Supplementary data for the article:

Kunpatee, K.; Chamsai, P.; Mehmeti, E.; Stankovic, D. M.; Ortner, A.; Kalcher, K.; Samphao, A. A Highly Sensitive Fenobucarb Electrochemical Sensor Based on Graphene Nanoribbons-Ionic Liquid-Cobalt Phthalocyanine Composites Modified on Screen-Printed Carbon Electrode Coupled with a Flow Injection Analysis. *Journal of Electroanalytical Chemistry* **2019**, *855*. https://doi.org/10.1016/j.jelechem.2019.113630

A highly sensitive fenobucarb electrochemical sensor based on graphene nanoribbons-ionic liquid-cobalt phthalocyanine composites modified on screen-printed carbon electrode coupled with a flow injection analysis

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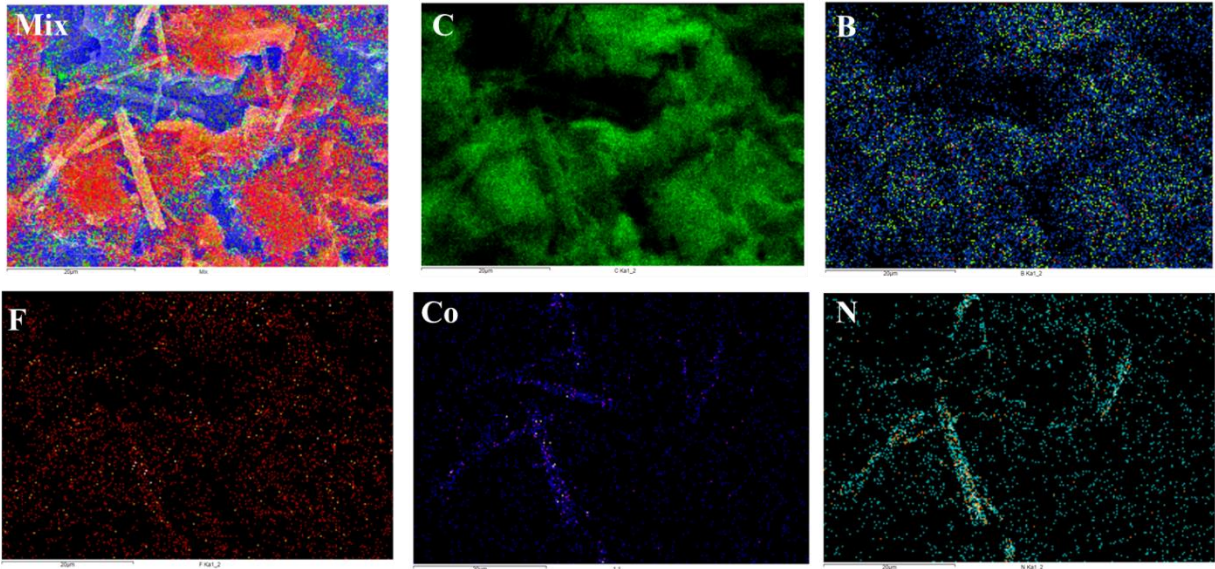
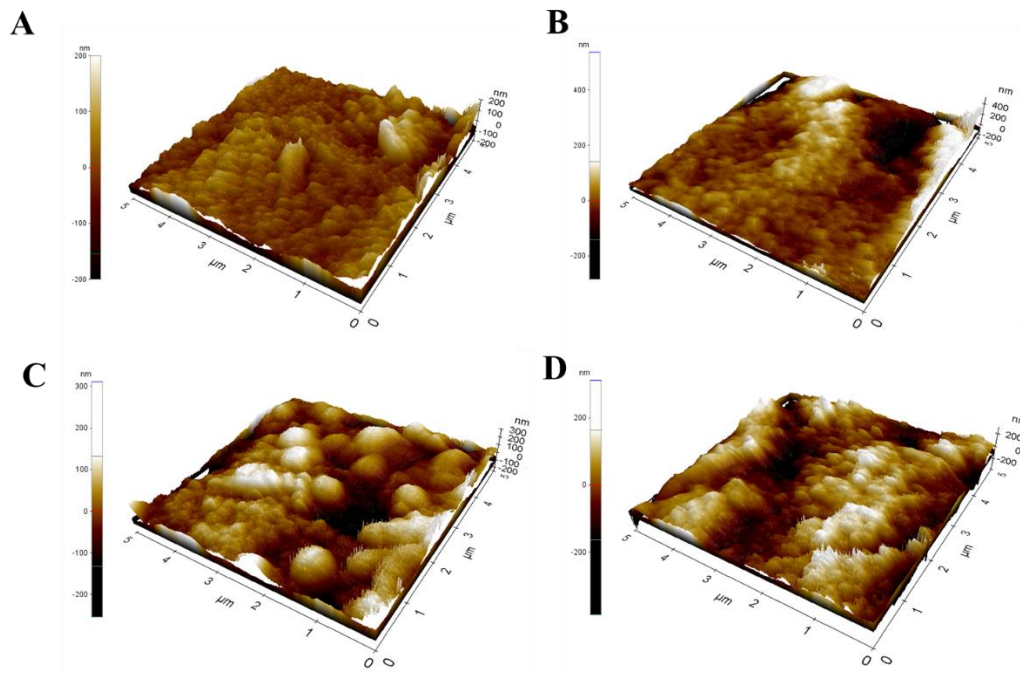**Fig. S1** EDX element mapping of GNRs-IL-CoPC/SPCE.

