

Fluorescence Turn-on and Turn-off Sensing of Pesticides by Carbon Dot- Based Sensor

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Supplementary Information

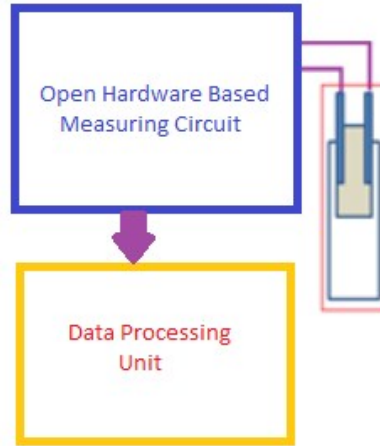


Figure S1a: System Schematic and Block Diagram

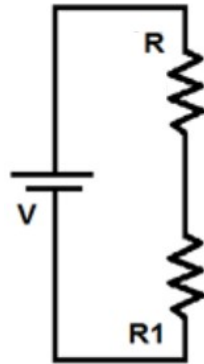


Figure S1b: Circuit Schematic



Figure S1c: Photo of IDE



Figure S1d: Snapshot of Experimental Setup

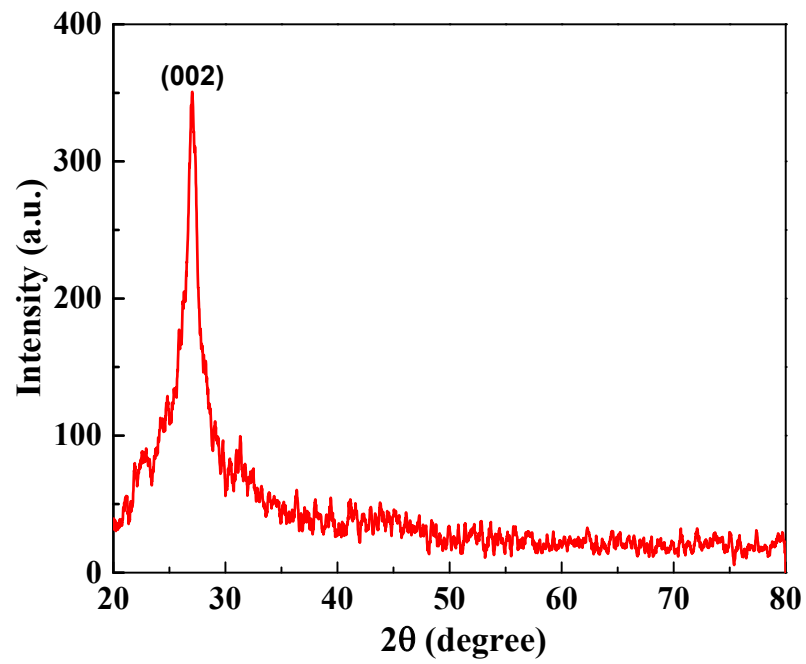


Figure S2: XRD pattern of the as-synthesized C-Dots

