Electronic Supplementary Material (ESI) for RSC Advances.


# Supporting Information

## In-situ Synthesis of Polythiophene Encapsulated 2D Hexagonal Boron Nitride Nanocomposite based Electrochemical Transducers for Detection of 5-Fluorouracil with High Selectivity

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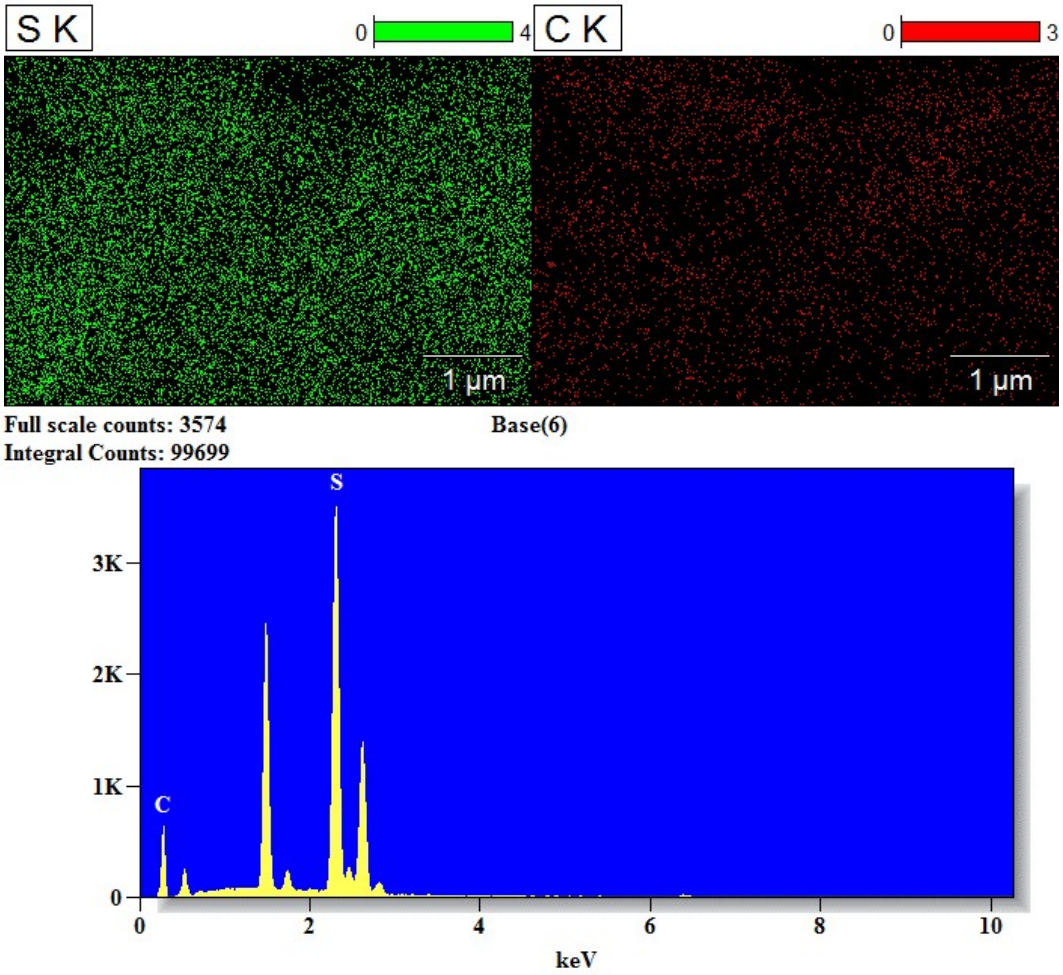
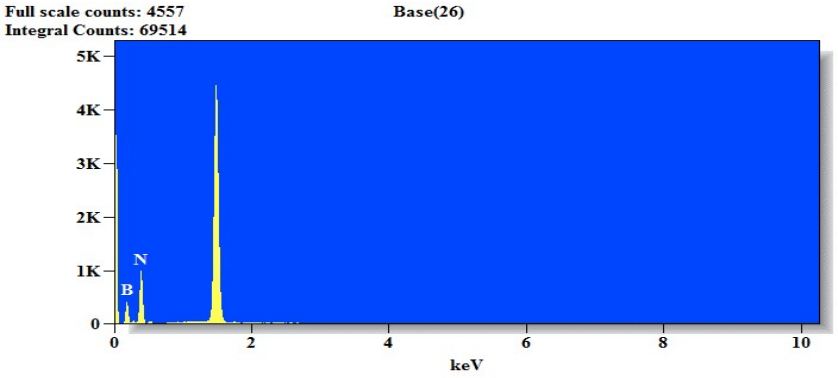


