Supporting Information

Effect of Capping Agent and Medium on Light-Induced Variation of the Luminescence Properties of CdTe Quantum Dots: A Study Based on Fluorescence Correlation Spectroscopy, Steady State and Time-Resolved Fluorescence Techniques

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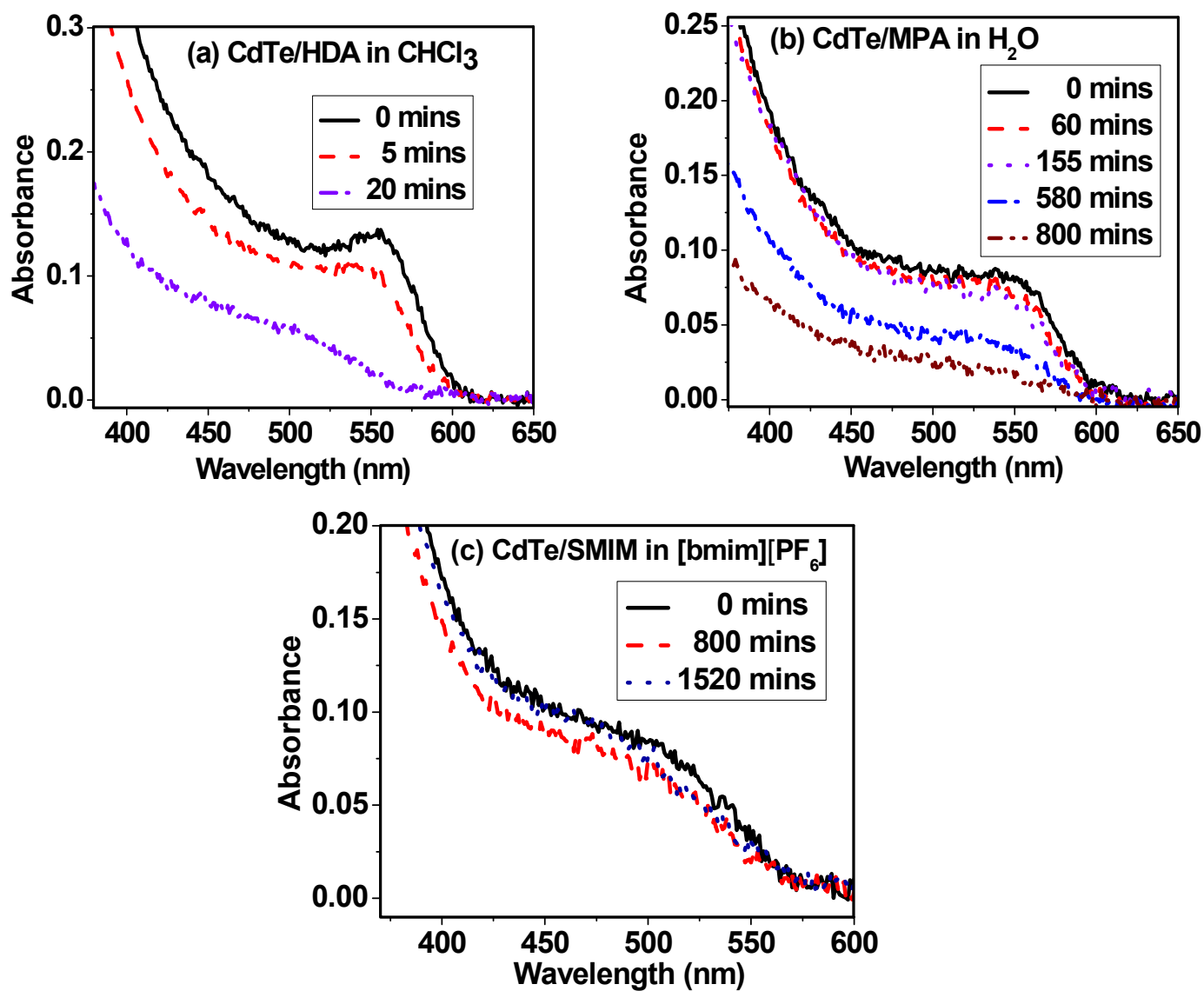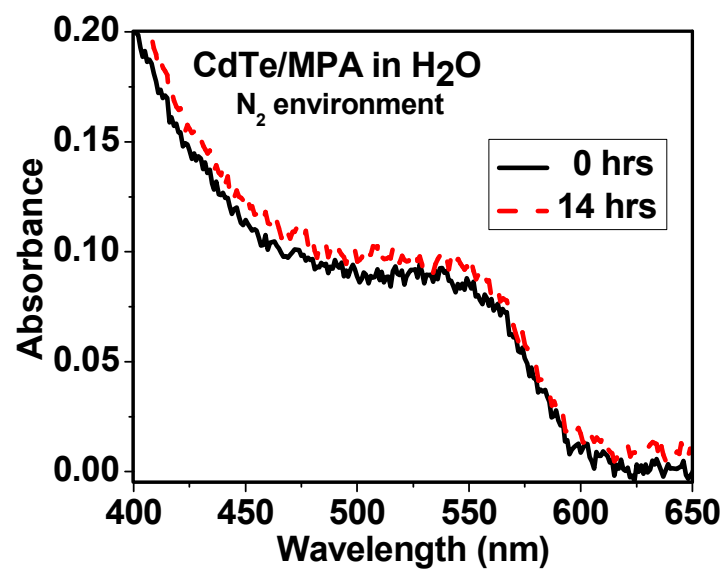
