

Supporting Information

to

Ruthenium Complex Based Nanocomposite Film with Enhanced and Selective Electrochemical Sensing of Bifenthrin Pesticide

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¹H NMR, ¹³C NMR , and ESI-MS spectrum of RuPo complex

ESI-MS: m/z calculated for [C₃₆H₂₄F₆N₆O₂PRu]⁺ 818.65; found: 818.67; [C₃₆H₂₃N₆O₂Ru]⁺ 672.68; found: 672.68. ¹H NMR (400 MHz, CD₃CN): δ (ppm) = 9.86 (s, 1H), 8.57 (dd, J = 8.2, 1.3 Hz), 8.54 (dd, J = 8.3, 1.3 Hz, 1H), 8.28 (s, 1H), 8.22 (d, J = 1.4 Hz, 2H), 8.15 (dd, J = 5.3, 1.3 Hz, 1H), 8.01 (dd, J = 5.2, 1.2 Hz, 1H), 7.64 (dd, J = 8.2, 5.3, 1H), 7.58 (m, 2H), 6.99 (d, J = 6.1, 1H). ¹³C NMR (100 MHz, CD₃CN): δ (ppm) = 162.8 (1C), 154.0 (1C), 153.8 (1C), 153.8 (1C), 149.7 (1C), 149.3 (1C), 149.1 (1C), 137.2 (2C), 131.9 (1C), 131.8 (1C), 129.0 (1C), 128.9 (1C), 126.7 (1C), 126.6 (1C), 123.9 (1C), 121.6 (1C), 111.1 (1C).

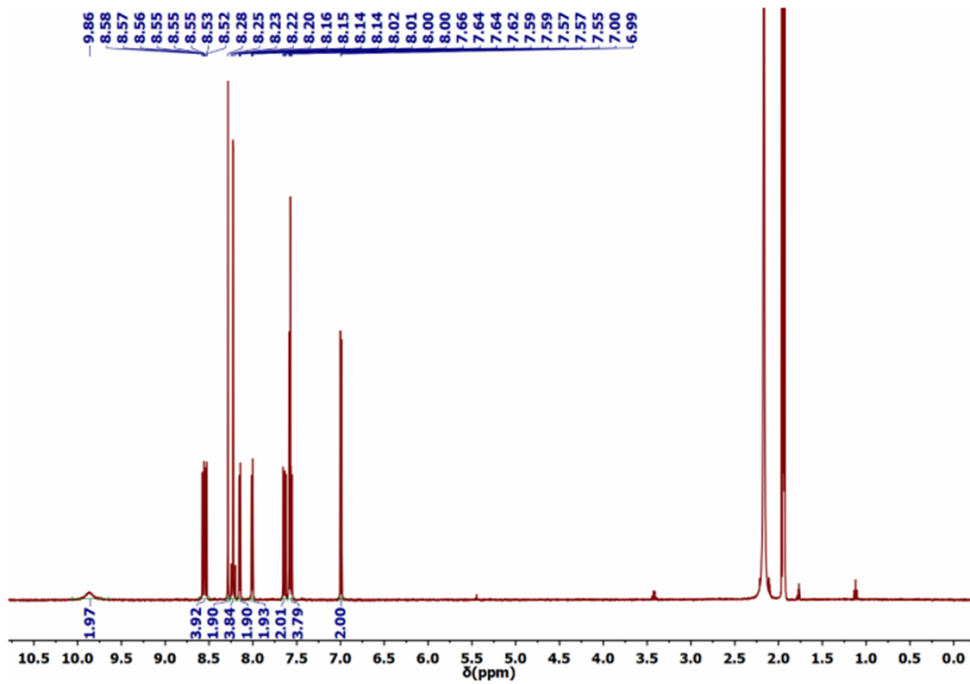


Fig. S1. ^1H NMR spectrum of RuPo in CD_3CN .