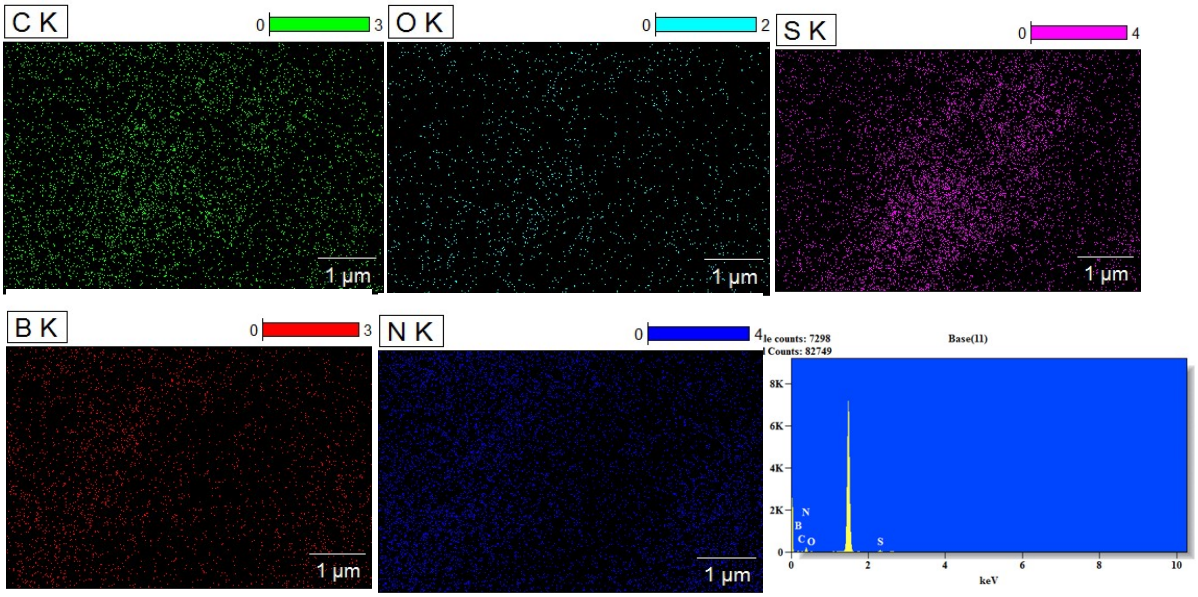

| Element | Net Counts | Weight % | Atom % | Formula |
|---|---|---|---|---|
| C | 3883 | 56.50 | 77.61 | C |
| S | 43918 | 43.50 | 22.39 | S |
| Total | | 100.00 | 100.00 | |

**Fig. $S_1$** Elemental mapping, EDS spectrum, and elemental composition of polythiophene




| Element | Net Counts | Weight % | Atom % | Formula |
|---|---|---|---|---|
| B | 1521 | 27.83 | 33.32 | B |
| N | 4260 | 72.17 | 66.68 | N |
| Total | | 100.00 | 100.00 | |

**Fig. $S_2$** EDS spectrum, and elemental composition of hexagonal-Boron nitride nanosheet.




| Element | Net Counts | Weight % | Atom % | Formula |
|---|---|---|---|---|
| B | 386 | 17.90 | 22.55 | B |
| C | 406 | 13.36 | 15.15 | C |
| N | 1096 | 48.01 | 46.68 | N |
| O | 231 | 15.97 | 13.59 | O |
| S | 1151 | 4.77 | 2.02 | S |
| Total | | 100.00 | 100.00 | |