(a) CdTe/HDA
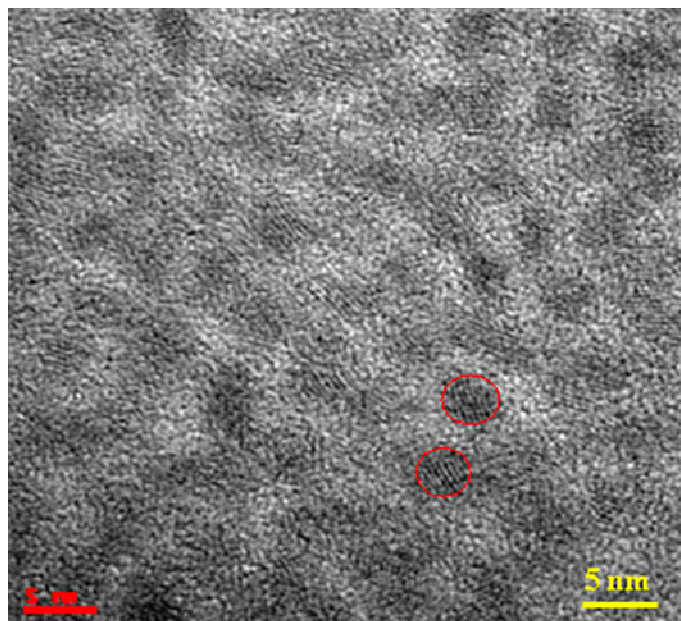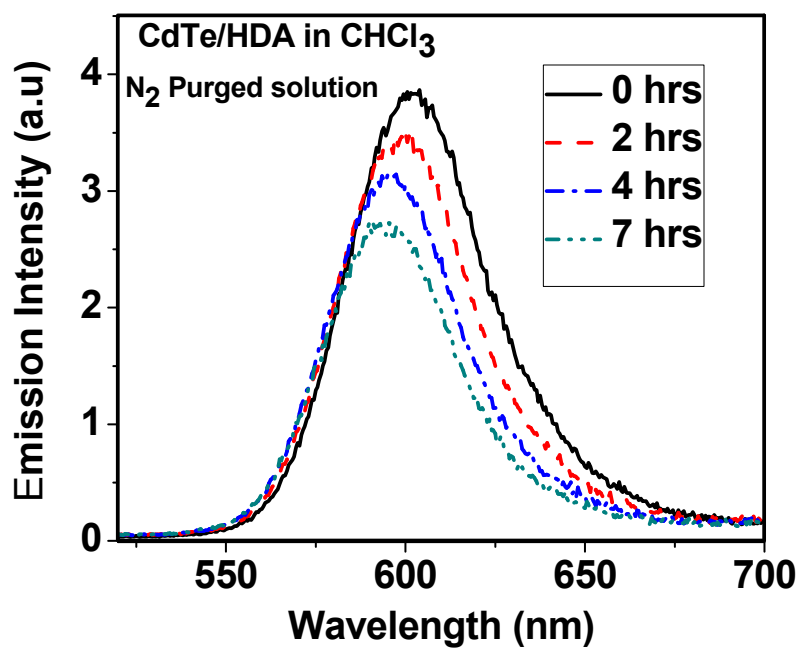

(b) CdTe/MPA
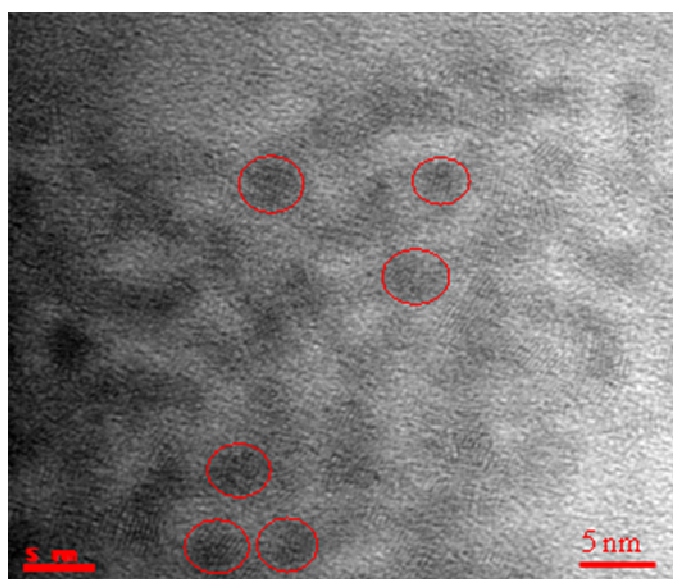
**Figure S1:** TEM images of (a) CdTe/HDA and (b) CdTe/MPA

Figure S2: Absorption spectra of the QDs after irradiation for different periods.

Figure S3: Absorption spectra of CdTe/MPA in H_2O before and after exposure to light for 14 hrs in N_2 atmosphere.