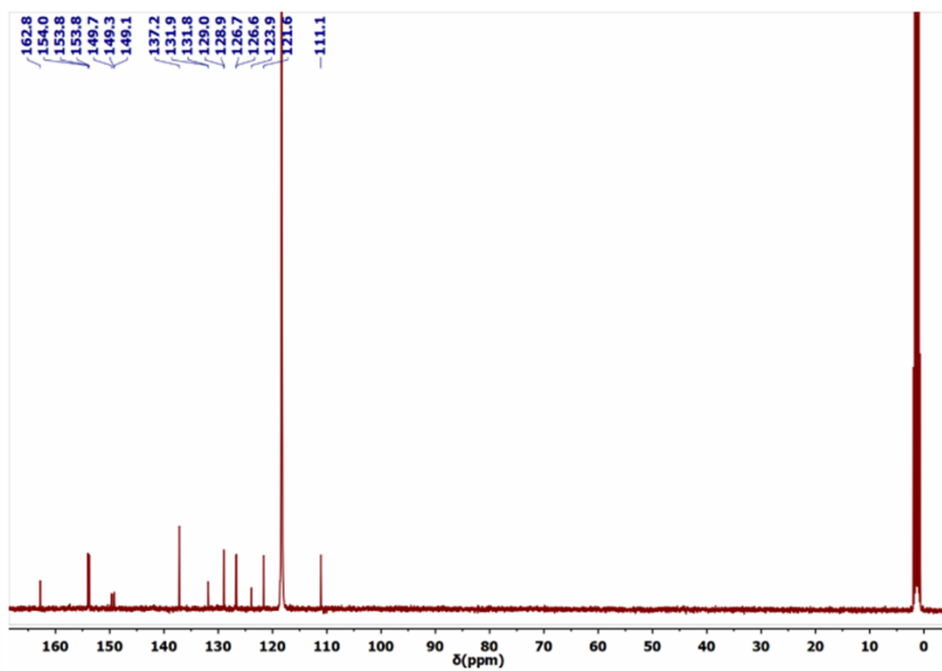


Fig. S2. ^{13}C NMR spectrum of RuPo in CD_3CN .

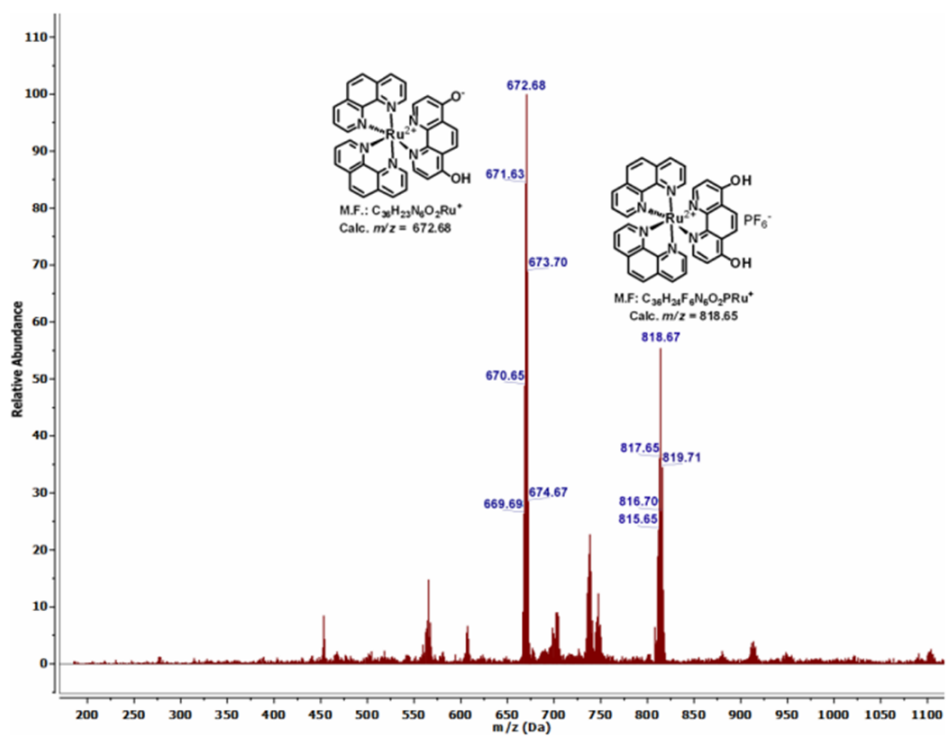


Fig. S3. ESI-MS spectrum of RuPo in CH₃CN.