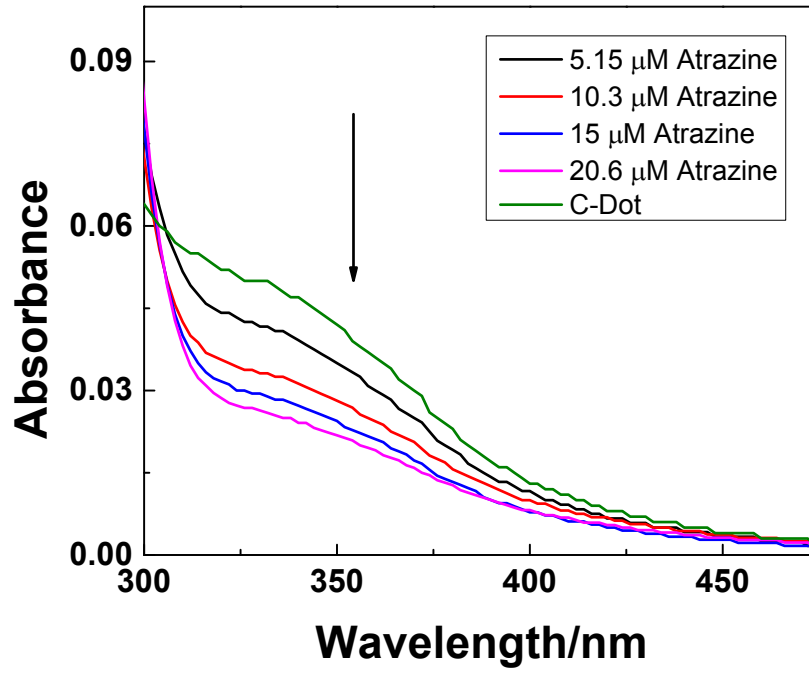


Fig.S3a

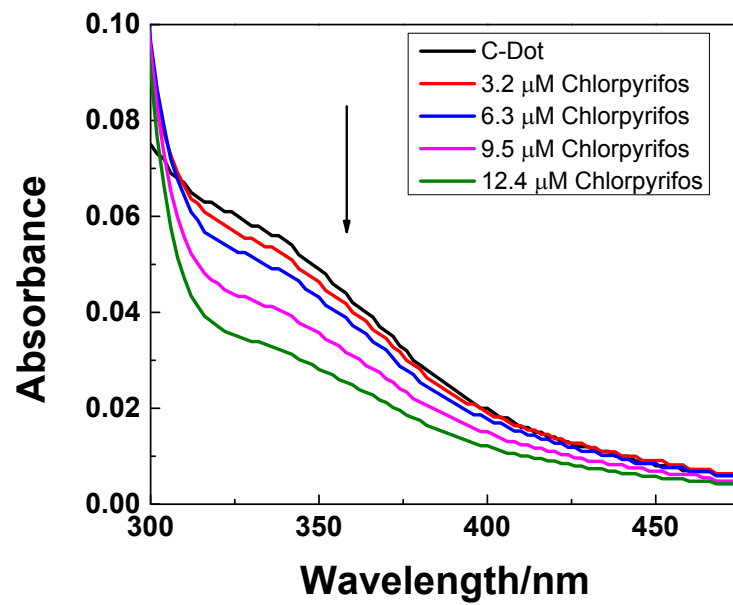


Fig.S3b

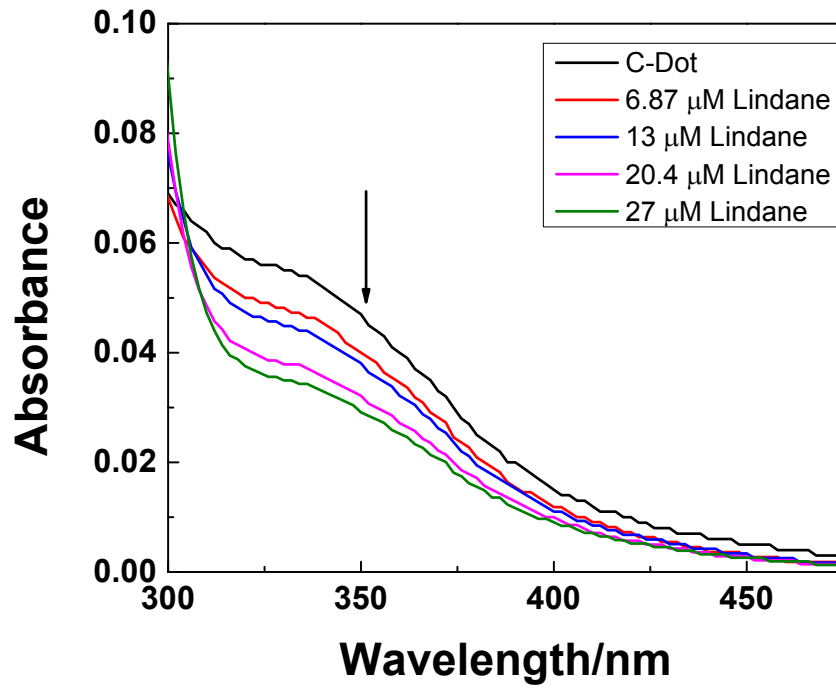


Fig.S3c

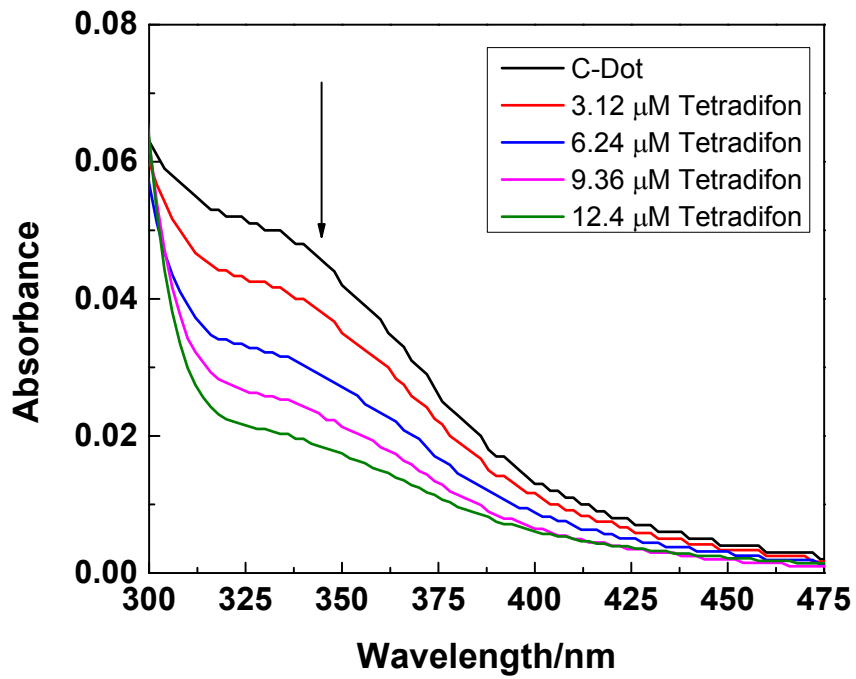


Fig.S3d

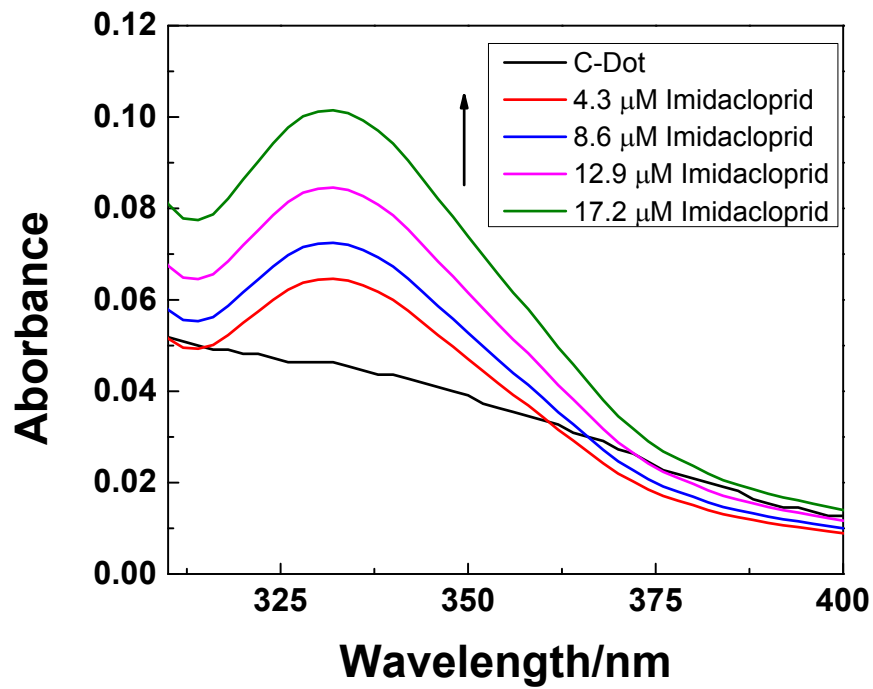


Fig.S3e

Figure S3. Absorbance spectra of C-Dots (Conc. ~ 0.1mg/ml) in the presence of increasing concentration of pesticides (a) Atrazine, (b) Chlorpyrifos, (c)Lindane , (d) Tetradifon , (e) Imidacloprid.

