Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Electronic Supplementary Information for:

Light harvesting enhancement upon incorporating alloy structured $CdSe_XTe_{1-X}$ quantum dots in DPP:$PC_{61}BM$ bulk heterojunction solar cell

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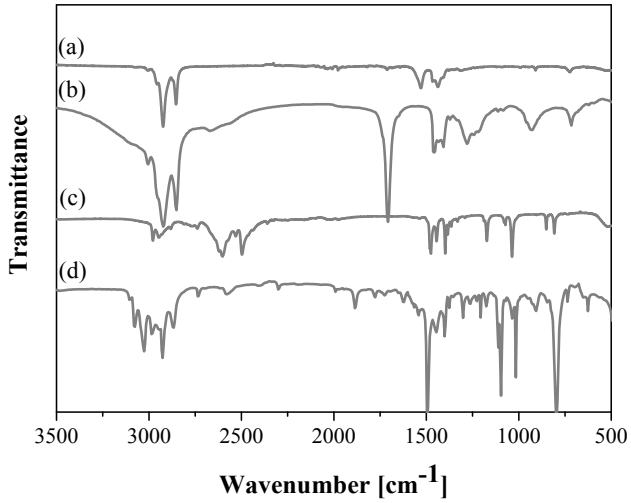

Figure S1. FT-IR spectra of (a) oleate capped $CdSe_XTe_{1-X}$ QDs (before ligand exchange), (b) p-methylthiolate capped $CdSe_XTe_{1-X}$ QDs (after ligand exchange), (c) oleic acid, and (d) p-methylthiophenole.

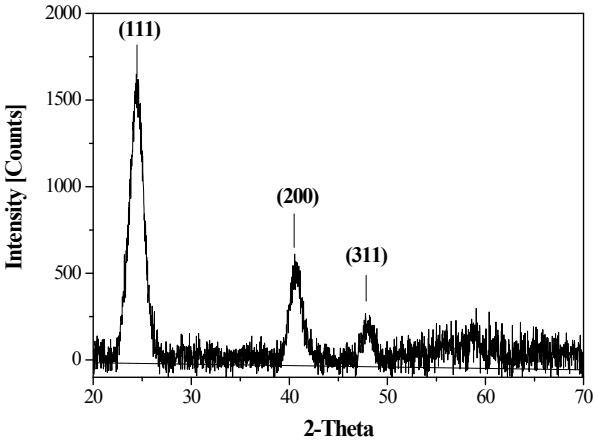

Figure S2. Powder x-ray diffractogramm of $CdSe_XTe_{1-X}$ QDs demonstrating their cubic zinc blende crystallinity.

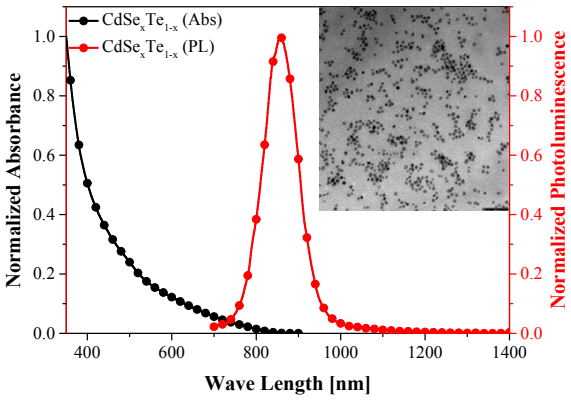

Figure S3. UV-Vis absorption and PL spectra of methylthiophenol-capped $CdSe_XTe_{1-X}$ nanoparticles. (Inset: TEM image of nanoparticles (the scale bar is 50 nm)).