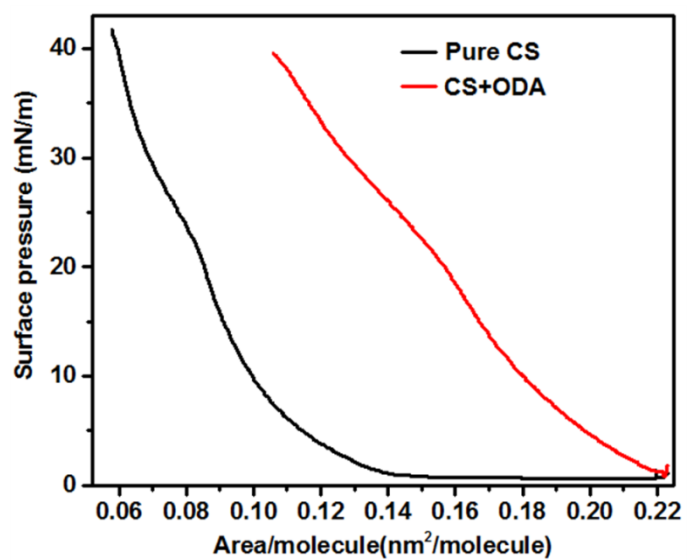


Fig. S4. Isotherm of pure CS and CS+ODA.

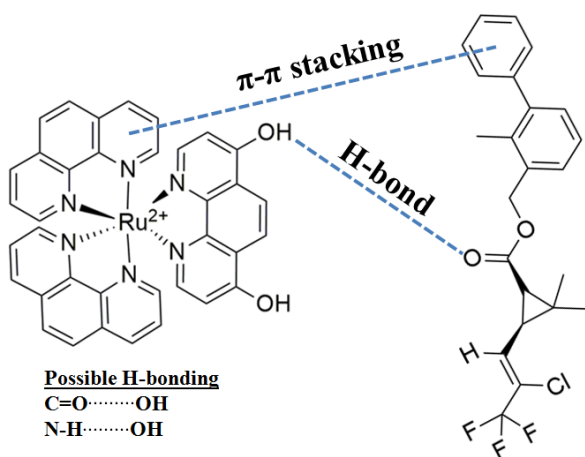


Fig. S5. Schematic mechanism for interaction of the RuPo with the BF pesticide.

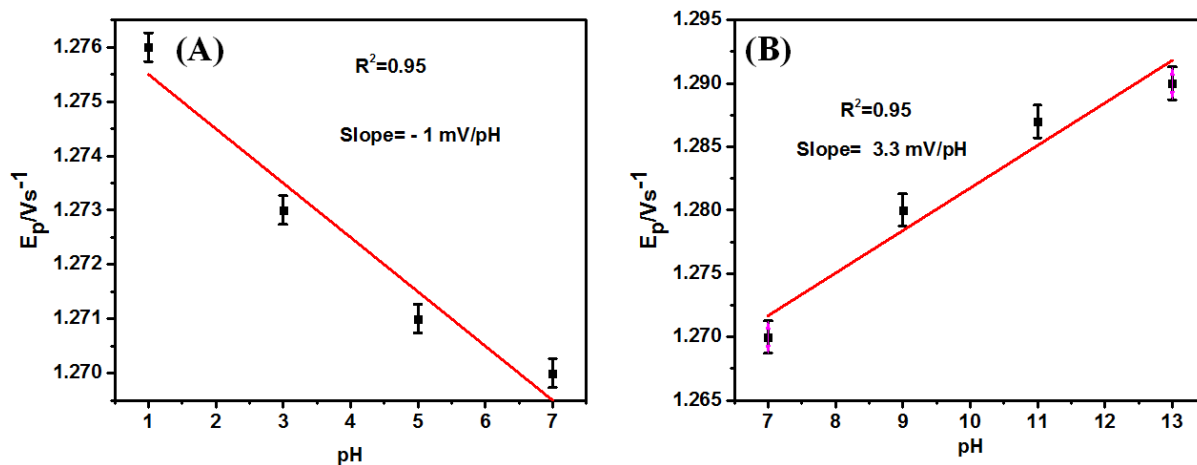


Fig. S6. (A) Plot of E_p (V/s) versus pH (1-7), (B) Plot of E_p (V/s) versus pH (7-13).

