Supplementary Materials

CdTe QD-Based Inhibition and Reactivation Assay of Acetylcholinesterase for Detection of Organophosphorus Pesticides

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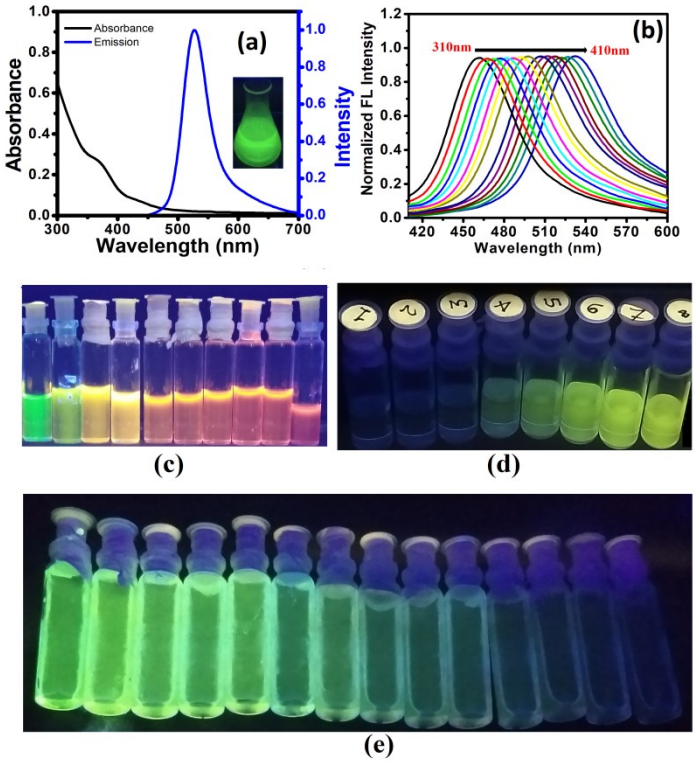

Fig. S1 (a) Absorption and FL spectra of CdTe-GSH QDsexcitedat 380 nm. Inset: Strong greenFL of CdTe-GSH QDs solution observed by the naked eyes under 365 nm UV lamp illuminations, **(b)**FL spectra of CdTe QD excited at different wavelength from 310 nm to 410 nm, **(c)** Photographic Image, **(d)** Colorimetric of CdTe QDs/AChE/CHOx biosensor in UV light at various concentration of paraoxon (OPs) at and blank (no paraoxon and ACh),**(e)**CdTe QDs/AChE/CHOx biosensor in UV light at various concentration of 4-$C_{12}PyOx^{-}$.

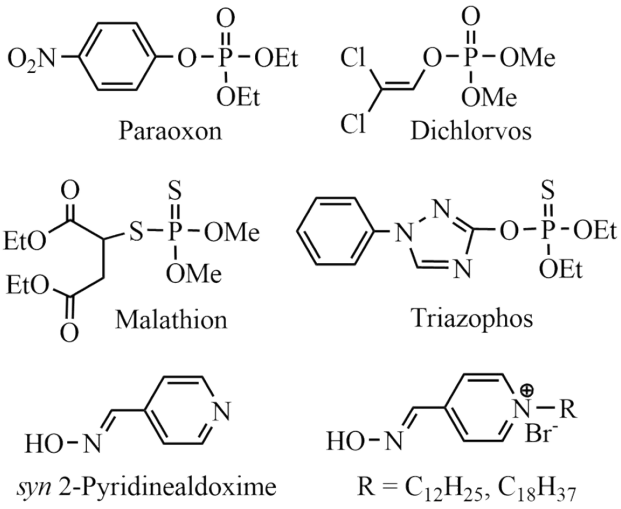

CHART S1

Table S1- Correlation of Optical bandgaps and Size of CdTe Quantum Dots

S.No.	Refluxing time (min)	Optical Bandgap (eV)	Size (nm)
1	05	3.50	1.4
2	10	3.30	1.7
3	15	3.12	1.8
4	20	3.05	1.9
5	25	3.00	2.0
6	30	2.90	2.1
7	35	2.80	2.5
8	40	2.56	2.8

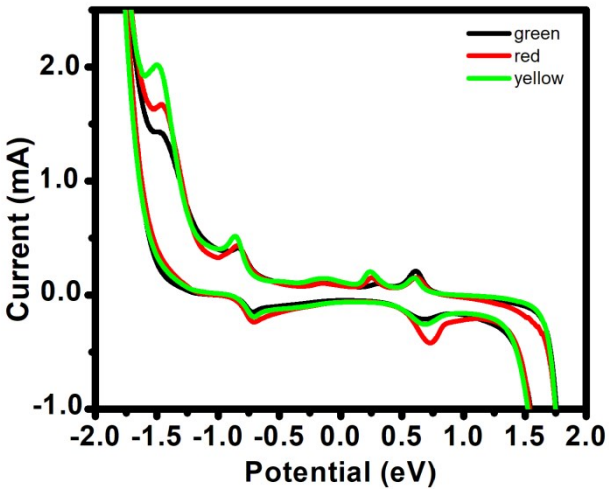

Fig. S2 Cyclic voltammogram of TGA capped CdTe Quantum dots

Table S2 Fluorescence decay parameter for CdTe QDs the decay times (τ_1, and τ_2) and the weighted average decay time (τ_{av}) and the quality of fitting (χ^2) are shown.