Figure S4: Steady state emission spectra of N_2 purged $CHCl_3$ solution of CdTe/HDA after different periods of light illumination. $\lambda_{ex} = 440$ nm.
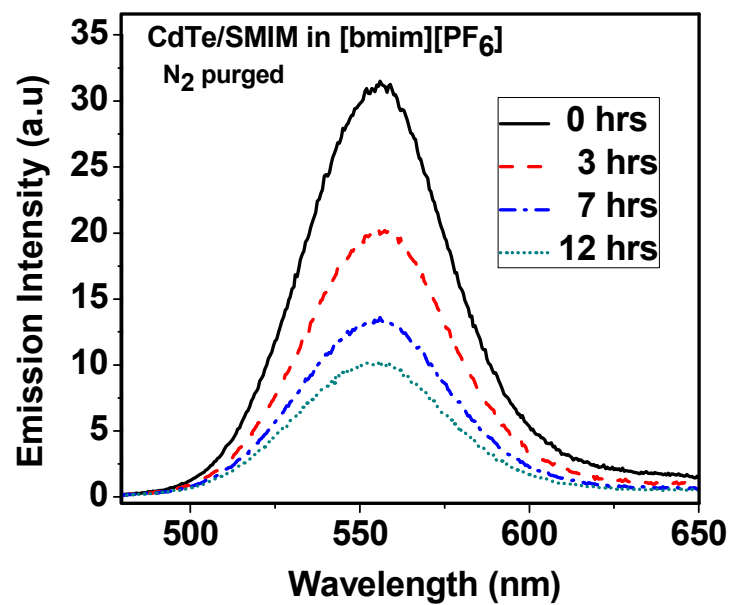
Figure S5: Emission spectra of CdTe/SMIM in [bmim][PF$_6$] recorded at different periods of light irradiation in N$_2$ environment. $\lambda_{ex} = 440$ nm.