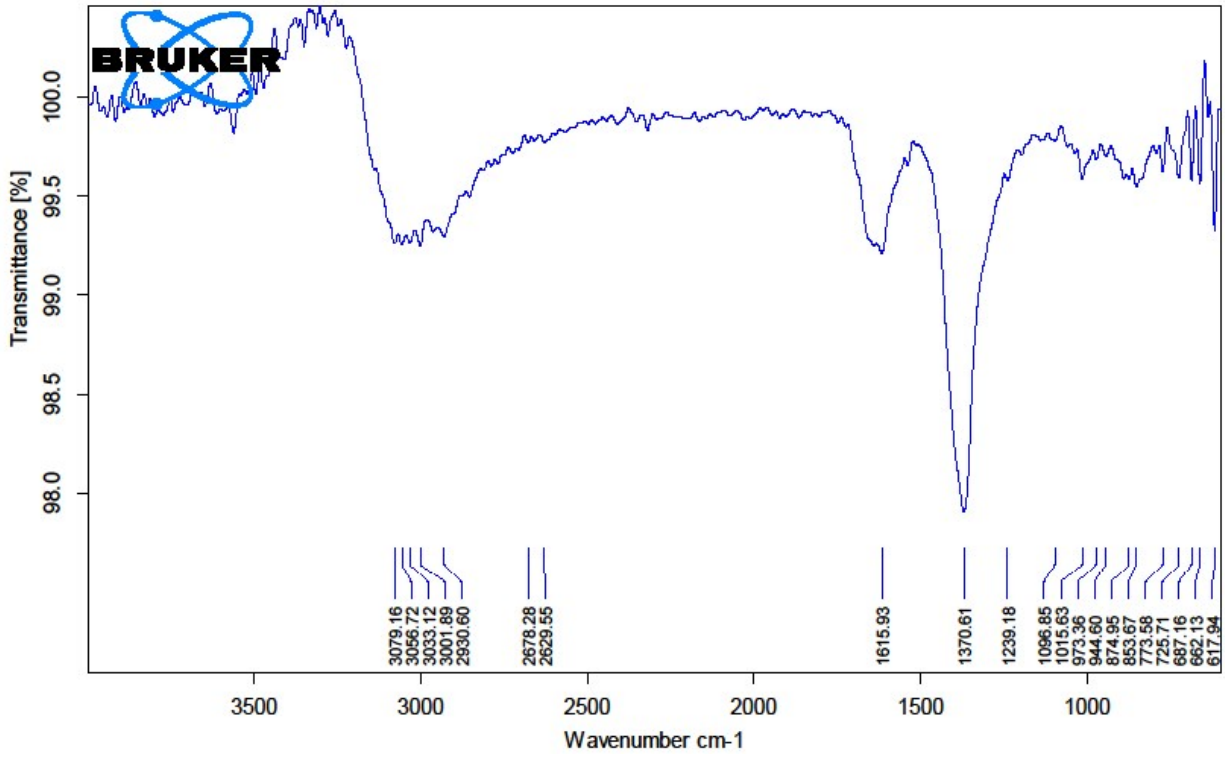


Fig.S4a

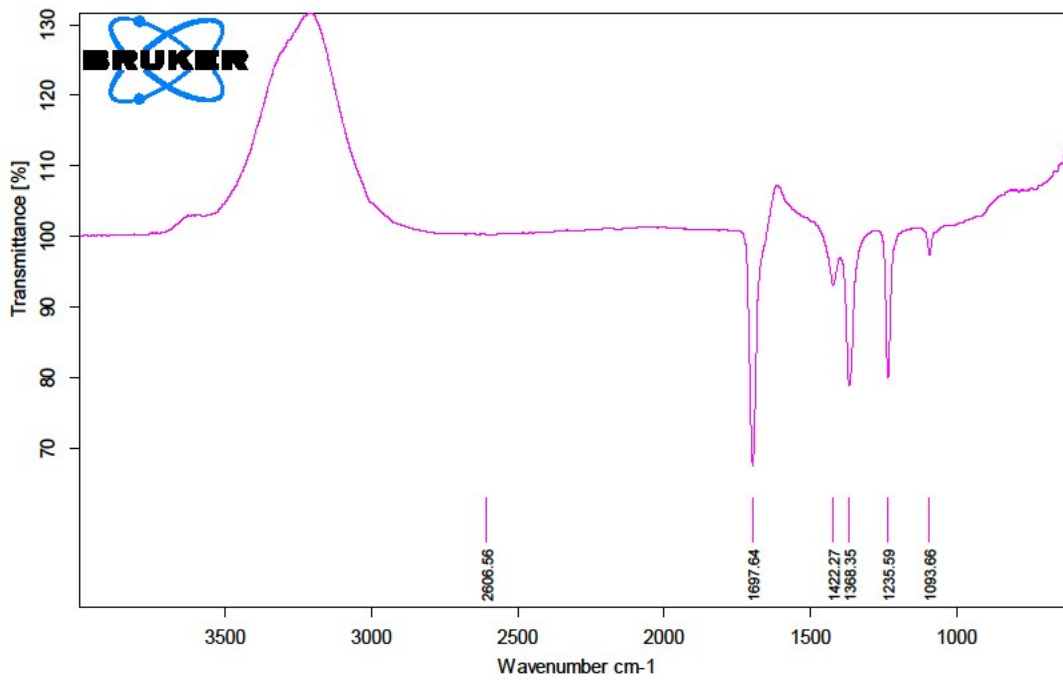


Fig.S4b

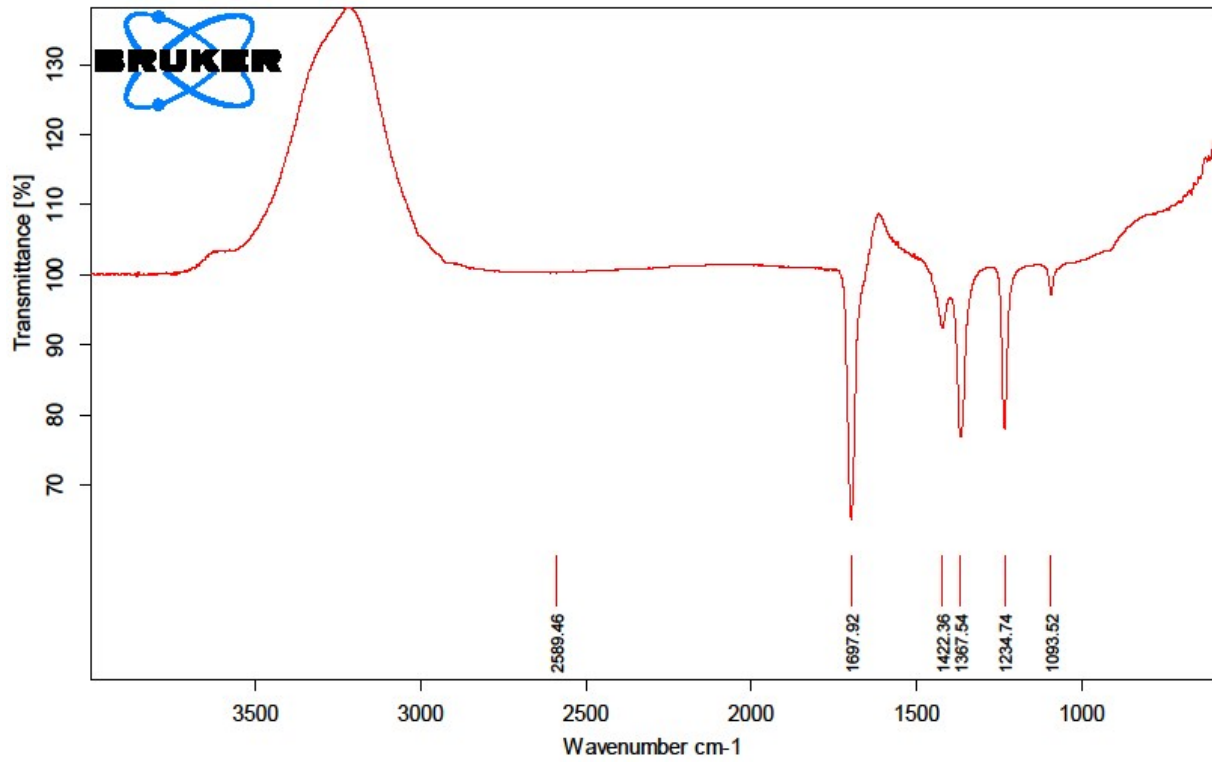


Fig.S4c

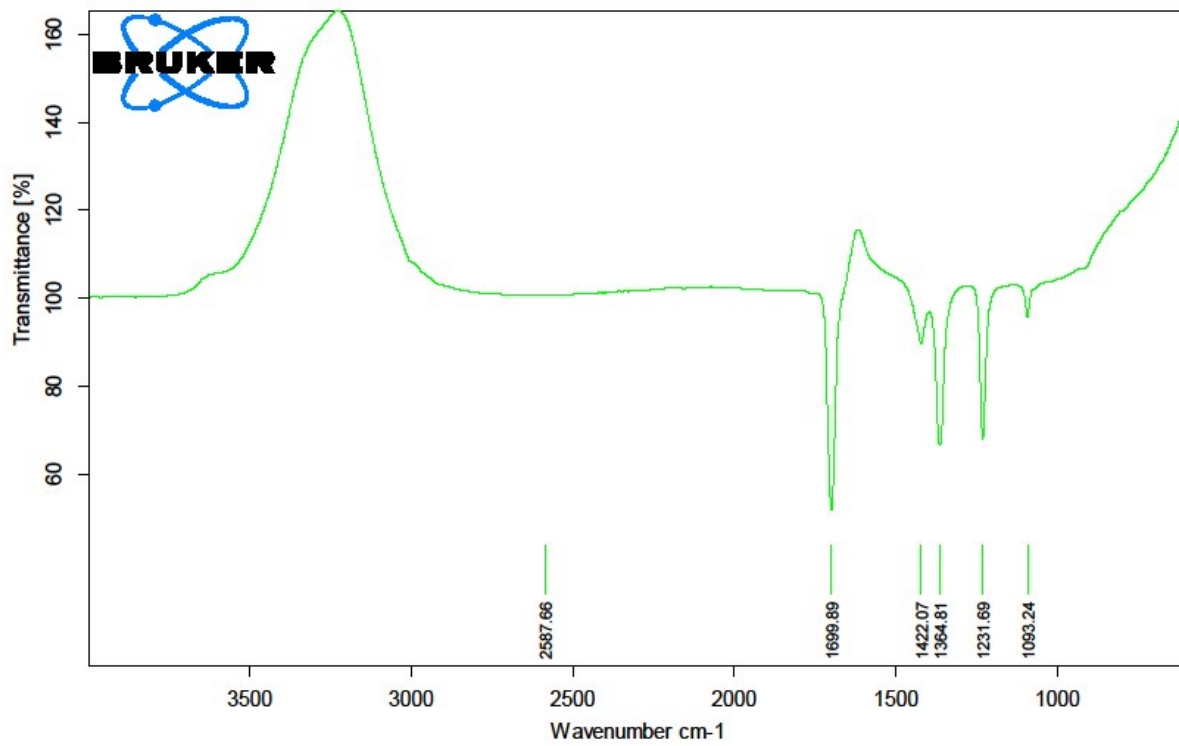


Fig.S4d

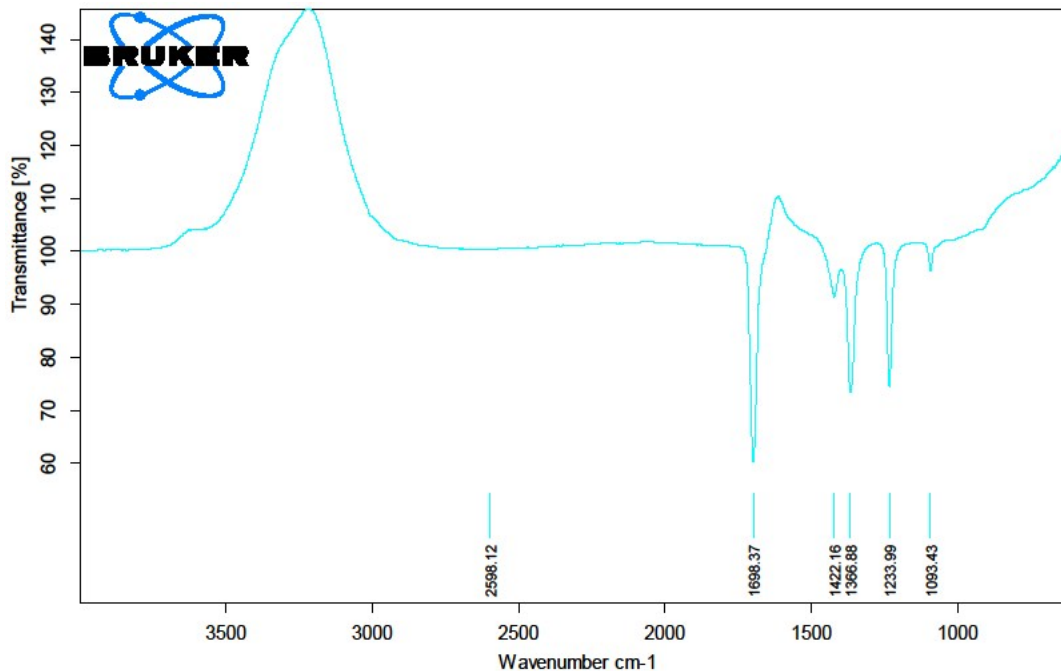


Fig.S4e

Figure S4: ATR spectra of as-synthesized C-Dots (a) before the addition of pesticides, after addition of (b) Imidacloprid, (c) Tetradifon, (d) Atrazine, (e) Lindane.

Table S1. Zeta potential values of C-Dots in the absence and presence of the 5 pesticides.

Samples	Zeta Potential (mV)
C-Dots	-16
C-Dots + Imidacloprid	-53
C-Dots + Tetradifon	-41
C-Dots + Atrazine	-25
C-Dots + Lindane	-19
C-Dots + Chlorpyrifos	-21