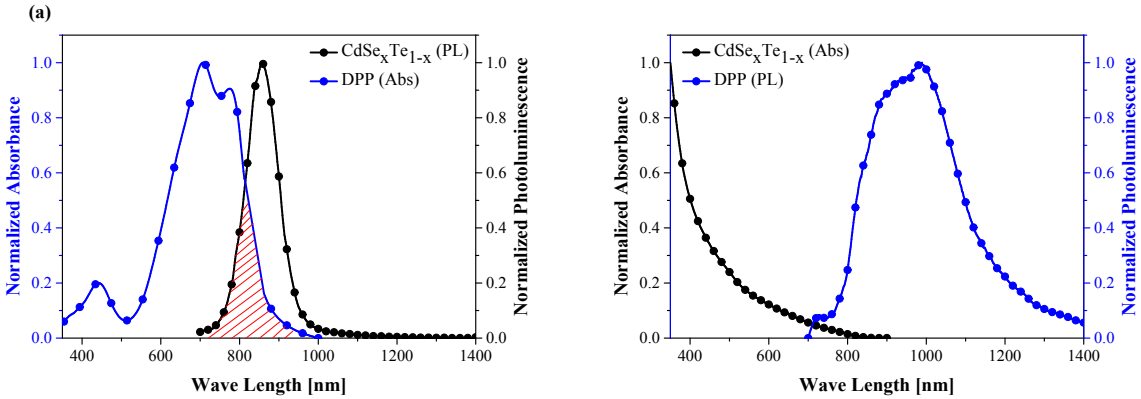

Figure S4. (a) UV-Vis absorption and PL spectra of DPP and $CdSe_XTe_{1-X}$ NPs respectively, (b) UV-Vis absorption and PL spectra of $CdSe_XTe_{1-X}$ NPs and DPP respectively.

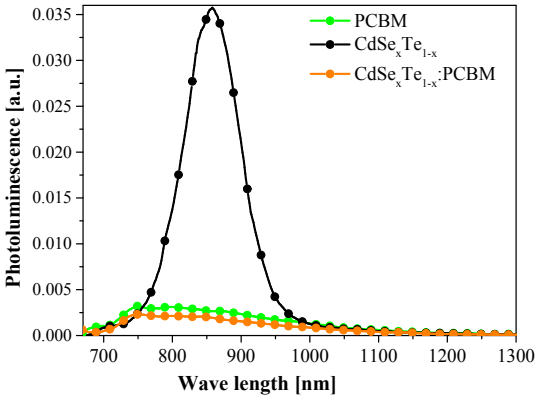

Figure S5. Photoluminescence spectra of PCBM, $CdSe_XTe_{1-X}$ and $CdSe_XTe_{1-X}$:PCBM

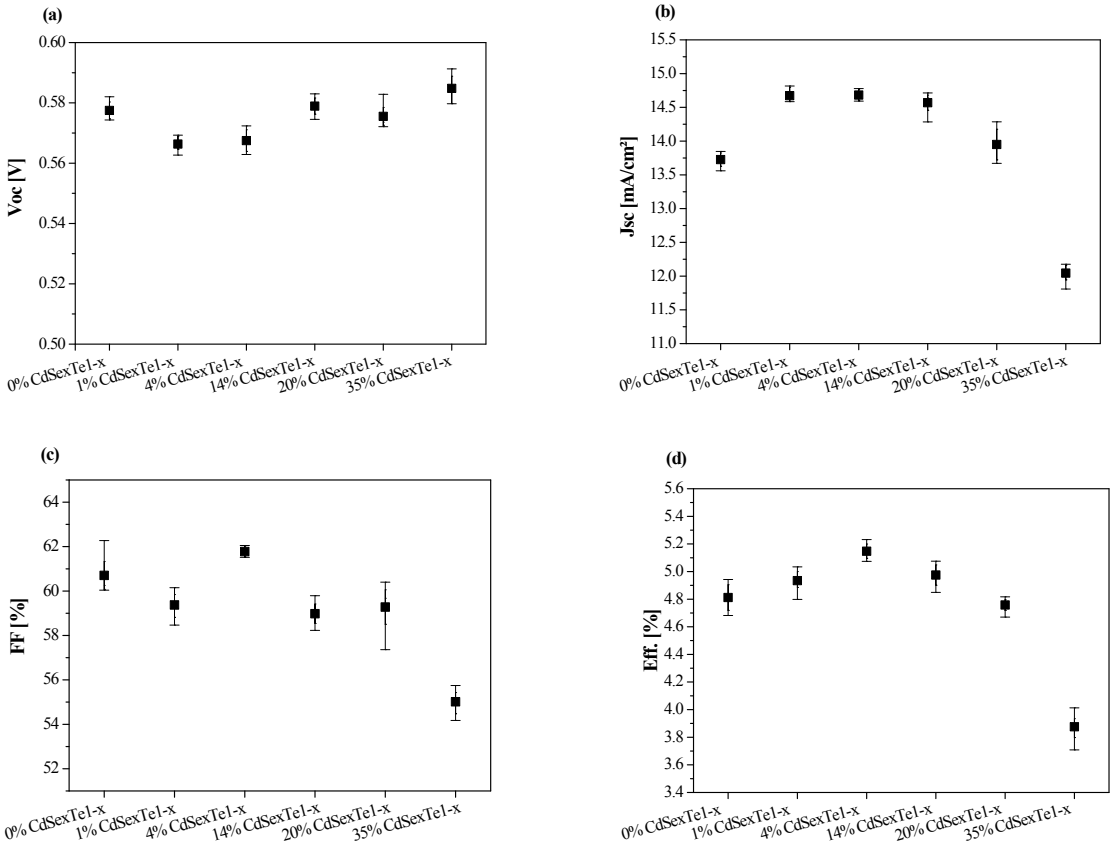

Figure S6. Box diagrams displaying (a) V_{oc}, (b) J_{SC}, (c) FF and (d) PCE of 6 cells containing different $CdSe_xTe_{1-x}$ content.