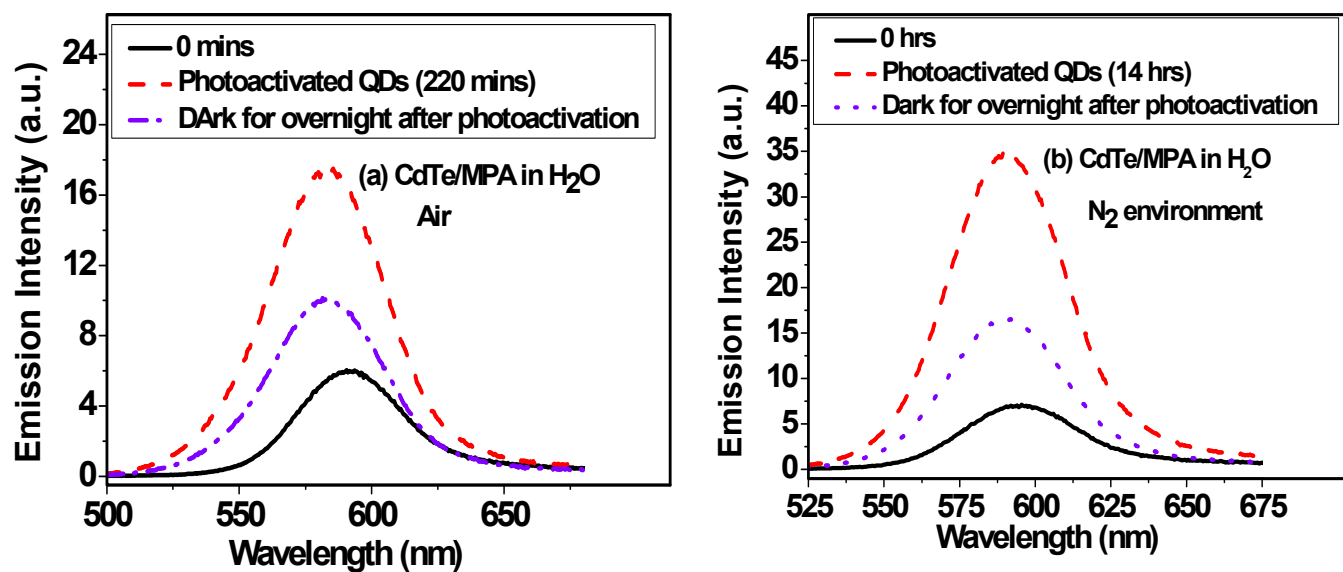
Figure S6: Emission spectra of the CdTe/MPA QDs before, immediately after photo-activation and after keeping the photo-activated QDs in the dark for overnight in (a) air and (b) N_2 environment.