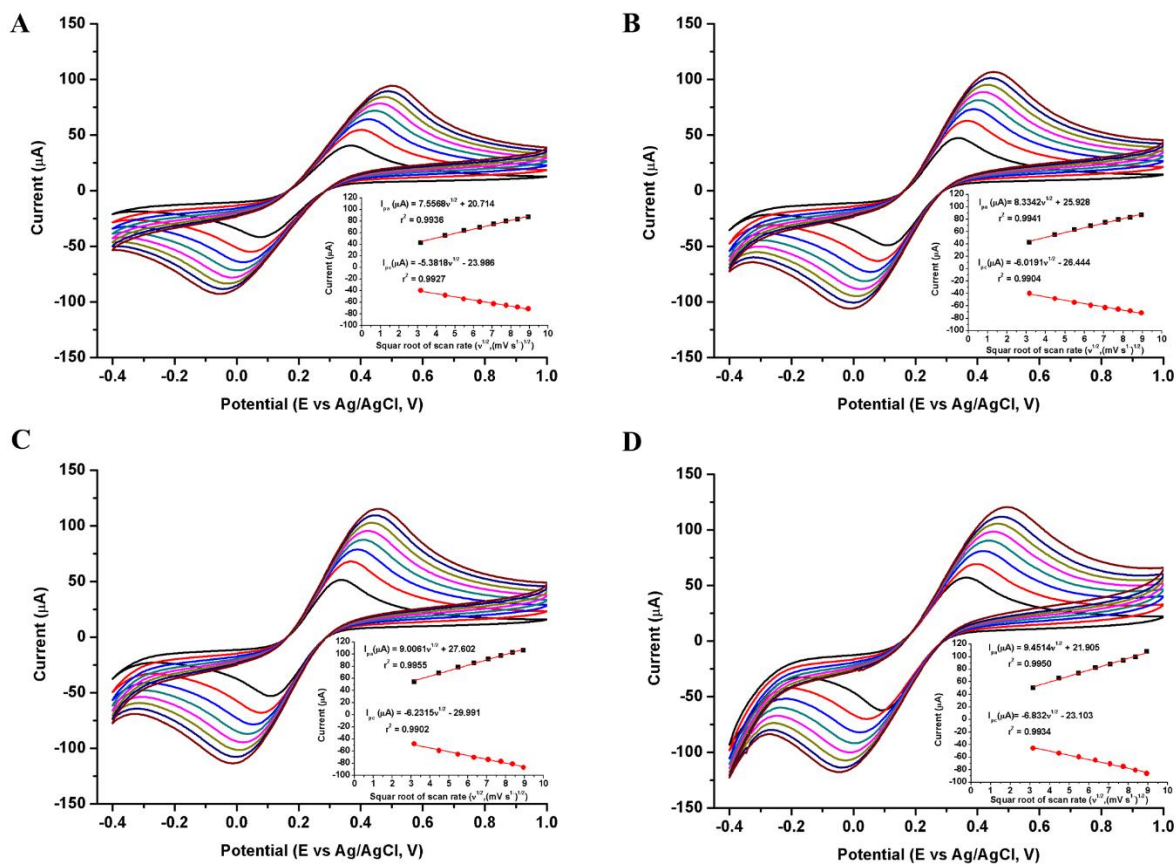**Fig. S2** AFM image of A) bare SPCE, (B) GNRs/SPCE, (C) GNRs-IL/SPCE and (D) GNRs-IL-CoPc/SPCE.

