

Supplementary Information

Electrochemical analysis of acetaminophen in commercial tablets using bimetallic **FeP/NiP** nanosheets

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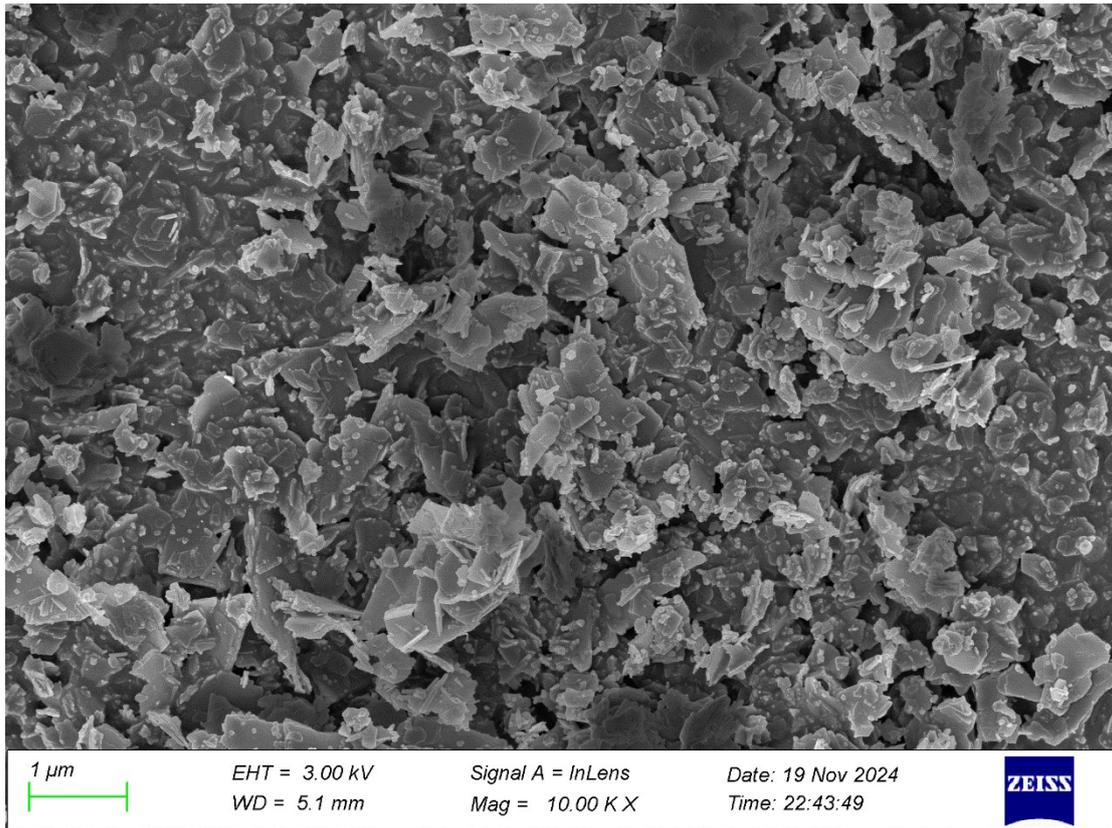