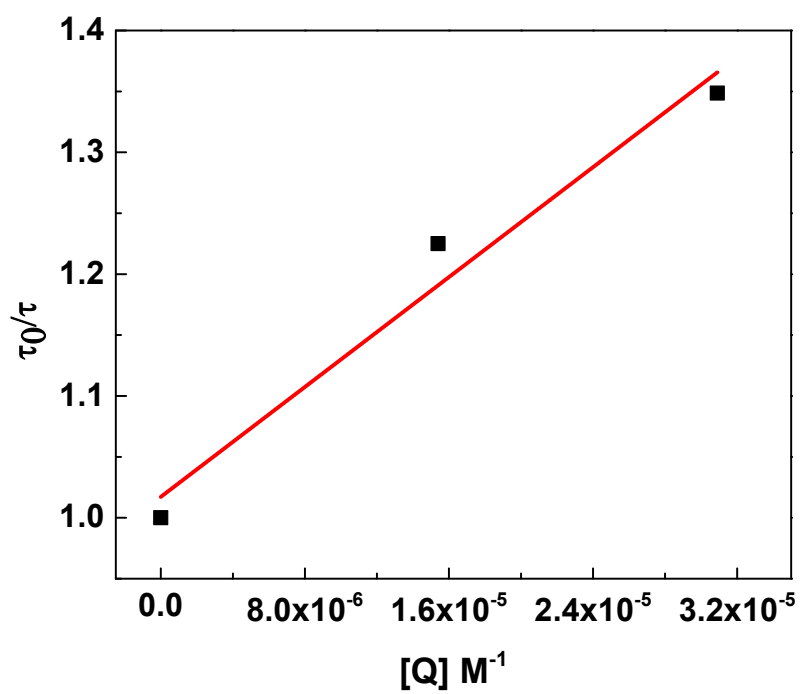


Fig.S5a

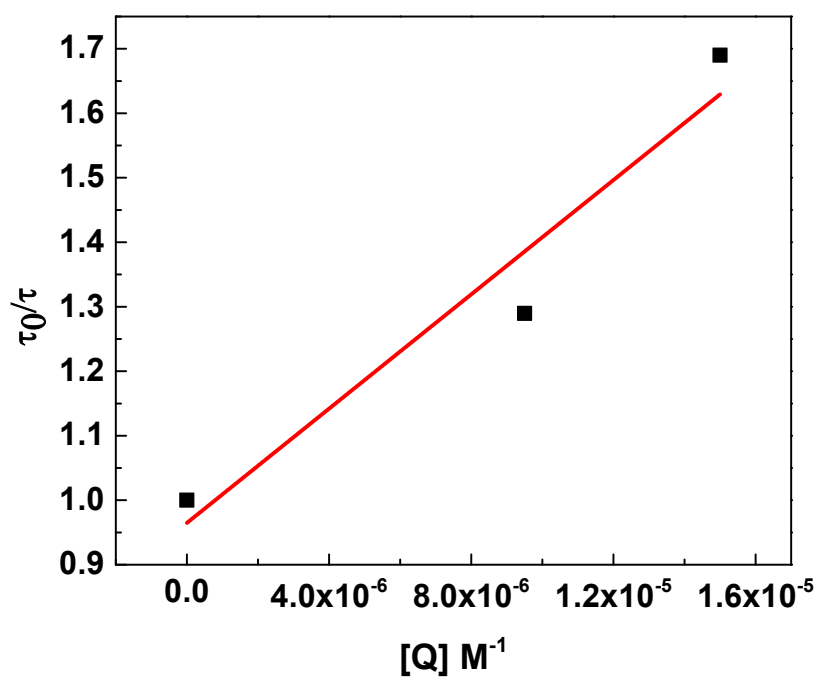


Fig.S5b

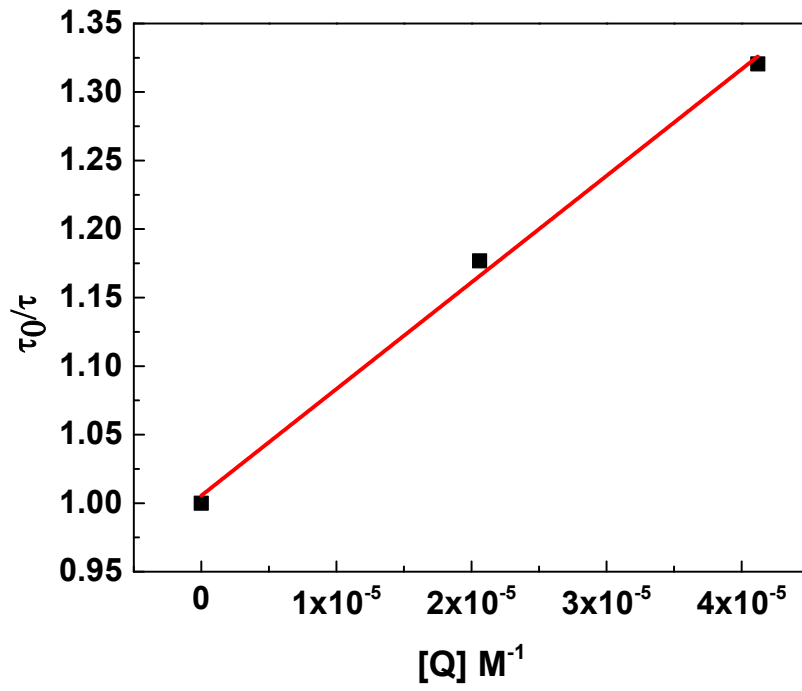


Fig.S5c

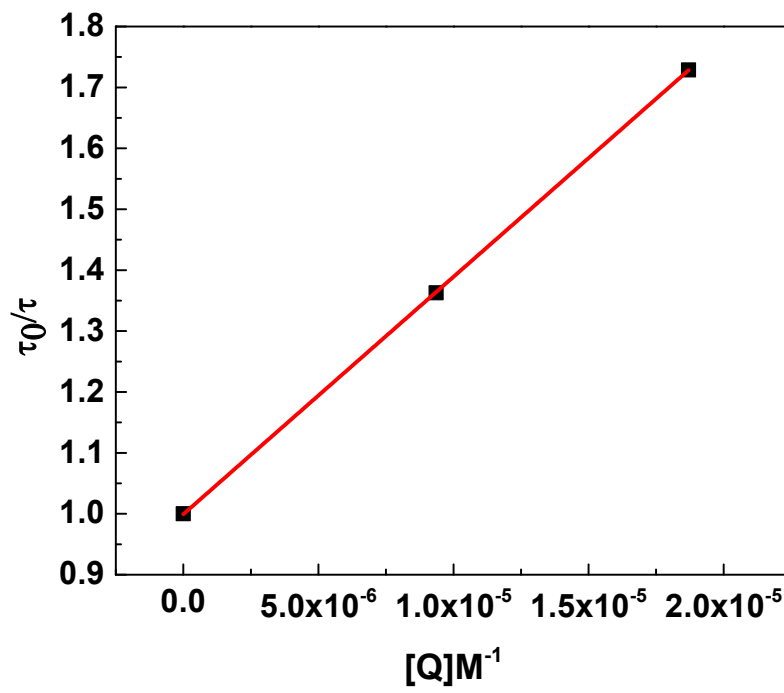


Fig.S5d

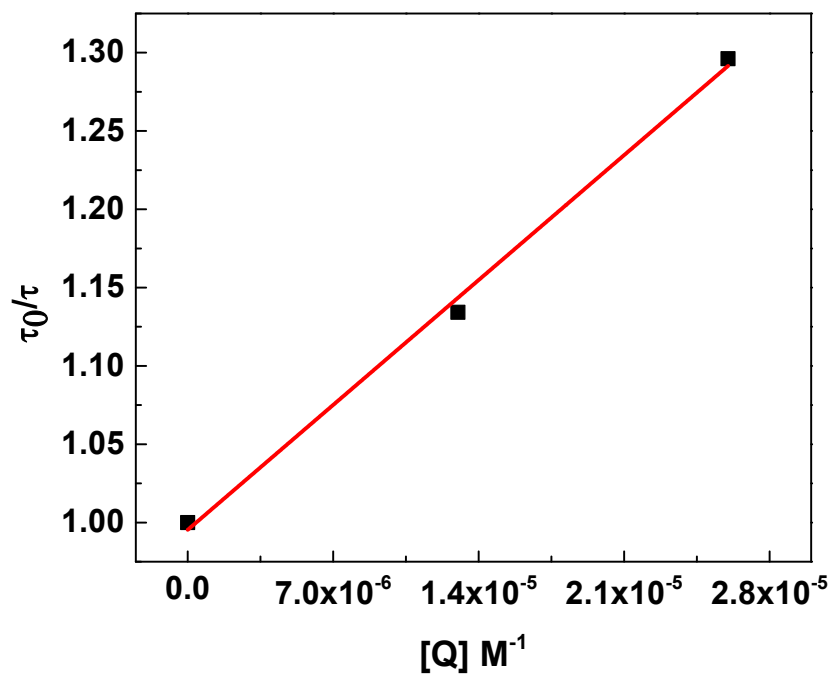


Fig.S5e

Figure S5. SV plots from time-resolved fluorescence lifetime decay for (a) Atrazine, (b) Chlorpyrifos, (c) Lindane, (d) Tetradifon and (e) Imidacloprid.