A

Inset:
$I_{pa} (\mu A) = 7.5568 v^{1/2} + 20.714$
$r^2 = 0.9936$

$I_{pc} (\mu A) = -5.3818 v^{1/2} - 23.986$
$r^2 = 0.9927$

B

Inset:
$I_{pa} (\mu A) = 8.3342 v^{1/2} + 25.928$
$r^2 = 0.9941$

$I_{pc} (\mu A) = -6.0191 v^{1/2} - 26.444$
$r^2 = 0.9904$

C

Inset:
$I_{pa} (\mu A) = 9.0061 v^{1/2} + 27.602$
$r^2 = 0.9855$

$I_{pc} (\mu A) = -6.2315 v^{1/2} - 29.991$
$r^2 = 0.9902$

D

Inset:
$I_{pa} (\mu A) = 9.4514 v^{1/2} + 21.805$
$r^2 = 0.9950$

$I_{pc} (\mu A) = -6.832 v^{1/2} - 23.103$
$r^2 = 0.9934$

Fig. S3 CVs response of SPCE (A), GNRs/SPCE (B), GNRs-IL/SPCE (C) and GNRs-IL-CoPc/SPCE (D) in 1 mM $[Fe(CN)_6]^{3-/4-}$ in 0.1 M KCl at various scan rates of 10, 20, 30, 40, 50, 60, 70 and 80 mV s^{-1}. In addition, plot between the peak current and square root of the scan rate (inset).
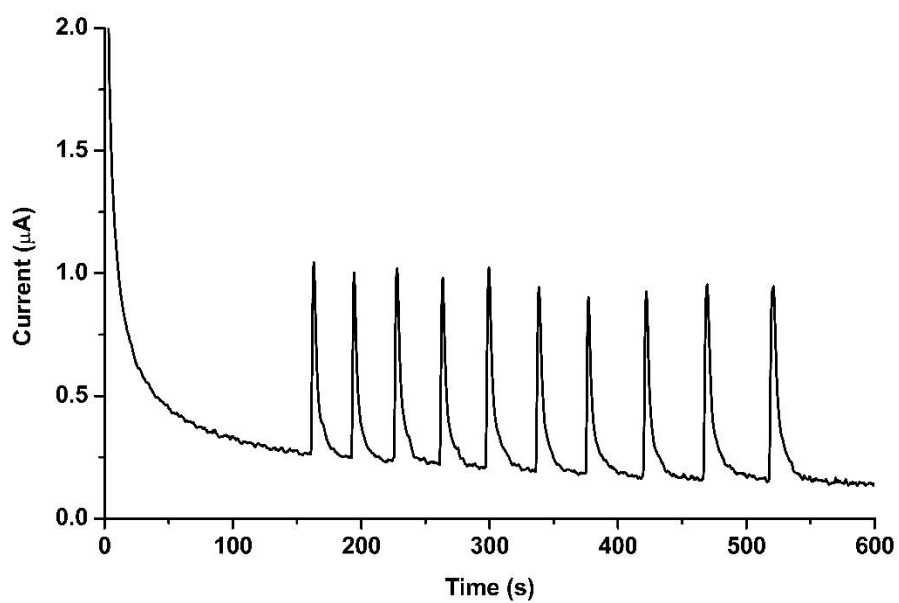
Fig. S4 Repeatability data from successive injection of 10 µM fenobucarb (n=10) at GNRs-IL-CoPc/SPCE
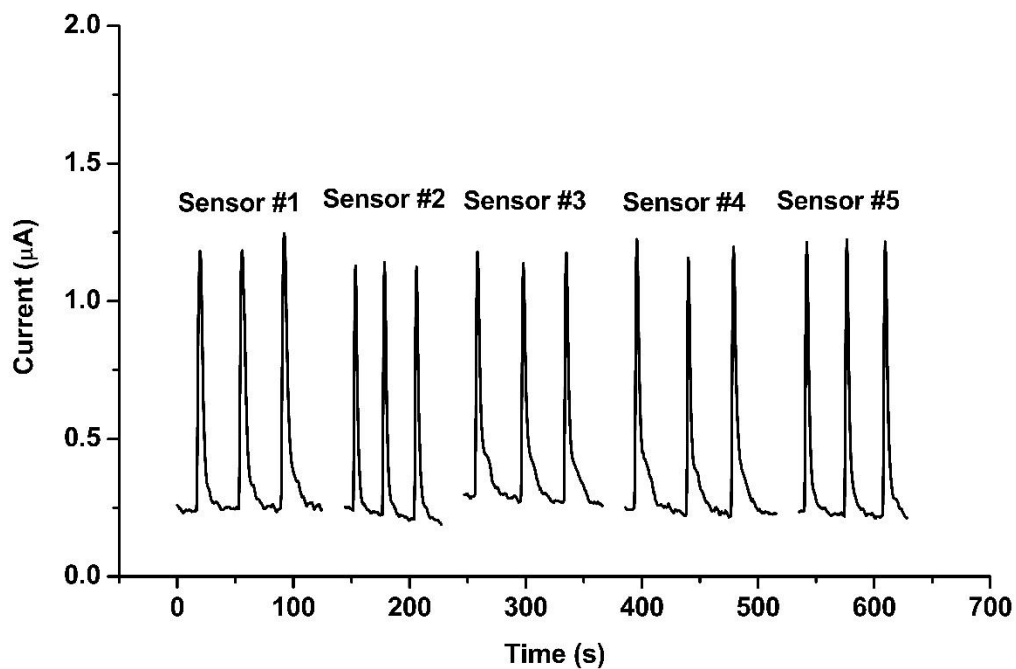

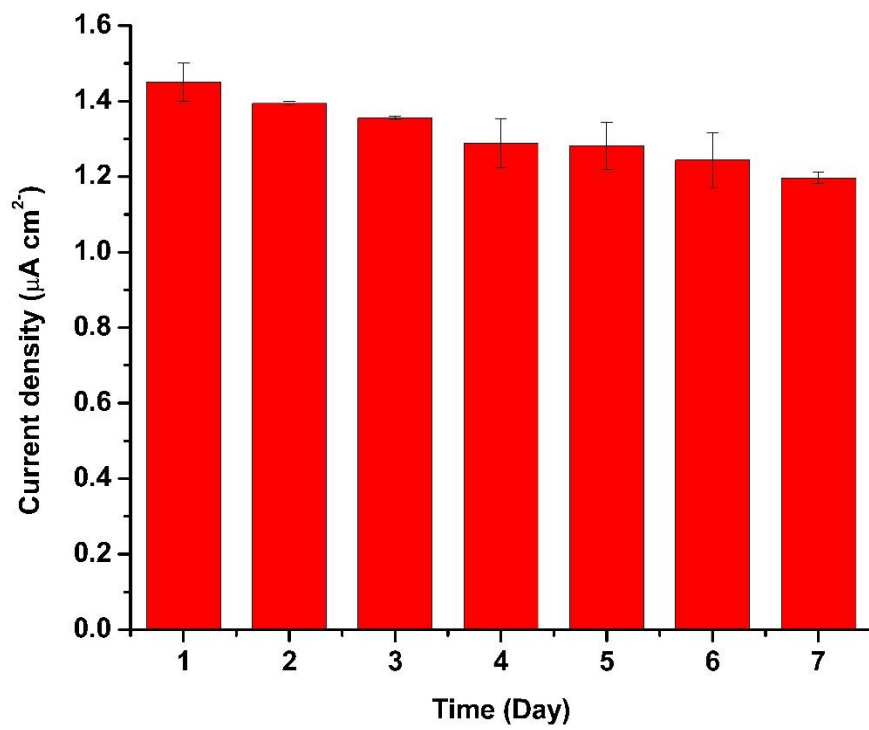**Fig. S5** Reproducibility data from five prepared sensor analysis