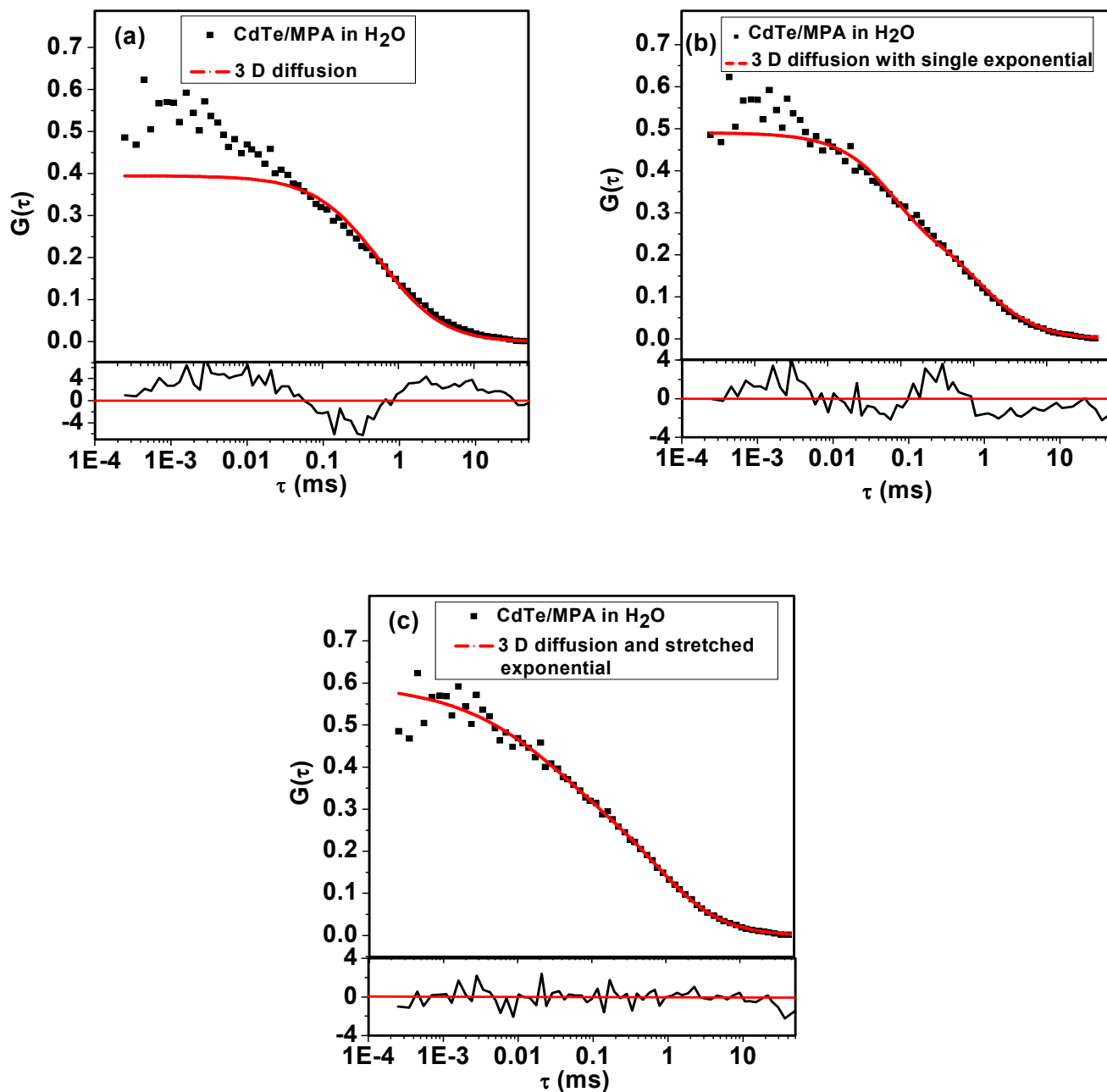
Figure S7: Fit of the correlation curves of a 56 nM aqueous solution of CdTe-MPA at 6 μW excitation power into (a) simple 3D diffusion model, (b) 3D diffusion model with single exponential term and (c) 3D diffusion model with a stretched exponential term. Here black points are the data and red line represents the fit. The residuals depicting the quality of the fits are shown in the lower part of each panel.