Figure S1 SEM image of **FeP/NiP** nanosheets precursor

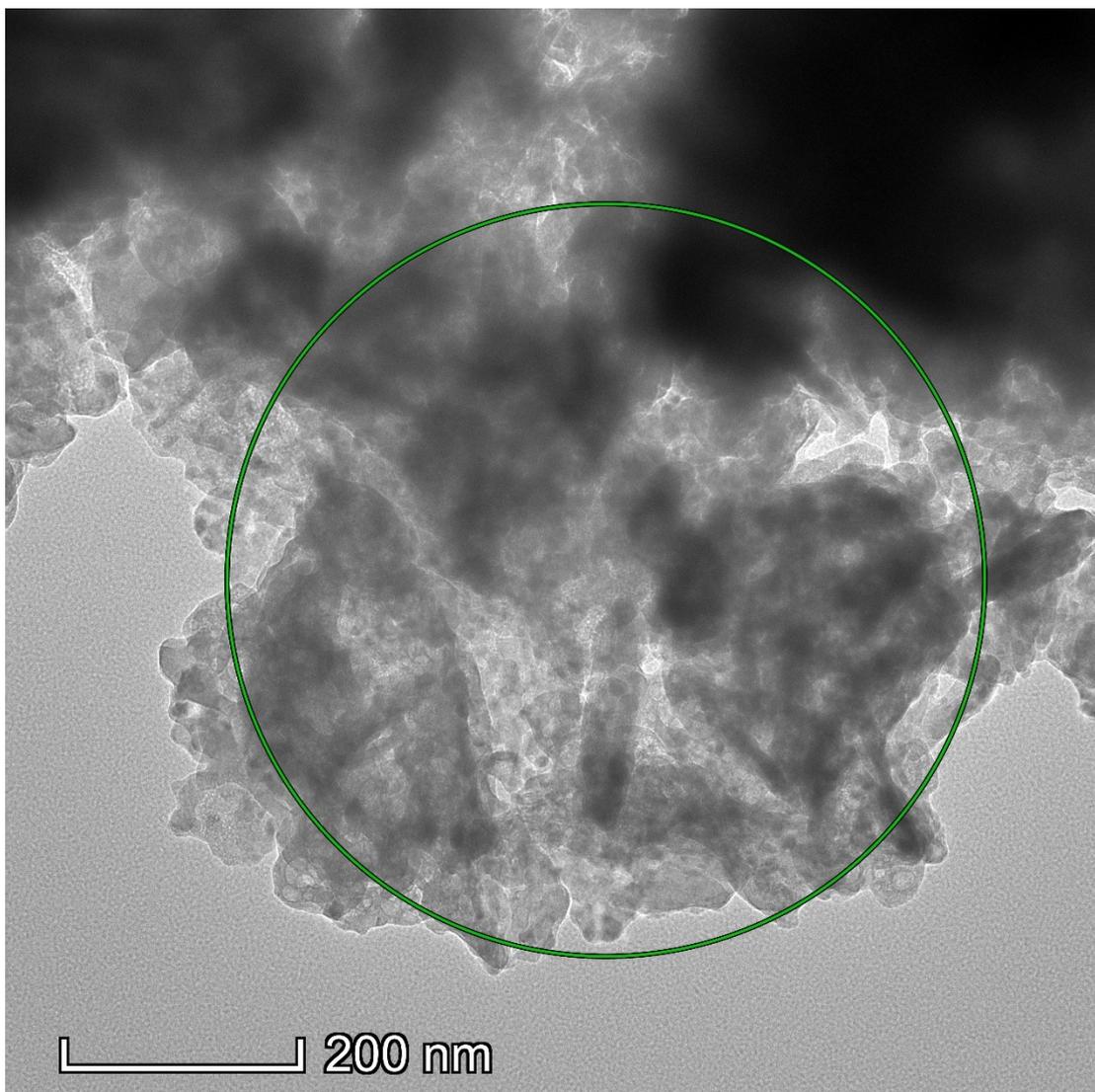


Figure S2 SAED electron diffraction pattern of **FeP/NiP** nanosheets

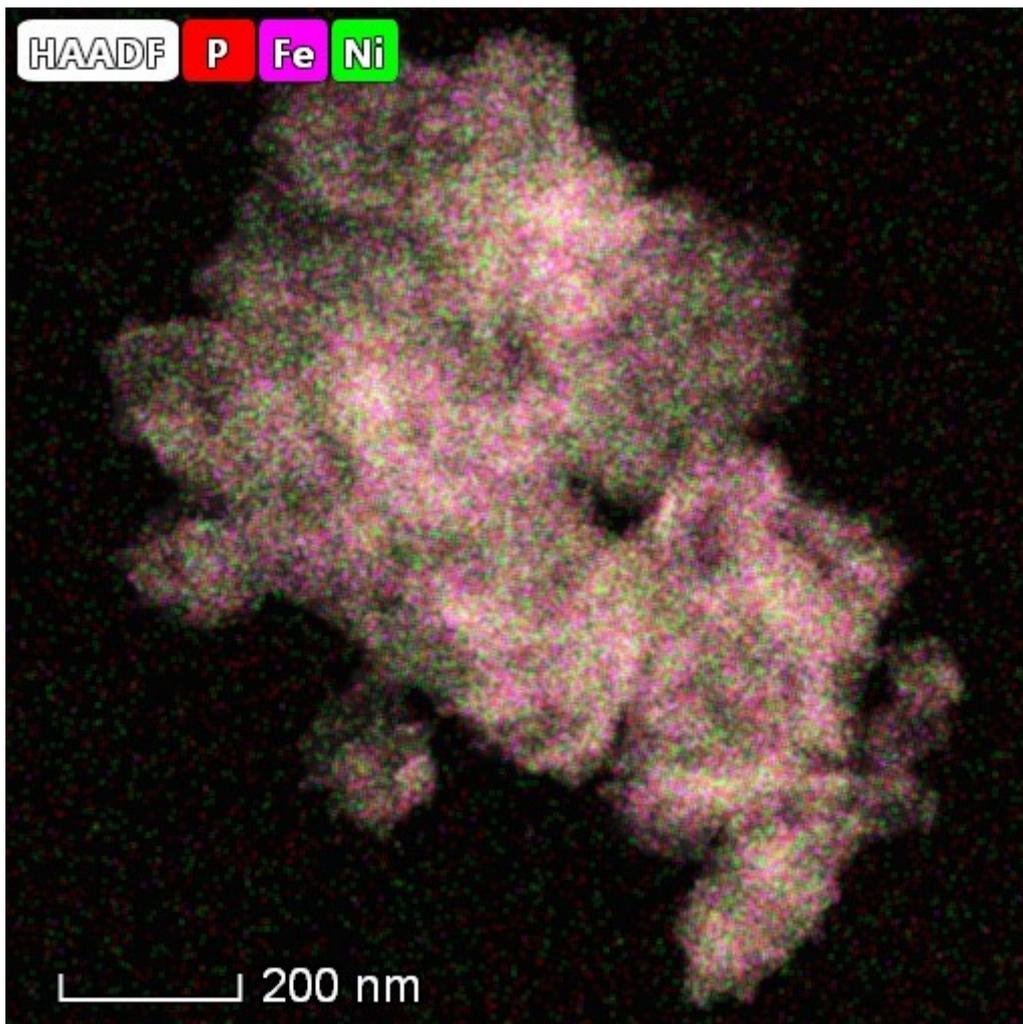


Figure S3 Elemental mapping images of **FeP/NiP** nanosheets