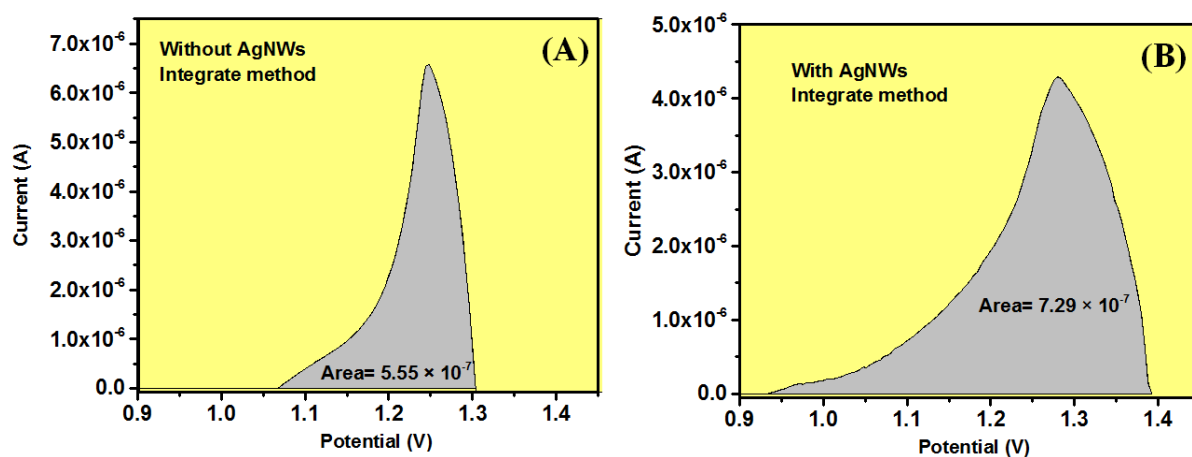


Fig. S7. Area of the DPV curve for (A) without AgNWs, (B) with AgNWs.

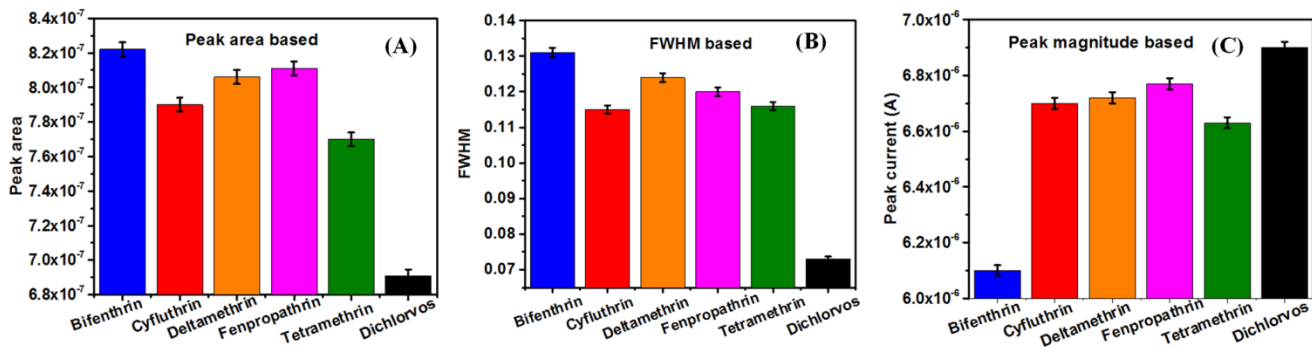


Fig. S8. Bar plot of different pesticide versus (A) peak area based, (B) FWHM based, (C) peak magnitude based.