Time	**(λ_{ex}) nm**	**(λ_{ex}) nm**	**τ_1 (ns)**	**τ_2(ns)**	**χ^2**	**τ_{av} (ns)**
10min	385	525	26	92	1.088	59
15min	400	540	30	98	1.037	64
20min	400	545	42	147	1.123	94.5
25min	410	565	44	185	1.181	114.5
30min	410	575	47	192	1.117	119.5
35min	418	585	55	254	0.981	154.5
40min	428	595	58	252	1.035	155
45min	435	598	58	259	0.959	158.5

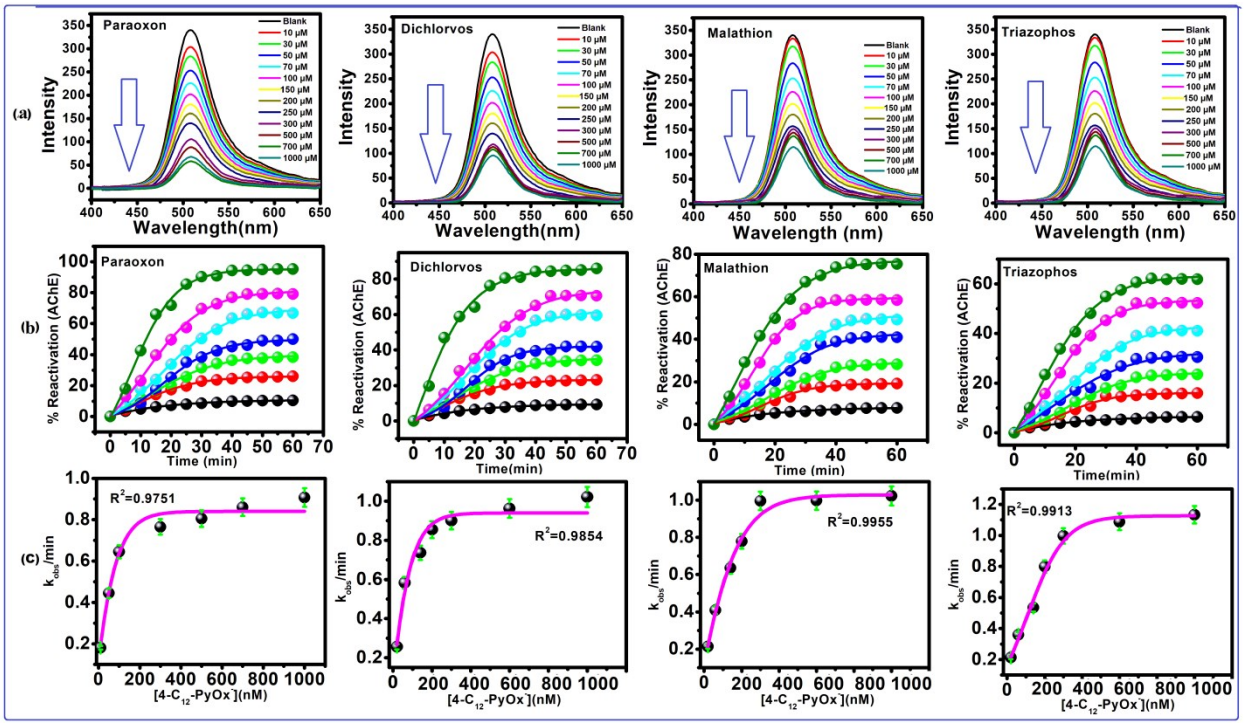

Fig. S3 Reactivation of inhibited AChE through the OPs using 4-C_{12}-PyOx$^-$(a) The fluorescence spectra of CdTe QD, in the presence of the 4-C_{12}-PyOx$^-$, inhibited AChE by paraoxon, dichlorvos, malathion, triazophos (b) Plot between the % reactivation of AChE and time/min(c) .plot between the k_{obs}/min and concentration of oxime, enabled the calculation of K_D and k_r