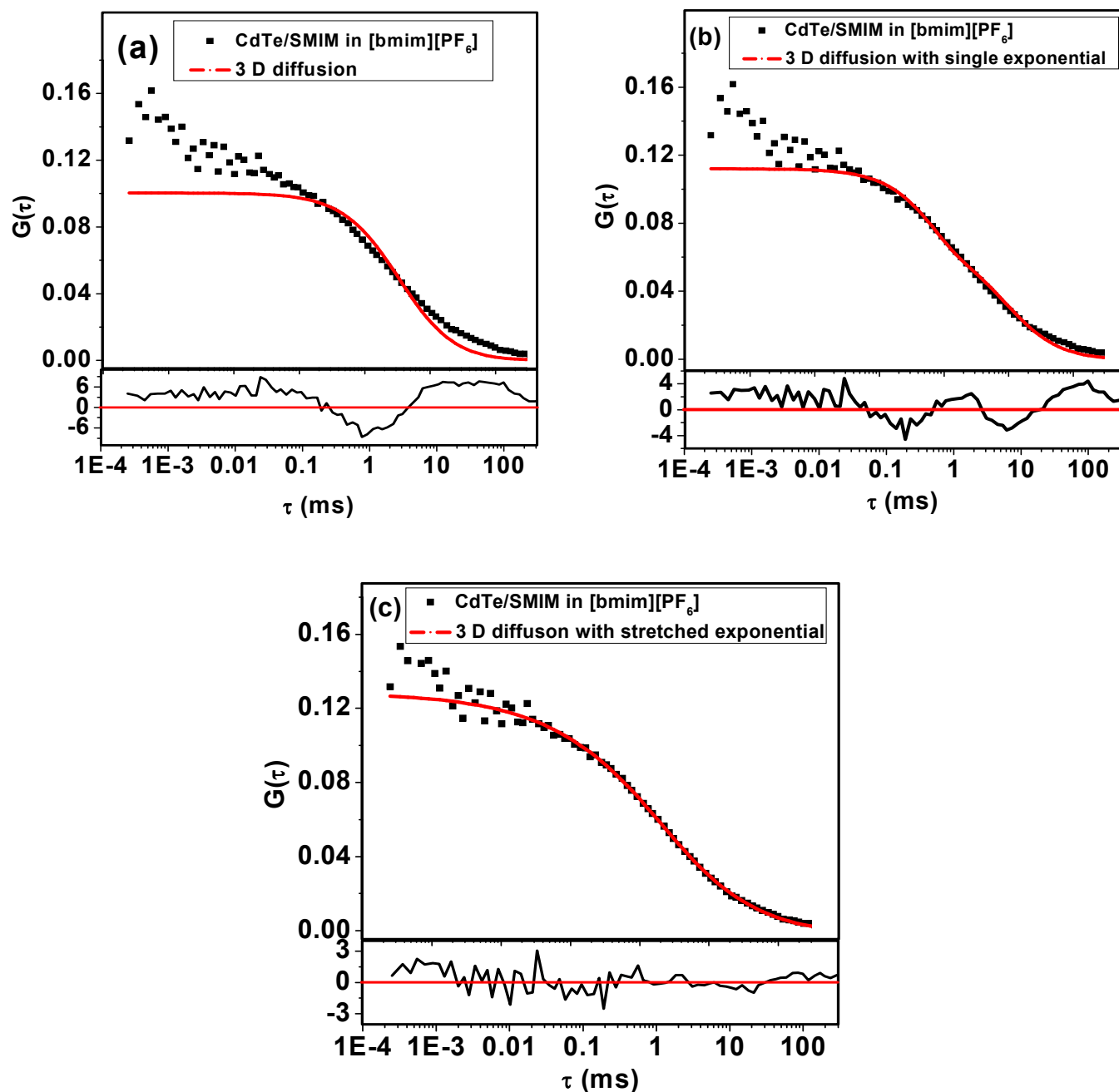
Figure S8: Fit of the correlation curves of a 400 nM CdTe/SMIM in [bmim][PF$_6$] at 5 μW excitation power into (a) simple 3D diffusion model, (b) 3D diffusion model with single exponential term and (c) 3D diffusion model with a stretched exponential term. Here black points are the data and red line represents the fit. The residuals depicting the quality of the fits are shown in the lower part of each panel.