Fig. S6 The storage stability of the GNRs-IL-CoPc modified SPCE using 10 μM fenobucarb
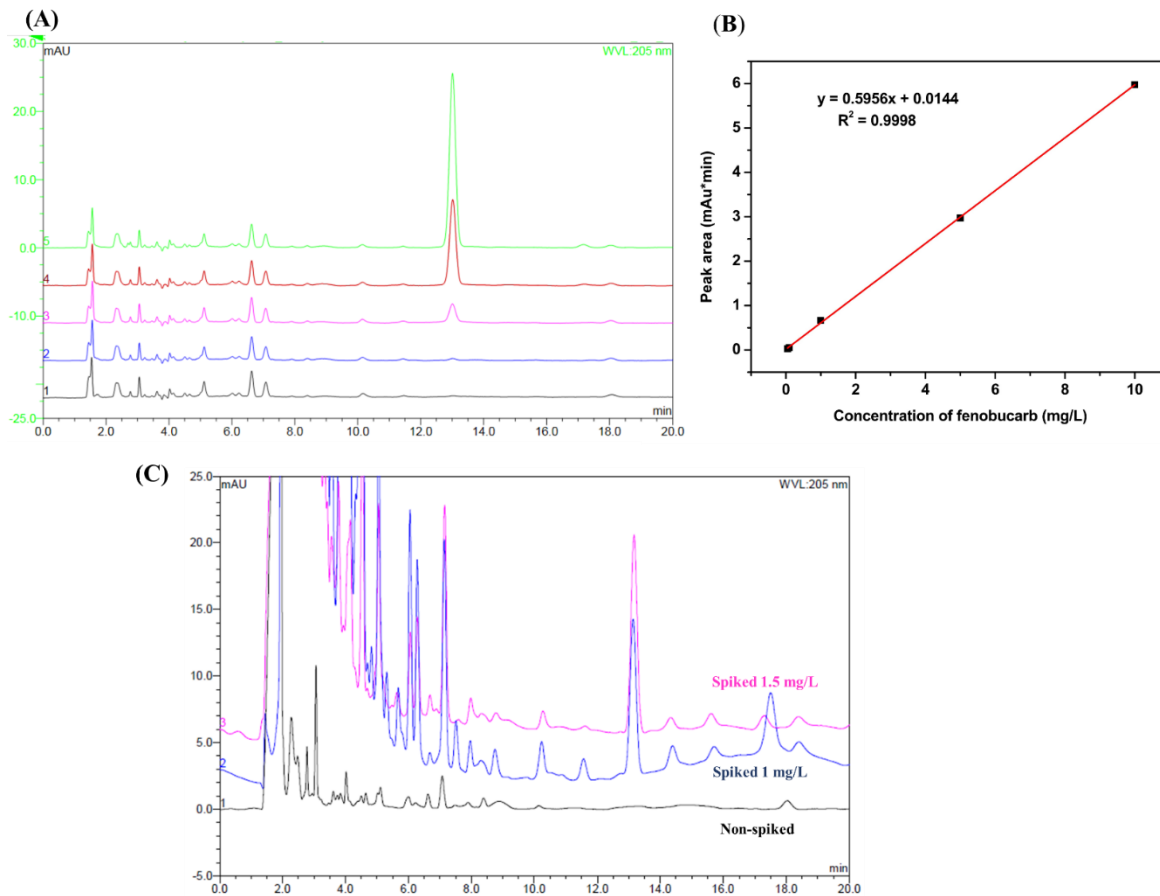
Fig. S7 (A) HPLC chromatograms of fenobucarb with different concentrations of 0.05, 0.1, 1, 5, and 10 mg/L, respectively. (B) The linear relationship between the concentration of fenobucarb and peak area. (C) HPLC chromatograms recorded for Chinese cabbage of non-spiked (black line) and spiked with 1 mg/L (blue line) and 1.5 mg/L (pink line) of fenobucarb