Table S2. The fluorescence lifetimes of C-Dots (Conc ~ 0.1mg/ml) in the absence and presence of different pesticides in the aqueous solution containing at the excitation at 330 nm and monitored at 457 nm.

Samples C-Dots+	τ_1 (ns)	f_1	τ_2 (ns)	f_2	τ_3 (ns)	f_3	$\langle\tau\rangle$ ns	χ^2
C-Dots	1.689	40.27	0.2469	30.21	6.1609	29.52	2.569	1.24
15.4 μ M Atrazine	1.620442	33.08	0.181688	41.57	6.365	23.35	2.097	1.18
31 μ M Atrazine	1.49627	27.42	0.123217	50.08	6.3661	22.51	1.9049	1.23
10 μ M Chlorpyrifos	1.4885	30.98	0.14213	44.62	6.0139	24.40	1.992	1.25
15 μ M Chlorpyrifos	1.4813	24.40	0.09205	57.95	6.2924	17.65	1.5253	1.19
13 μ M Imidacloprid	1.57968	35.29	0.1998	38.69	6.2659	26.02	2.2652	1.21
26 μ M Imidacloprid	1.5484	30.06	0.14265	48.05	6.5714	21.90	1.9824	1.15
20.6 μ M Lindane	1.555	32.86	0.171322	41.57	6.2615	25.57	2.1832	1.389
41.2 μ M Lindane	1.5114	29.69	0.12895	48.05	6.44305	22.27	1.9455	1.3
9.4 μ M Tetradifon	1.4392	28.31	0.12838	47.82	5.9318	23.88	1.8853	1.19
18.7 Tetradifon	1.5377	21.76	0.09707	61.15	6.3916	17.09	1.486	1.13