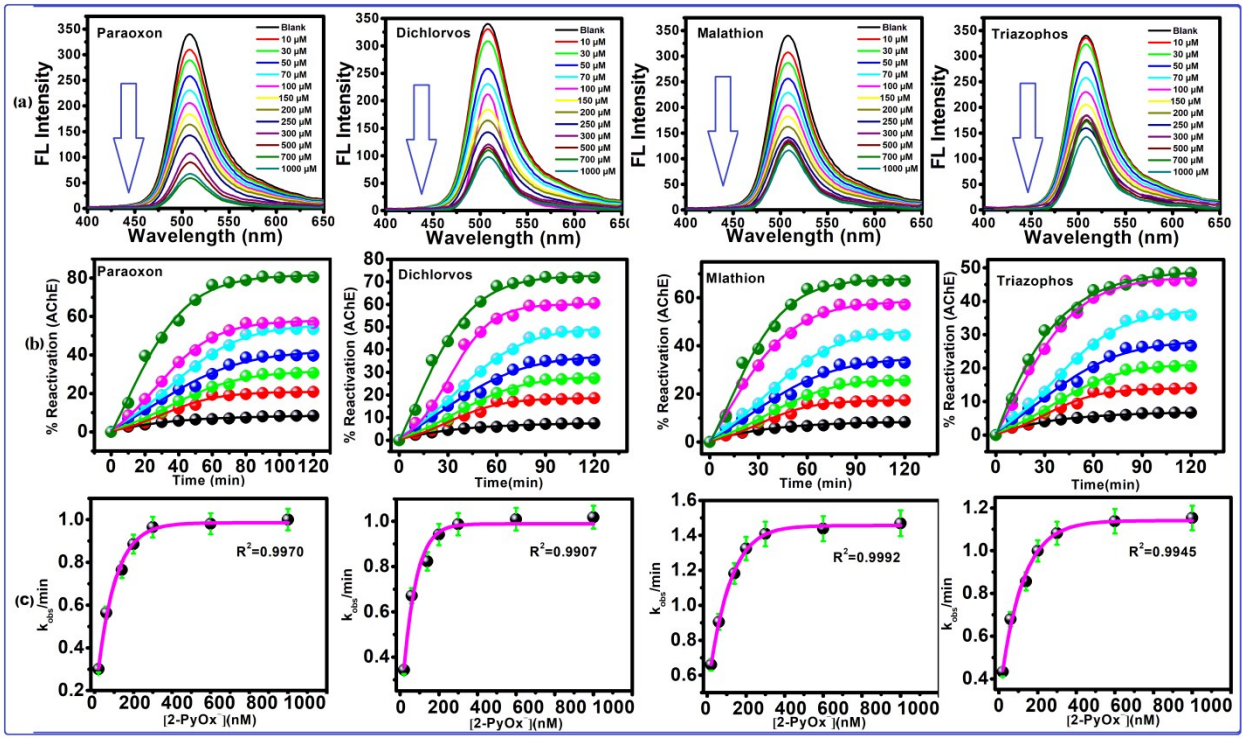

Fig. S4 Reactivation of inhibited AChE through the OPs using 2-PyOx$^-$(a) The fluorescence spectra of CdTe QD, in the presence of the 2-PyOx$^-$, inhibited AChE by paraoxon, dichlorvos, malathion,

triazophos (b) Plot between the % reactivation of AChE and time/min.(c) plot between the k_{obs}/min and concentration of oxime, enabled the calculation of K_D and k_r.

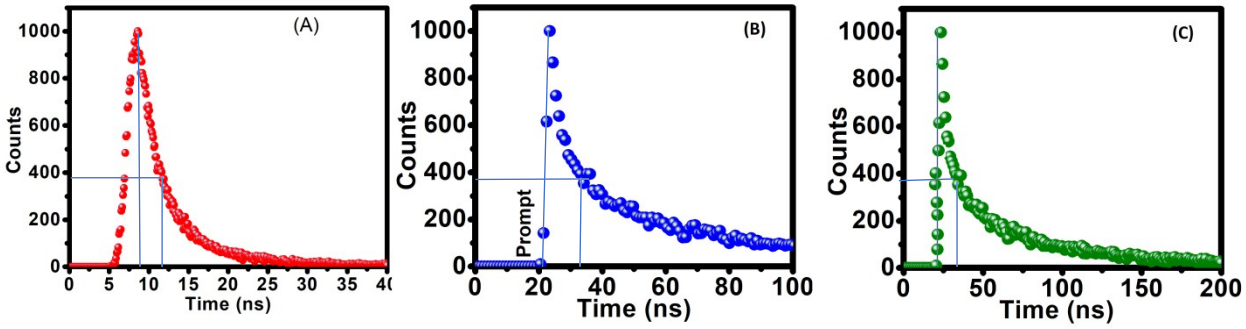

Fig. S5 Fluorescence lifetime decay of CdTe QDs (A) in the absence of paraoxon (B) in the presence of paraoxon (C) in the presence of paraoxon and oxime.

Table S3 Fluorescence decay parameter for CdTe QDs assay (A) CdTe/ChOx/AChE, (B) CdTe/ChOx/AChE/OPs, and (C) CdTe/ChOx/AChE/OPs/Oxime,the decay times (τ_1, and τ_2) and the weighted average decay time (τ_{av}) and the quality of fitting (χ^2) are shown.

Sample Name	**τ_1 (ns)**	**τ_2(ns)**	**τ_{av} (ns)**
A	2.6	8.7	5.65
B	36.5	115.6	76.05
C	16.0	58.7	37.35