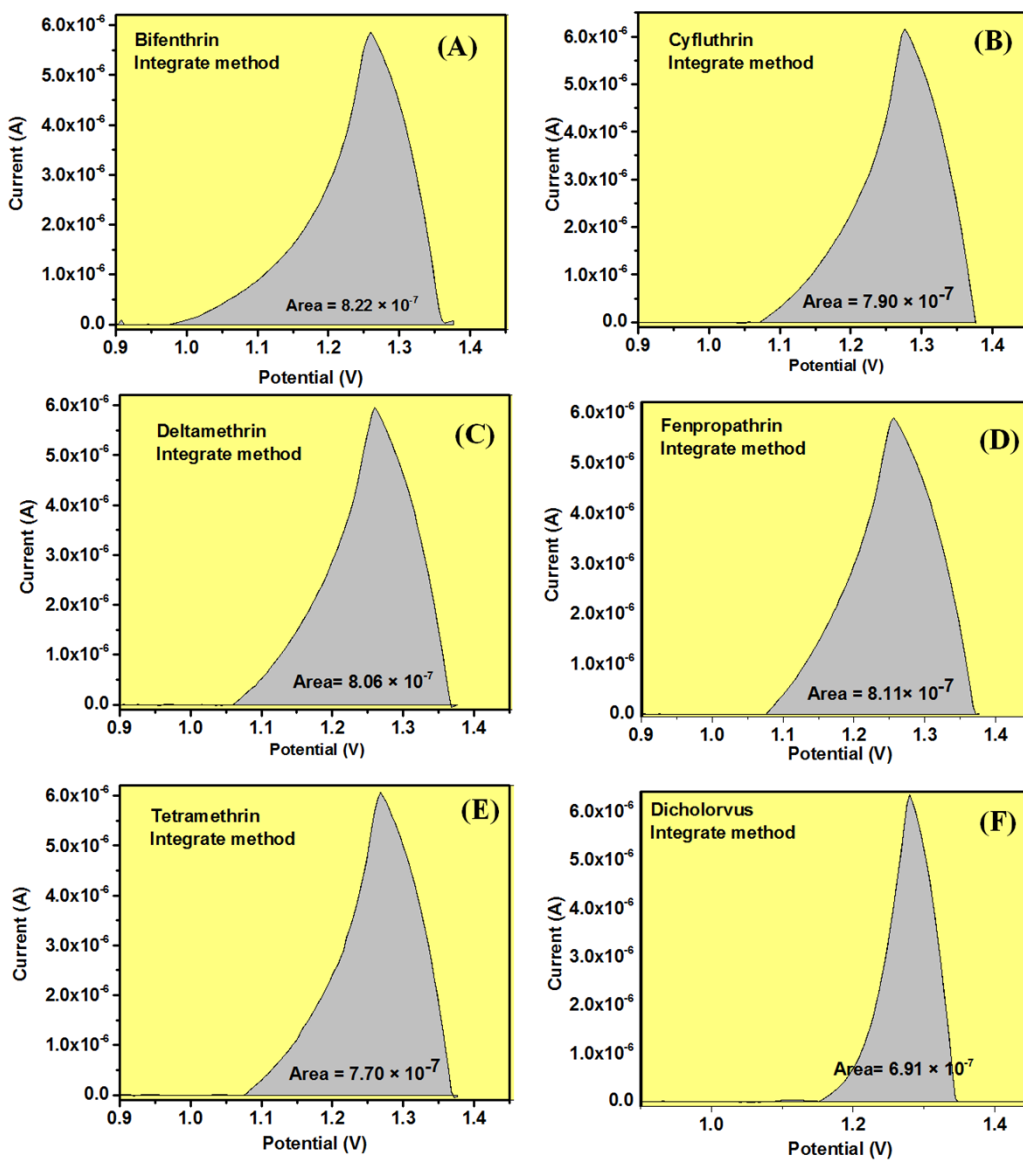


Fig. S9. Peak area of the DPV curve for different pesticides (A-F).

