Electronic supplementary information

A simple electrochemical sensor based on rGO/MoS$_2$/CS modified GCE for highly sensitive detection of Pb(II) in tobacco leaves

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Fig. S1. FT-IR Spectra of (a) GO, (b) rGO/MoS$_2$ and (c) rGO/MoS$_2$/CS
Fig. S2. The voltammetric response of the nanocomposite-modified GCE with various CS content (a) and the ratio of MoS$_2$ to rGO (b) for 0.50 μM of Pb(II) in 0.10 M HAc–NaAc.
Fig. S3. Optimization of electrode operating conditions for detecting 0.50 μM of Pb(II) in 0.10 M HAc–NaAc; (a) pH; (b) deposition potential and (c) deposition time
Table S1. Comparison of the analytical performance for the analysis of Pb(II) at different electrodes

| Electrode             | Technique | Linear range (μM) | LOD (μM) | Reference |
|-----------------------|-----------|-------------------|----------|-----------|
| [Ru(bpy)_3]^2+/GO     | DPV       | 0.1–1.2           | 0.0016   | [1]       |
| C_{60}-CS             | DPASV     | 0.005–6.0         | 0.001    | [2]       |
| N-doped graphene      | DPASV     | 0.07–9.0          | 0.05     | [3]       |
| ZIF-8/CS              | DPASV     | 1.0–100           | 0.062    | [4]       |
| MnFe_2O_4/GO          | SWASV     | 0.2–1.1           | 0.0883   | [5]       |
| Fe_3O_4/CS            | SWASV     | 0.4–1.4           | 0.0422   | [6]       |
| rGO/Fe_3O_4           | SWASV     | 0.4–1.5           | 0.169    | [7]       |
| MoS_2/rGO             | SWASV     | 0.05–0.7          | 0.005    | [8]       |
| rGO/MoS_2/CS          | SWASV     | 0.005–2.0         | 0.0016   | This work |
Reference

[1] M. B. Gumpu, M. Veerapandian, U. M. Krishnan, and J. B. B. Rayappan, Talanta, 2017, **162**, 574-5822.
[2] X. Han, Z. Meng, H. Zhang, and J. Zheng, *Microchim. Acta*, 2018, **185(5)**, 274.
[3] H. Xing, J. Xu, X. Zhu, X. Duan, L. Lu, W. Wang, and T. Yang, *J. Electroanal. Chem.*, 2016, **760**, 52-58.
[4] Y. Chu, F. Gao, F. Gao, and Q. Wang, *J. Electroanal. Chem.*, 2019, **835**, 293-300.
[5] S. F. Zhou, X. J. Han, H. L. Fan, J. Huang, and Y. Q. Liu, *J. Alloys Compd.*, 2018, **747**, 447-454.
[6] S. F. Zhou, X. J. Han, and Y. Q. Liu, *J. Alloys Compd.*, 2016, **684**, 1-7.
[7] Y. Sun, W. Zhang, H. Yu, C. Hou, D. S. Li, Y. Zhang, and Y. Liu, *J. Alloys Compd.*, 2015, **638**, 182-187.
[8] Y. F. Sun, J. H. Sun, J. Wang, Z. X. Pi, L. C. Wang, M. Yang, and X. J. Huang, *Anal. Chim. Acta*, 2019, **1063**, 64-74.