**Fig. $S_3$** Elemental mapping, EDS spectrum, and elemental composition of PTh/h-BN composite.

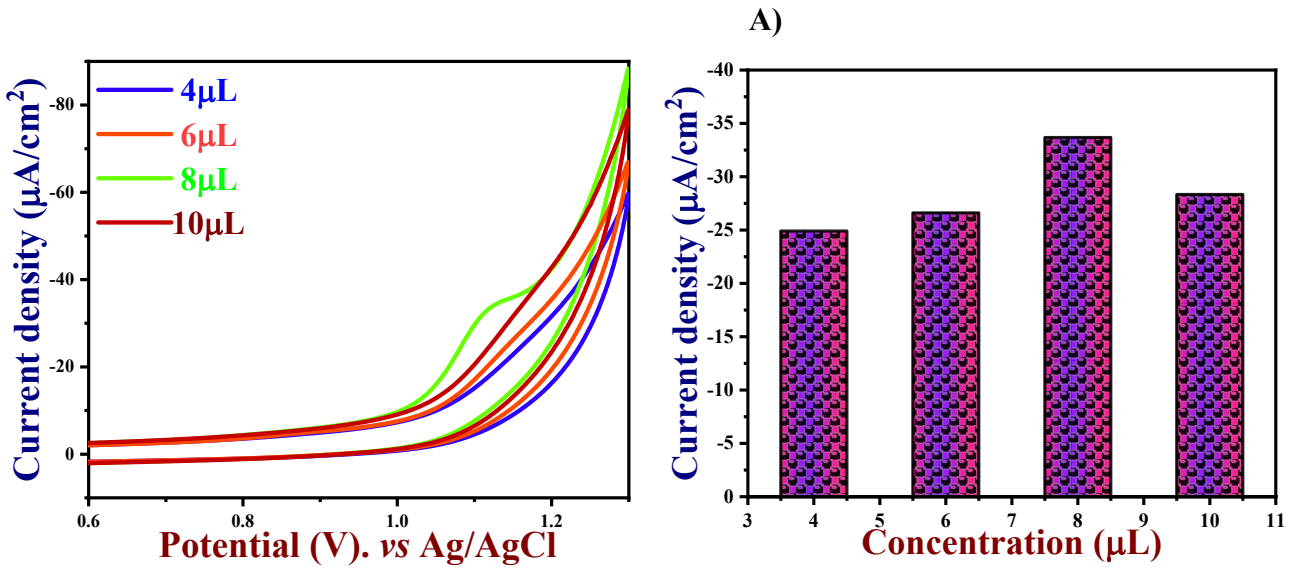



**Fig. $S_4$(A)** CV curves of PTh/h-BN modified GCEs in presence of 0.1 M PBS (pH 7.0) containing 50 µM of 5-Fu at a scan rate of 50 mV/s in different uL of dispersion. **(B)** Histogram of current density vs concentration of different uL)

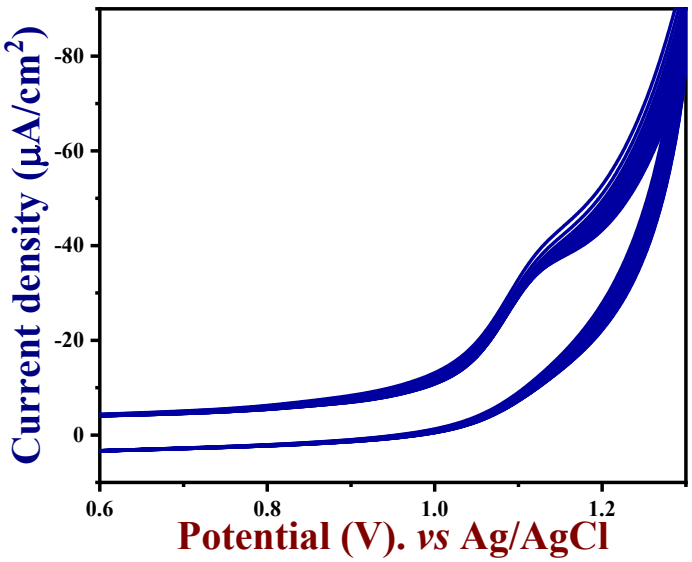



**Fig. $S_5$** CV curves of PTh/h-BN modified GCEs in presence of 0.1 M PBS (pH =7.0) containing 50 µM of 5-Fu at a scan rate of 50 mV/s in 50 cycle segments