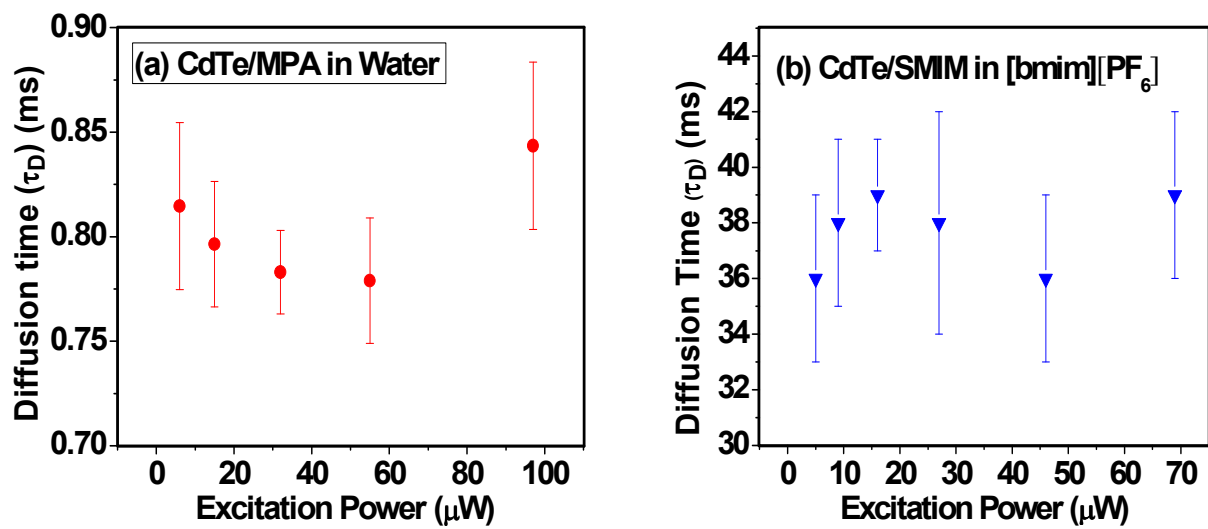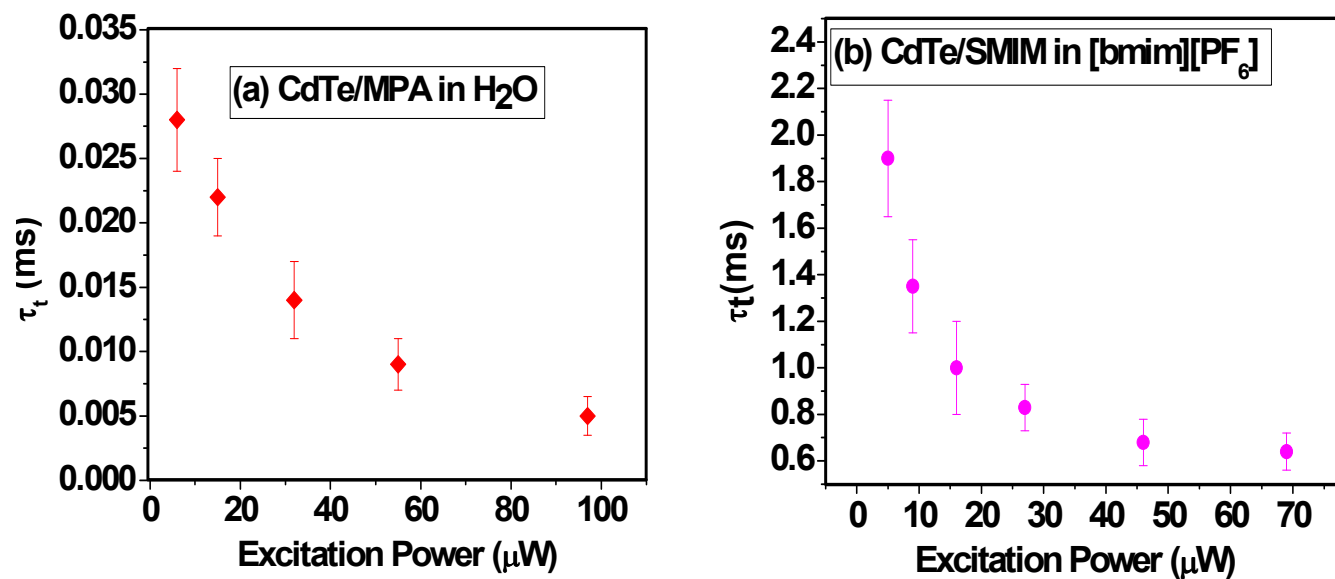
**Figure S9:** Plot of the diffusion time (τ_D) of the QDs vs excitation power.

Figure S10: Variation of the blinking time (τ_t) of the QDs on the excitation power.

Table S1: Some parameters relating to the FCS studies on CdTe/MPA in H_2O at various excitation power.

excitation power (µW)	excitation intensity (kW/cm^2)	excitation rate (s^{-1})	G(0)	T	N	dark fraction[†]	bright fraction*
6	1.58	2.16×10^6	0.5752	0.46	3.2	0.91	0.09
