

Supporting information

Induced UV Photon Sensing Property in Narrow Bandgap CdTe Quantum Dots through Controlling Hot Electron Dynamics

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Supporting Information

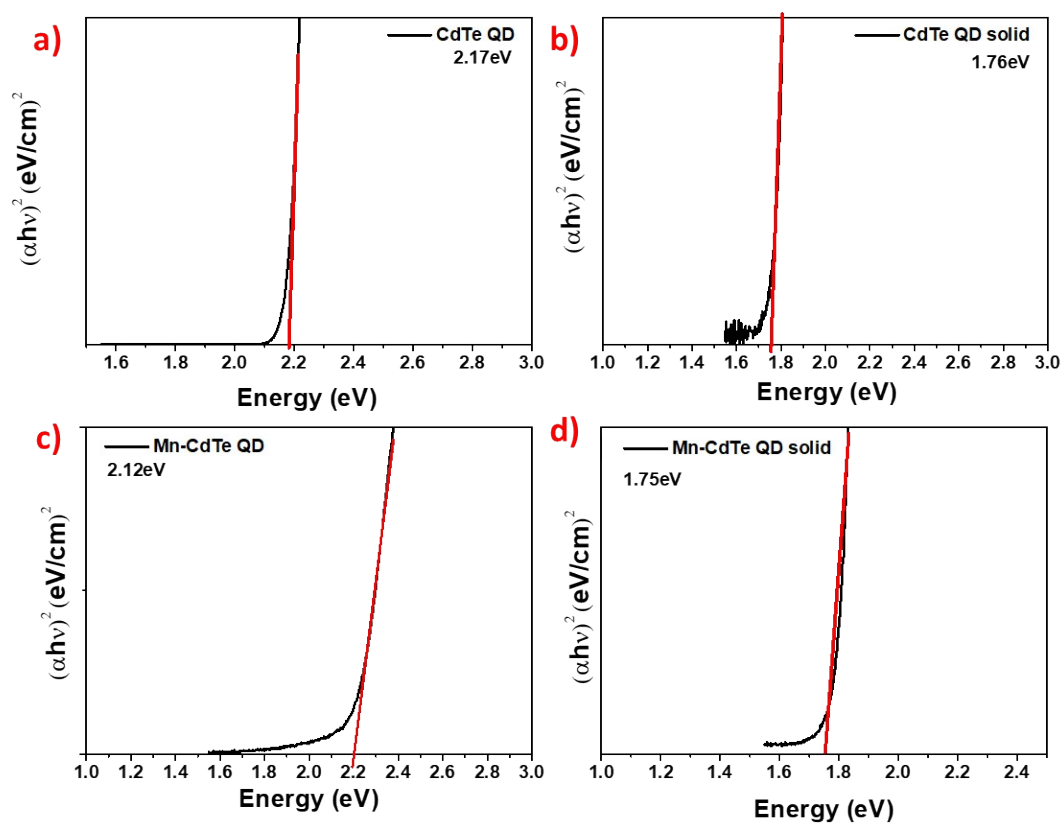


Fig.S1. The optical bandgap for CdTe & Mn-CdTe samples are, obtained by extrapolating $(\alpha h\nu)^2$ versus $h\nu$ plot