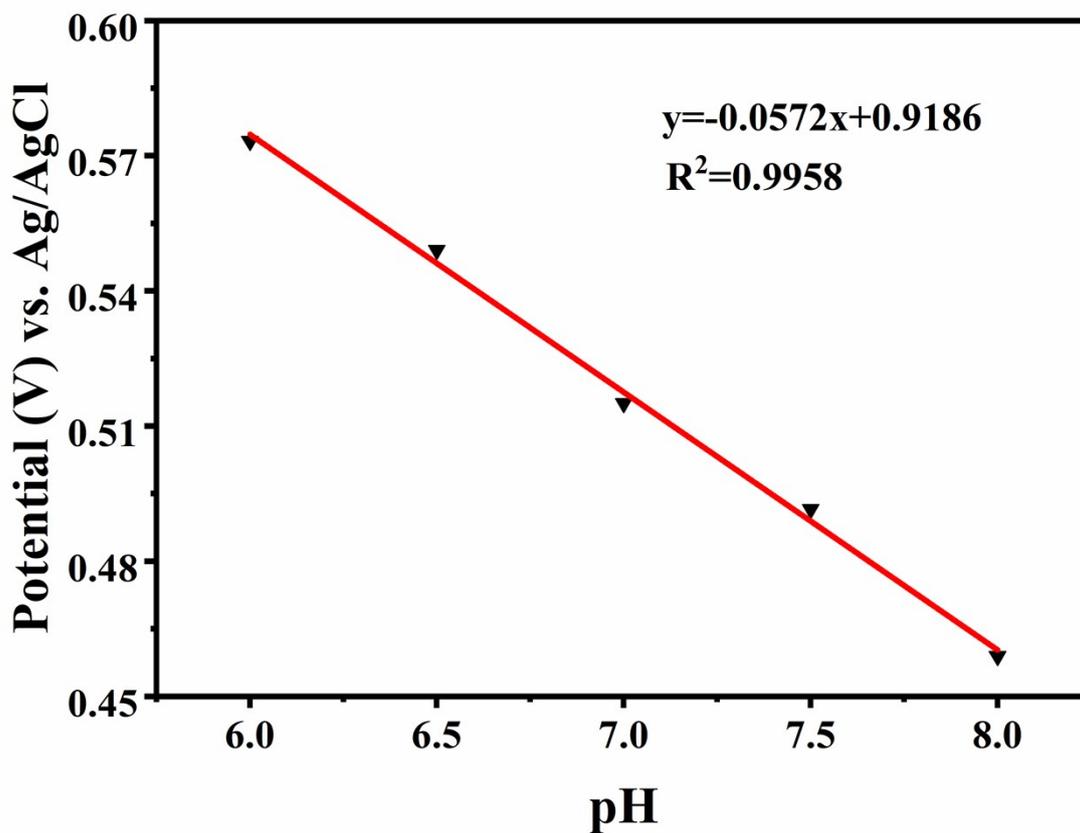


Figure S4 Calibration curve of pH and potential

Randles–Sevcik equation:

$$I_p = 2.69 \times 10^5 n^{\frac{3}{2}} A D^{\frac{1}{2}} v^{\frac{1}{2}} C$$

Laviron equation:

$$E_{pa} = E^{\circ} + \frac{2.3RT}{(1-\alpha)nF} \log v \quad (1)$$

$$E_{pc} = E^{\circ} - \frac{2.3RT}{\alpha nF} \log v \quad (2)$$

$$\log k_s = \alpha \log (1 - \alpha) + (1 - \alpha) \log \alpha - \log \left(\frac{RT}{nFv} \right) - \frac{(1 - \alpha) \alpha nF \Delta E}{2.3RT}$$

(3)