15	3.95	5.40×10^6	0.4484	0.61	5.7	0.83	0.17
32	8.40	11.47×10^6	0.3201	0.72	11.2	0.67	0.33
55	14.50	20.00×10^6	0.2601	0.80	19.2	0.43	0.57

$N_{actual} = 33.6$ estimated from the concentration of QDs for an observation volume of 10^{-15} L.
*N/N_{actual} gives the bright fraction of the QDs. [†]Dark fraction = (1 - bright fraction).
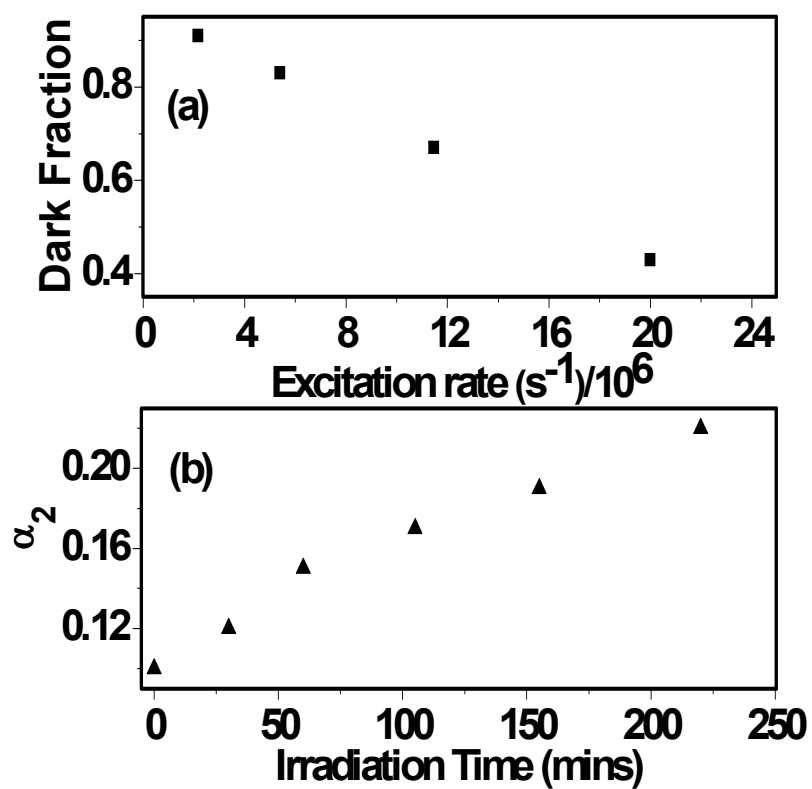
Figure S11: Plot of (a) dark fraction of the QDs (obtained from FCS measurement) with excitation rate and (b) amplitude of the long lifetime component (α_2) with irradiation time.