An ultrasensitive "mix-and-detect" kind of fluorescent biosensor for malaoxon detection using the AChE-ATCh-Ag-GO system

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Supplementary Information
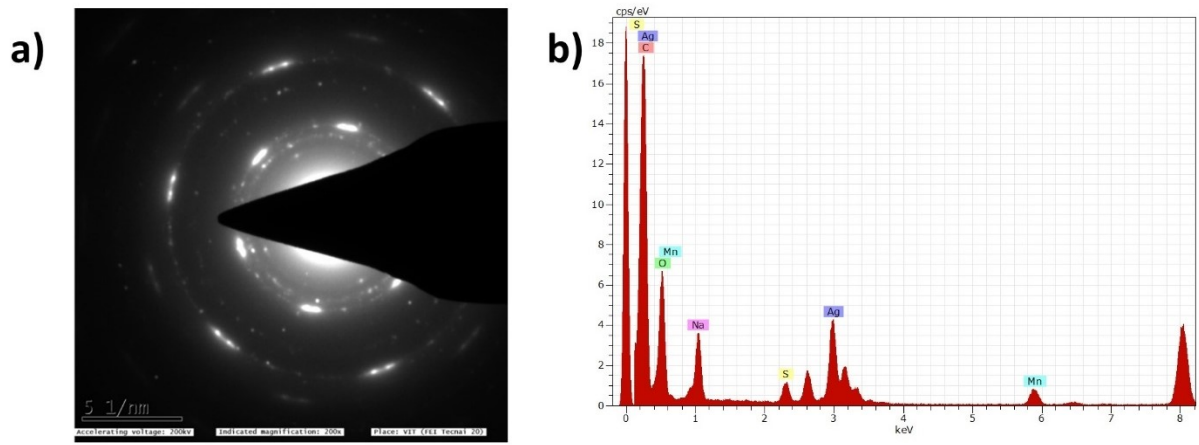
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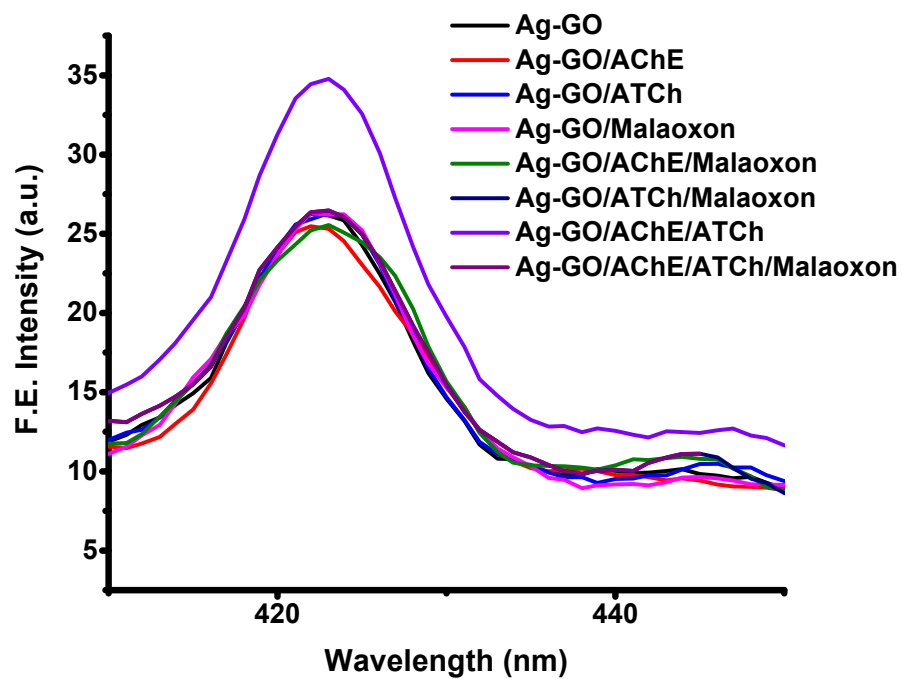
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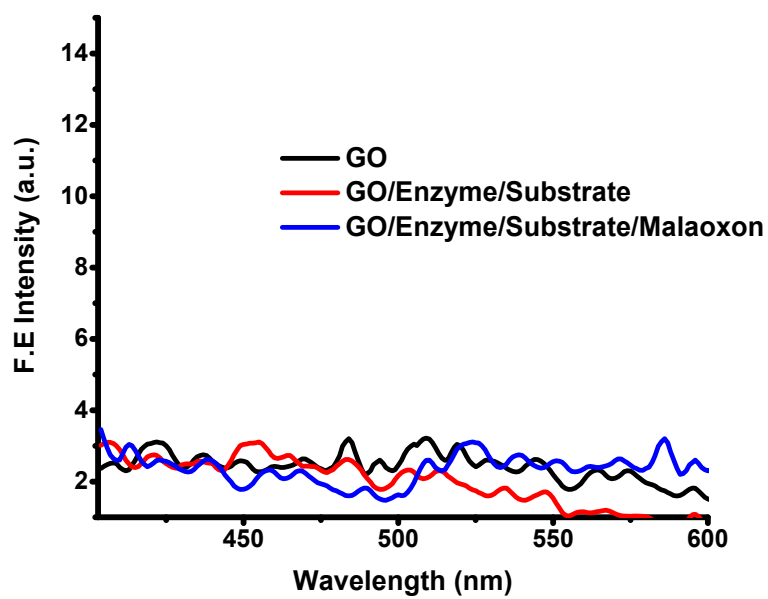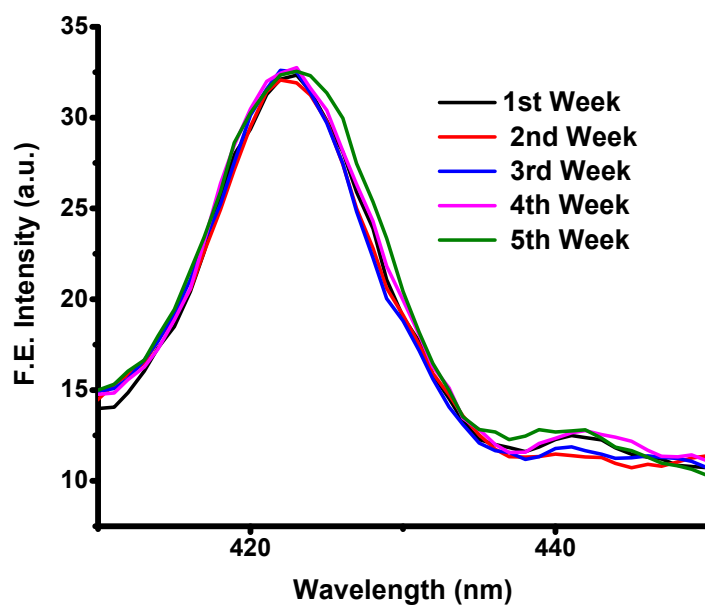Email: amit.mookerjea@gmail.com, amitav@vit.ac.in