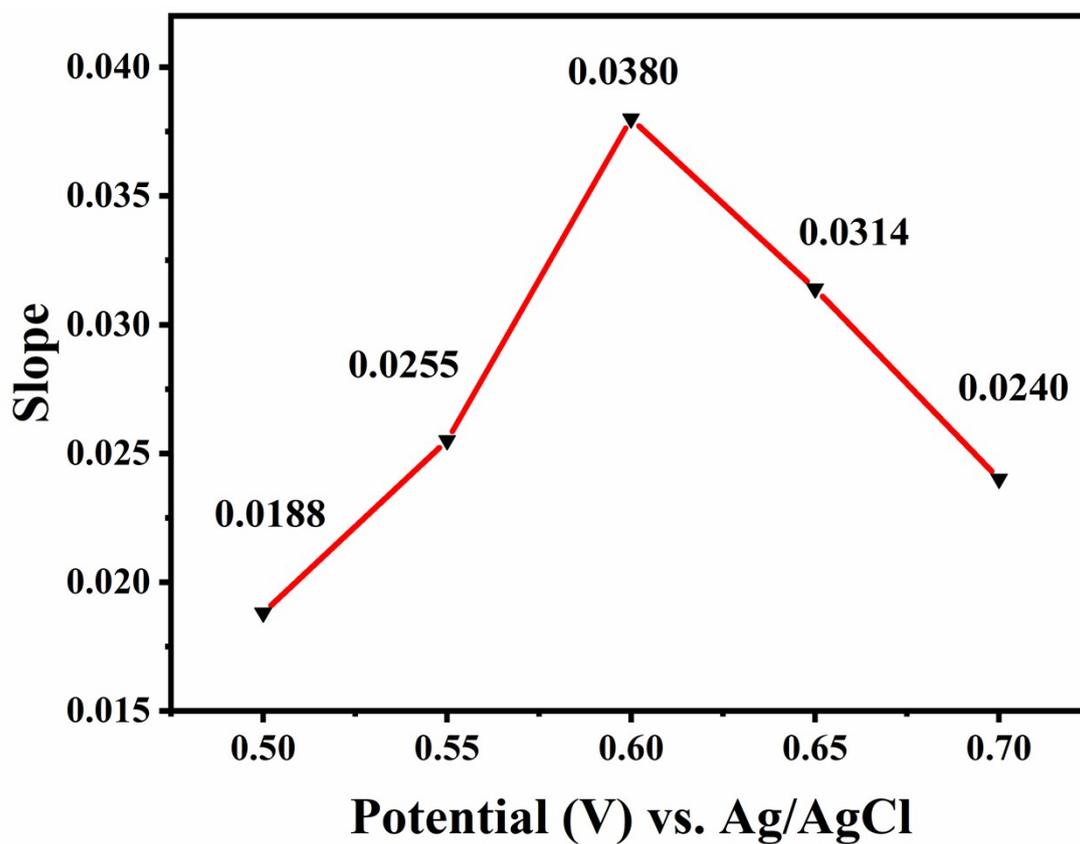


Figure S5 The relationship diagram between slope of fitting curve and potential

Table S1 Performance comparison of electrochemical
AP sensors based on different electrode materials

Electrodes	Linear range (μM)	Detection limit (μM)	Refs
ZnCo ₂ O ₄ @NC/GCE	8–520	0.0608	1
S-CTFs@NiCo ₂ O ₄ /GCE	2–360	0.35	2
Ag-ZIF-67/GCE	0.1–70	0.04	3
FeCo@C/GCE	0.001–0.8	0.00059	4
GCE/PCA-CoP	0.05–50	0.01	5
MnCo-P/S-RGO/GCE	0.05–1.94	0.00139	6
FeP/NiP@GCE	0.25–1150	0.034	This work

References

1. T. Shen, Y. Zhou, D. Wu, H. He, A. Xie and S. Luo, *Diamond Relat. Mater.*, 2024, **149**, 111593.
2. L. Sun, H. Guo, Z. Pan, B. Liu, N. Wu, Y. Liu, Z. Lu, X. Wei and W. Yang, *Microchem. J.*, 2022, **182**, 107879.
3. J. Wang, F. Yin, W. Tang, N. Zhang, L. Li, S. Zheng, J. Tang and J. Guo, *Int. J. Electrochem. Sci.*, 2023, **18**, 100334.
4. H. Gu, X. Shui, Y. Zhang, T. Zeng, J. Yang, Z. Wu, X. Zhang and N. Yang, *Carbon*, 2024, **221**, 118954.
5. R. Li, T. T. Zhai, L. X. Zhao, N. N. Zhang, M. T. He and L. Tan, *Colloids Surf. A Physicochem. Eng. Asp.*, 2021, **627**, 127173.
6. N. Karuppusamy, V. Mariyappan, S. M. Chen, M. D. Thangamuthu and R. H. Li, *Surf. Interfaces*, 2023, **37**, 102681.