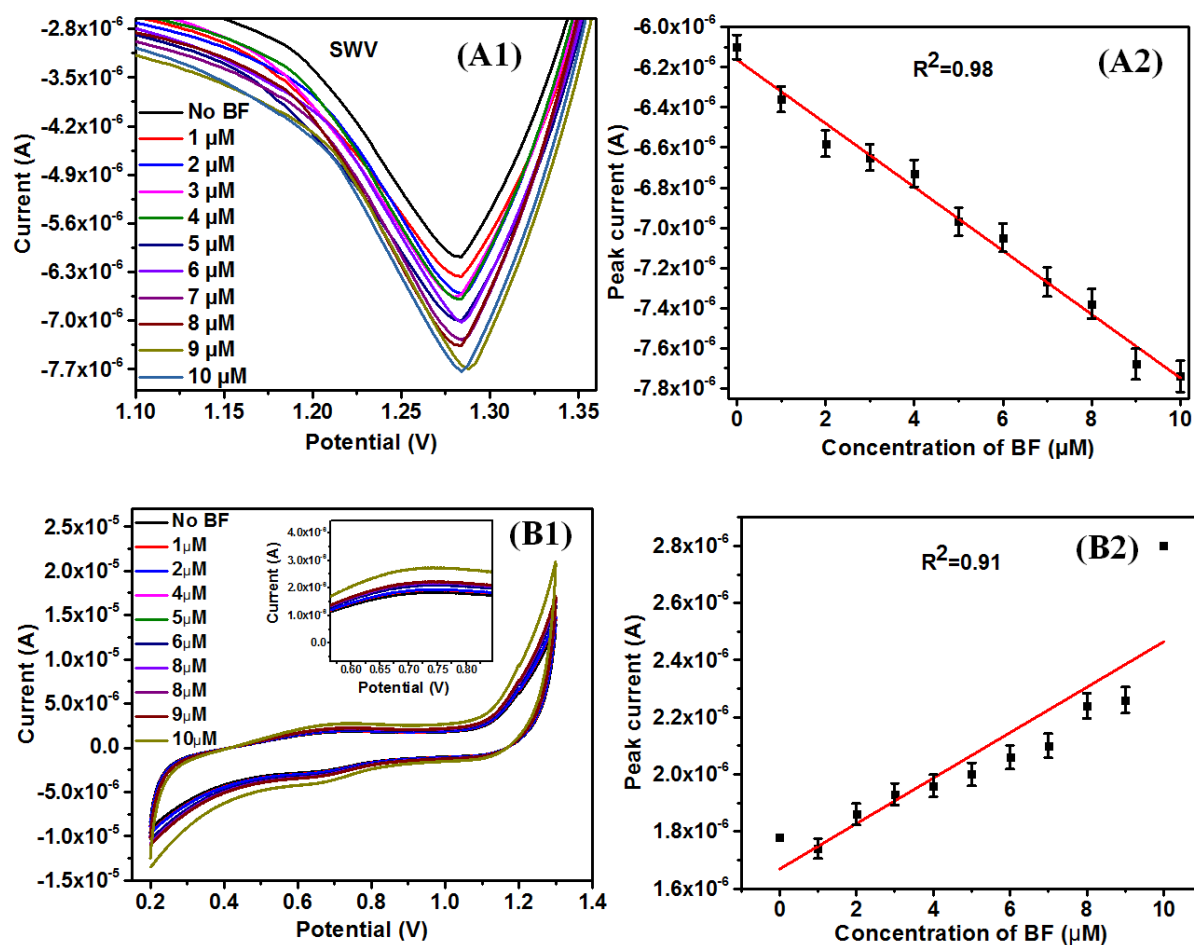


Fig. S10. (A1) SWV graph of composite modified Pt electrode with different concentration of bifenthrin, (A2) Calibration curve with analyte (bifenthrin pesticide) concentrations vs peak current (B1) CV graph of composite modified Pt electrode with different concentration of bifenthrin, (B2) Calibration curve with analyte (bifenthrin pesticide) concentrations vs peak current

Table S1: Table for FTIR peak assignment of the components and composite LB film.

S. No	Peak	Functional group identification	References
1	843	P-F stretching of RuPo	[41]
2	1426	P-F stretching of RuPo	[41]
3	1523	N-H stretching of chitosan	[54]

4	3360	O-H stretching of chitosan	[89]
5	3370	N-H stretching of pure ODA	[90]
6	3373	N-H stretching of ODA in composite	[90]
7	3380	N-H stretching of ODA	[88]
8	3386	N-H stretching of RuPo	[91]
9	3443	N-H stretching of RuPo	[42]
10	3742	-OH group of chitosan	[91]