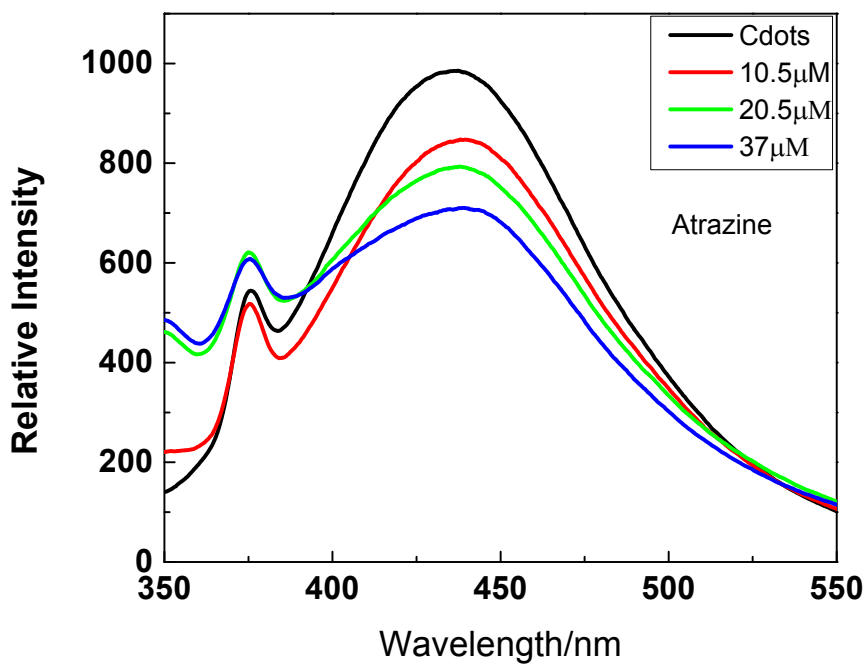


Fig.S6a

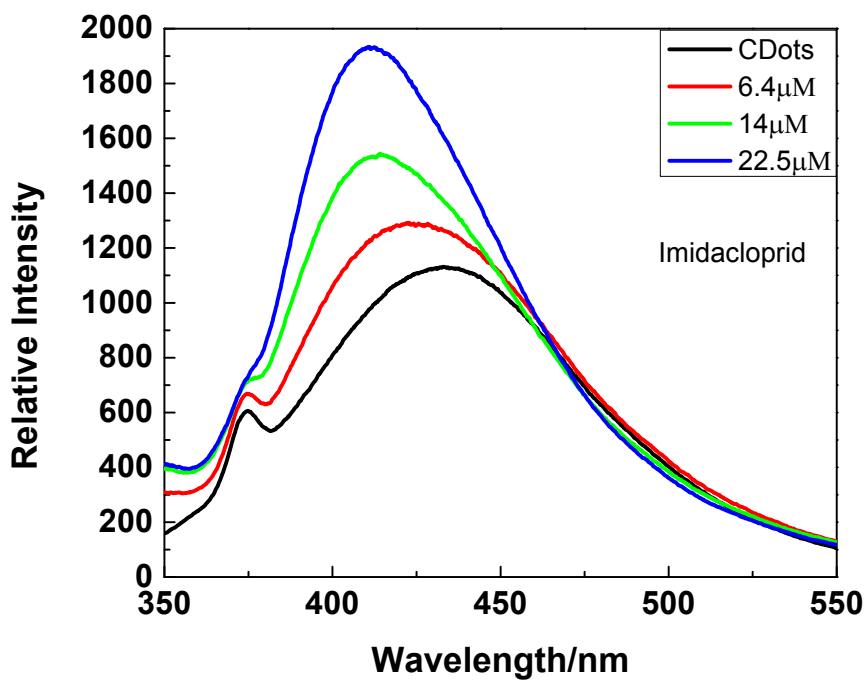


Fig.S6b

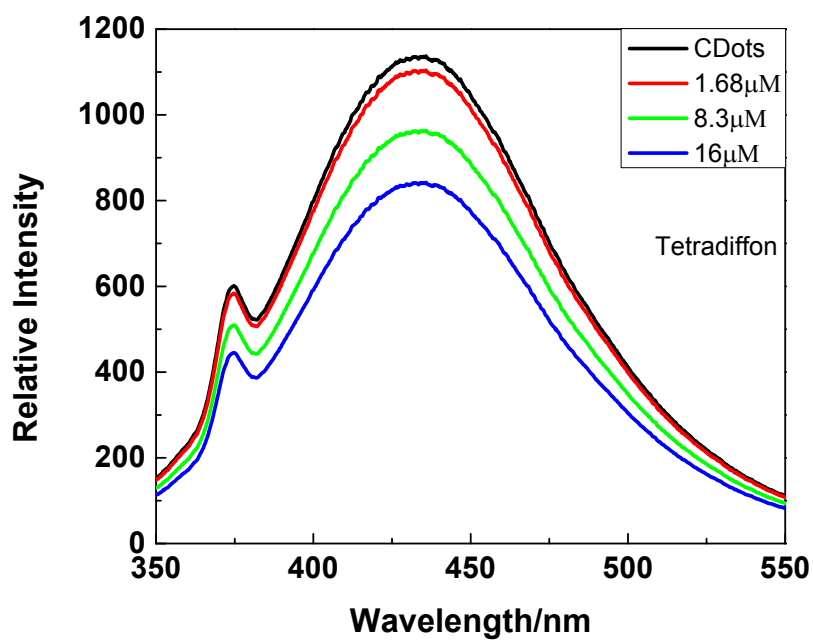


Fig.S6c

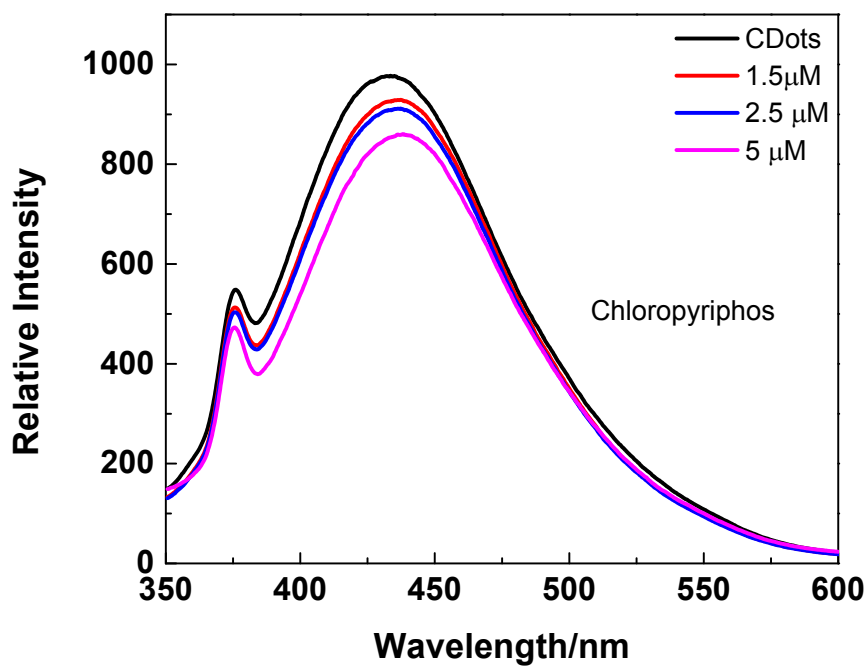


Fig.S6d