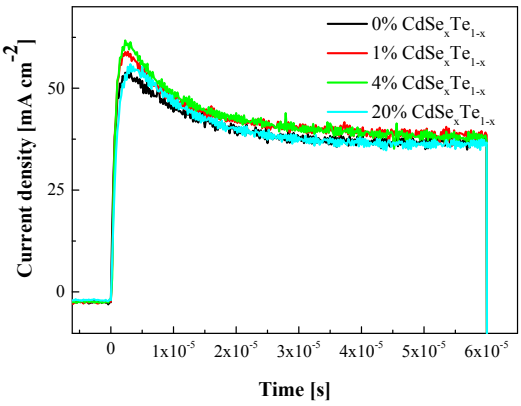

Figure S7**.** Time dependent photo-CELIV traces of hybrid solar cells with different $CdSe_xTe_{1-x}$ concentrations.

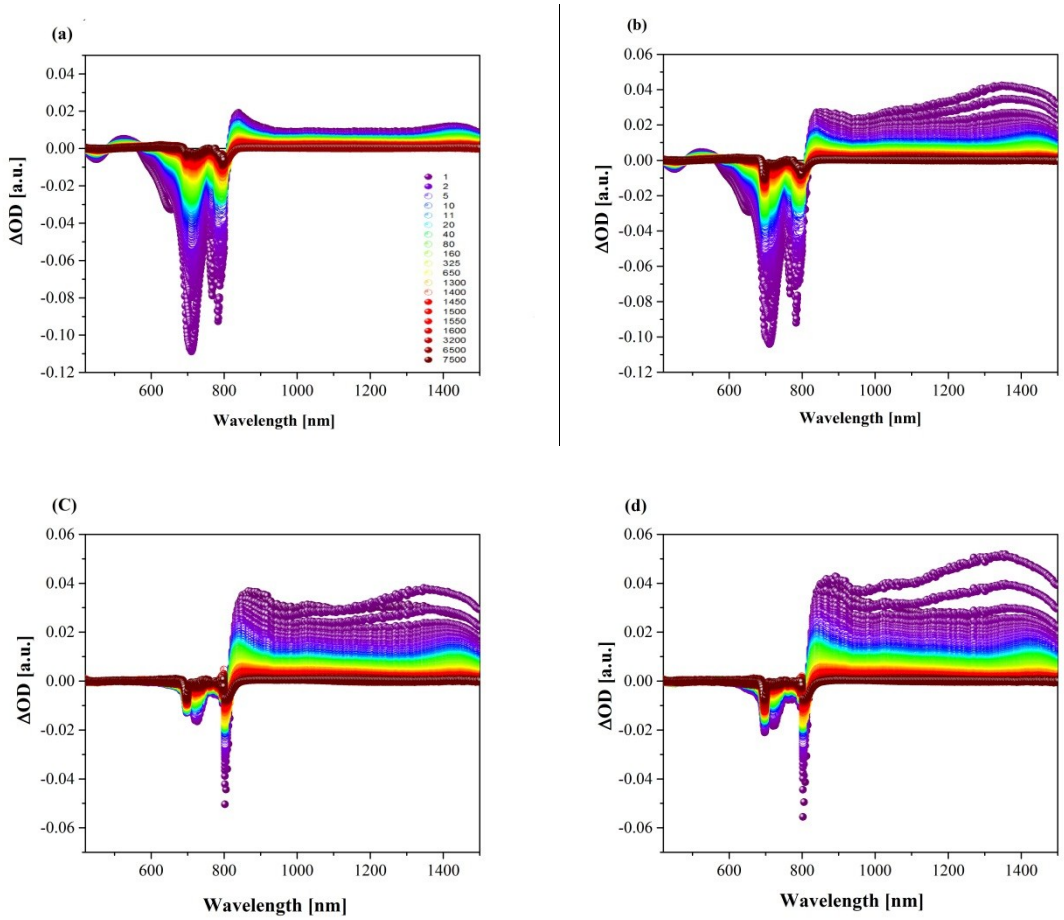

Figure S8. Differential absorption spectra upon excitation at 695 nm (100 nJ) of ternary film containing (a) 1 wt.% $CdSe_XTe_{1-X}$, (b) 4 wt.% $CdSe_XTe_{1-X}$, (c) 14 wt.% $CdSe_XTe_{1-X}$, and (d) 20 wt.% $CdSe_XTe_{1-X.}$ The numbers reported in the legend correspond to the time delays in ps.