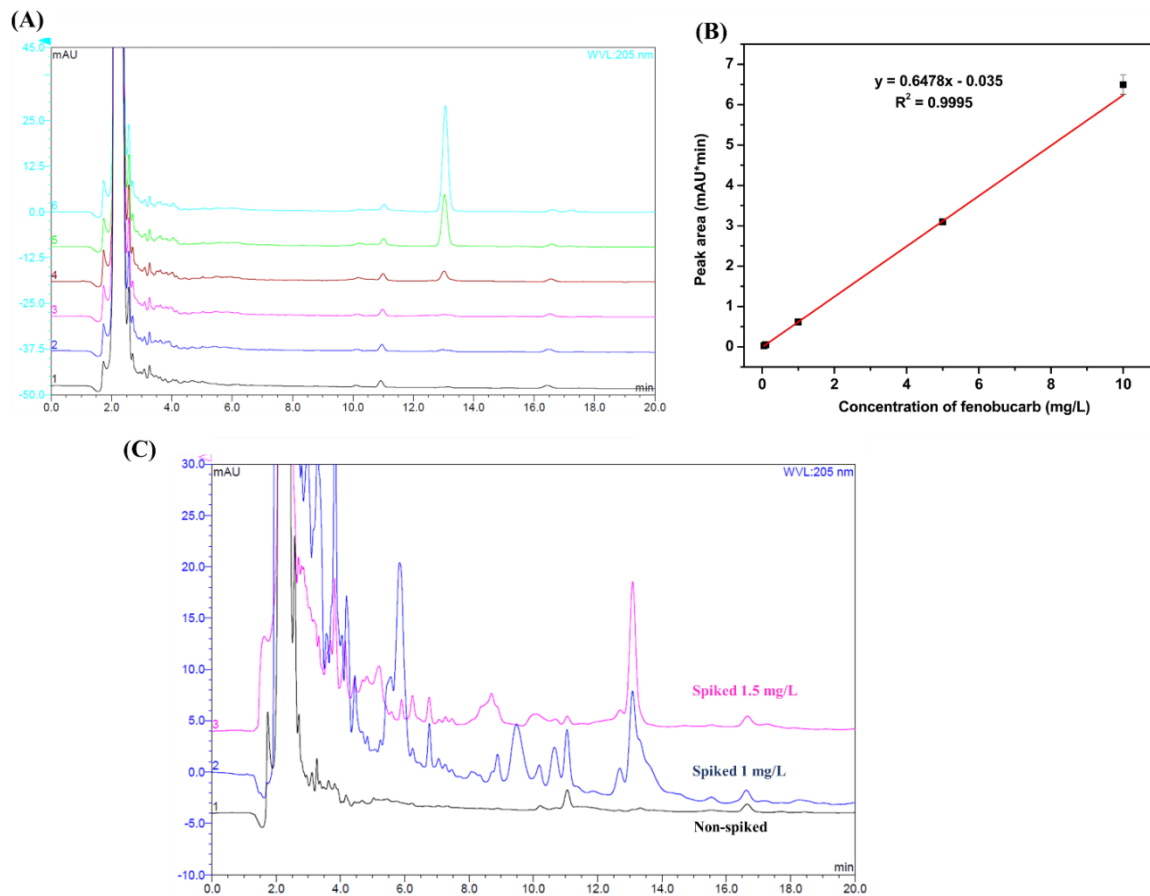
Fig. S8 (A) HPLC chromatograms of fenobucarb with different concentrations of 0.05, 0.1, 1, 5, and 10 mg/L, respectively. (B) The linear relationship between the concentration of fenobucarb and peak area. (C) HPLC chromatograms recorded for cucumber sample of non-spiked (black line) and spiked with 1 mg/L (blue line) and 1.5 mg/L (pink line) of fenobucarb