric acid	2.01
Fe ³⁺	3.66	Malathion	1.45
Ca ²⁺	1.02	Methyl isofenphos	0.86
K ⁺	0.56	Thimet	1.44
Mg ²⁺	0.22	Methamidophos	2.09
Glutamic acid	1.45	Parathion	4.33
Glucose	3.02	Methyl parathion	4.57

1. Y. Yang, M. Guo, M. Yang, Z. Wang, G. Shen and R. Yu, *International Journal of Environmental Analytical Chemistry*, 2005, **85**, 163-175.
2. M. Chao and M. Chen, *Food Anal. Methods*, 2014, **7**, 1729-1736.
3. L. Wu, W. Lei, Z. Han, Y. Zhang, M. Xia and Q. Hao, *Sensors and Actuators B: Chemical*, 2015, **206**, 495-501.