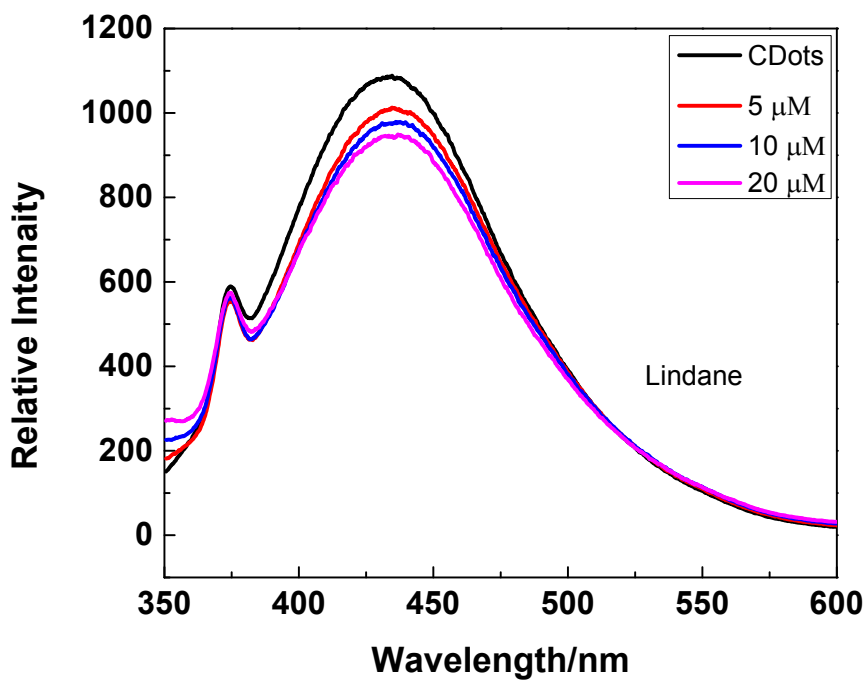


Fig.S6e

Figure S6: Fluorescence response of C-Dots towards (a) Atrazine, (b) Imidacloprid and (c) Tetradiflon, (d) Chlorpyrifos and (e) Lindane in river water.