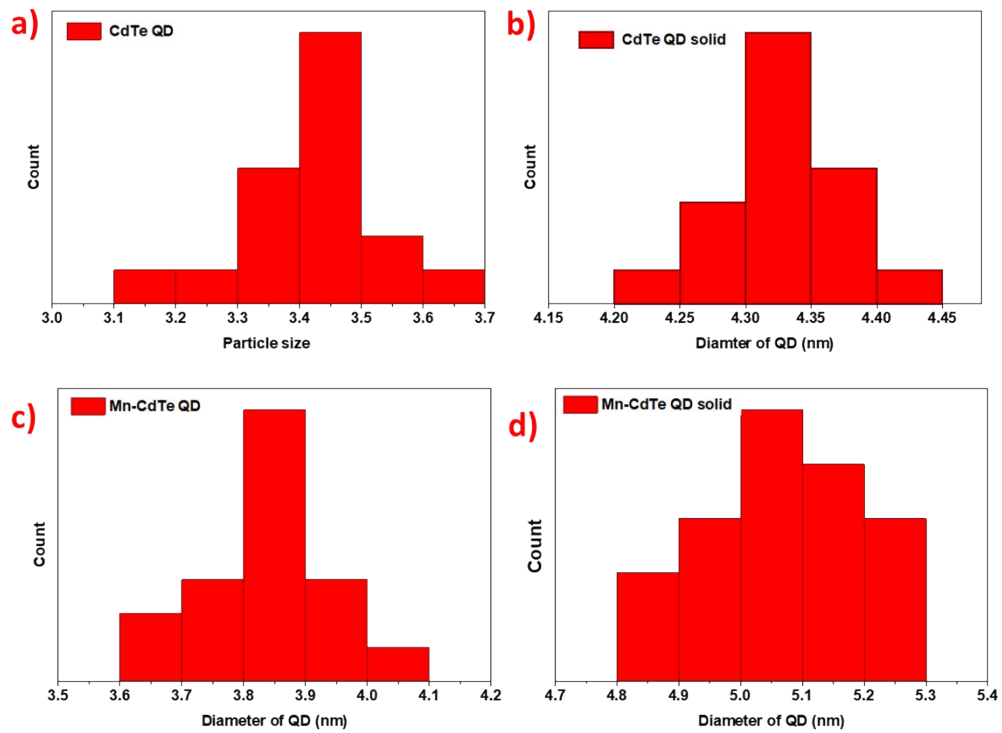


Fig. S2. Size histogram for CdTe QD, CdTe QD solid, Mn-CdTe QD and Mn-CdTe QD solid obtained from TEM imaging.

Sl. No.	Sample name	Average Size of the QDs (nm) From TEM analysis	Average particle size calculation from UV-Vis absorption peak maximum position (nm)	Band Gap (E_g in eV) By plot
1	CdTe QD	3.4nm	3.39nm	2.17
2	CdTe QD solid	4.3nm	4.32nm	1.76
3	Mn-CdTe QD	3.8nm	3.83nm	2.12
4	Mn-CdTe QD solid	5nm	5.03nm	1.75

Table S1. Average size calculation of prepared QD systems by TEM and Uv-visible absorption spectra

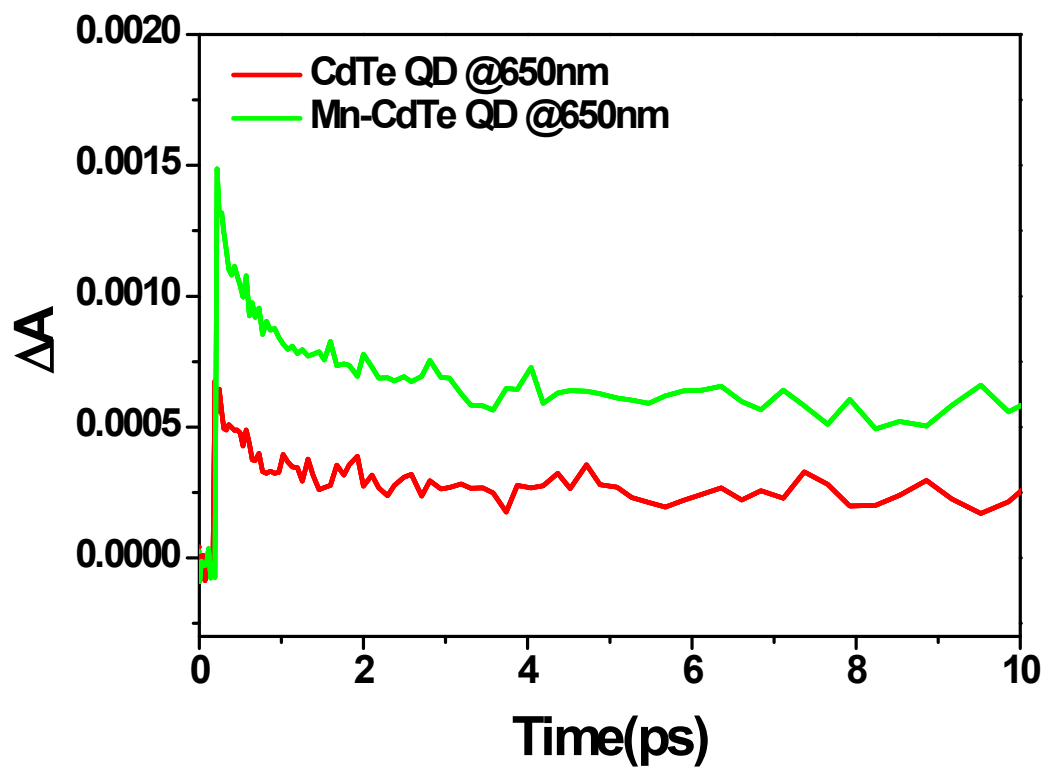


Fig. S3. The TA curve at the PA region at 650nm, obtained in CdTe & Mn-CdTe QDs. The magnitude of the PA region is larger for Mn-CdTe QD.