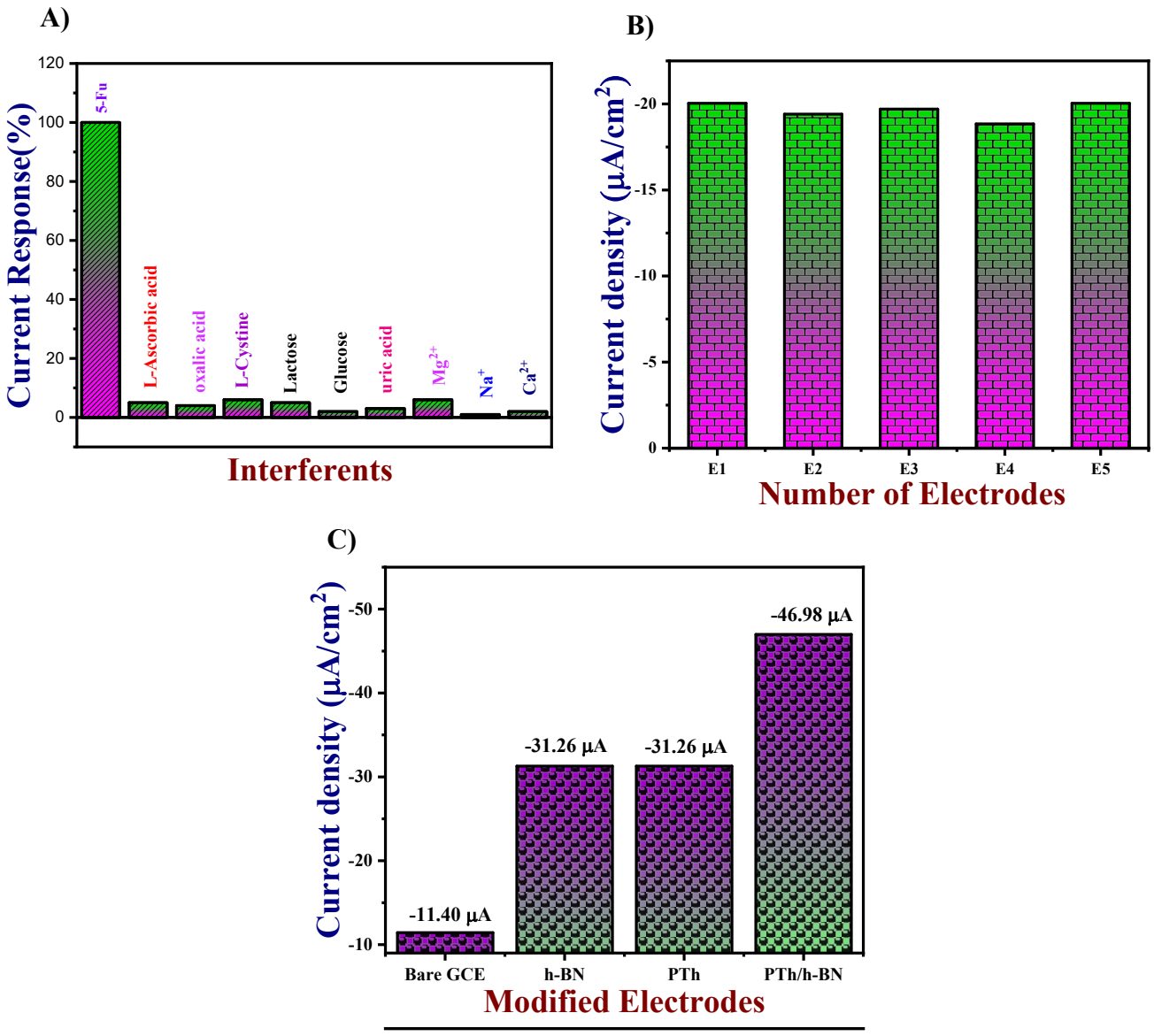



**Fig. $S_6$ (A)** Histogram of current response vs various interferent ions in the presence of target analyte (5-Fu). **(B)** Histogram of current density vs the number of different electrodes. **(C)** Histogram of current density vs the number of different modified electrodes.