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Fig. S1. a) SAED pattern of Ag-GO nanocomposite, b) EDX analysis of Ag-GO.

Fig. S2. Effect of the separate, as well as a mixture of reactants in AgNPs aggregation on GO sheet

Fig. S3. Effect of the mixture of reactants such as enzyme/substrate/malaoxon, and enzyme/substrate, on the bare GO sheet

Fig. S4. Stability evaluation of the Ag-GO nanohybrid in the presence of enzyme, substrate malaoxon (0.001 pM).

Table S1. F.E intensity (mean ± SD) values at various malaoxon concentrations

Malaoxon Concentrations (pM)	F.E intensity (mean ± SD)
0.001	32.3±0.00011
0.01	31.21±0.023
0.1	30.3±0.030
1	29.3±0.009
10	28.4±0.010
100	27.4±0.008
1000	26.4±0.012

Table S2. Summary of the ANOVA results

F	50735
P value	<0.0001
P value summary	****
Significant difference among means (P < 0.05)?	Yes
R square	1

Table S3. F.E intensity (mean ± SD) values of malaoxon and other interferents

Target analyte and Interferents	F.E intensity (mean ± SD)
Malaoxon	32.31±0.28
Fenthion	35.44±0.35
Trichlorfon	34.88±0.49
Urea	36.95±0.22
Methiocarb	35.2±0.17
Permethrin	35.02±0.41
Temephos	34.77±0.19

Table S4. Statistical performance of the sensor for detection of malaoxon

Concentration (pM)	RSD % (n=3)		
	Run-to-Run	Day-to-Day	Batch-to-Batch
0.001	0.00035	0.093513	0.108624
0.01	0.07426	0.153949	0.204437
0.1	0.09910	0.176291	0.203267
1	0.03375	0.703608	0.943981
10	0.038639	0.185774	0.305827
100	0.031617	0.09263	0.157231
1000	0.047945	0.195401	0.28021