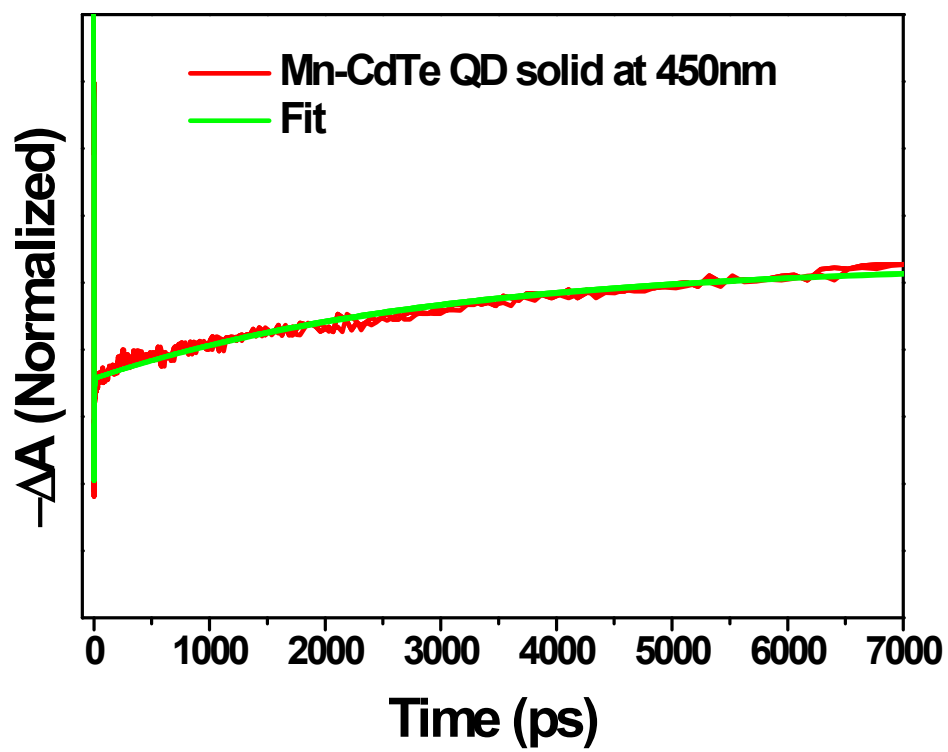


Fig.S4. The kinetic trace and fit curve obtained from TA spectrum for Mn-CdTe QD solid at 450nm.

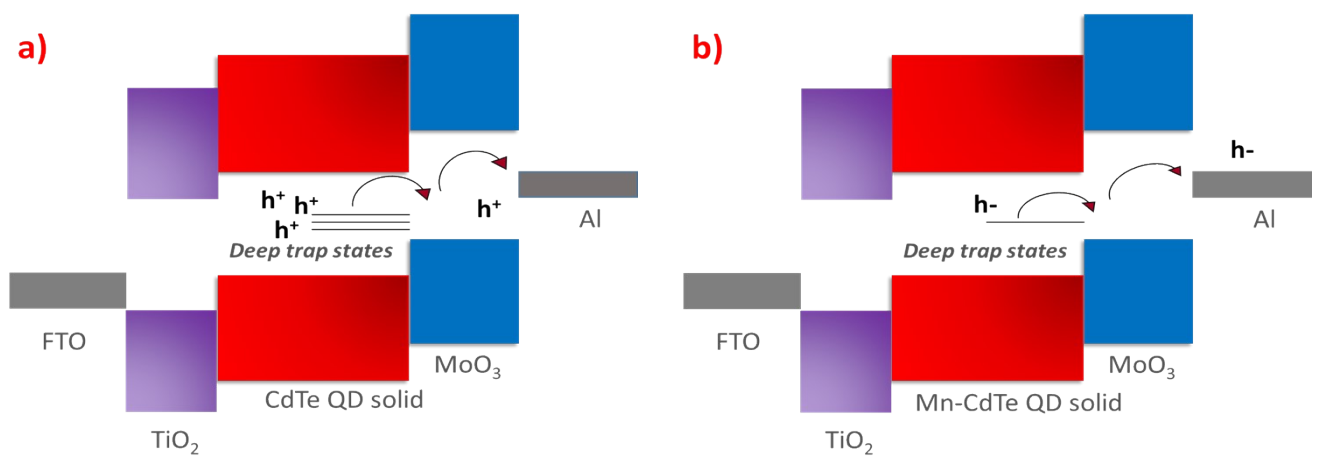


Fig. S5. Schematic diagram of CdTe QD solid a) and Mn-CdTe QD solid b) based photo sensitive device. (a) Shows the schematic representation of injection of holes from defect states at a bias voltage of 1V, and the holes are transporting through the high density deep trap states of the CdTe QD solid, upon no photon illumination. Whereas in Mn-CdTe QD solid (b) with low density of deep trap states, less number of deep trap assisted holes are transported through the device when no photons are illuminated which is the reason for the less magnitude of dark I_{OFF} current in forward bias.