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Supporting Information

Photoluminescence Quenching of Inorganic Cesium Lead Halides Perovskite Quantum Dots ($CsPbX_3$) by Electron / hole Acceptor

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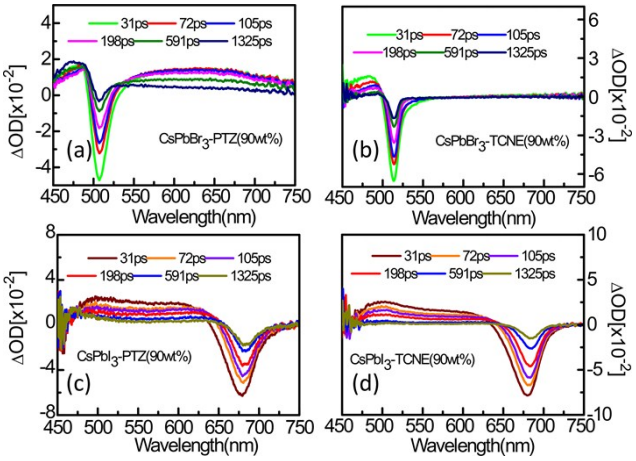

Figure S1 Time-resolved TA spectra of $CsPbBr_3$ QDs adsorbed with 90% PTZ (a) and $CsPbBr_3$ adsorbed with 90% TCNE (b). Time-resolved transient absorption spectra of $CsPbI_3$ adsorbed with 90% PTZ (c) and $CsPbI_3$ adsorbed with 90%TCNE (d). The time-resolved transient absorption spectra were obtained at different probe delay times following 400 nm laser excitation with an energy density of 4.5 μJ/cm^2.

sample	τ_1/ps	τ_2/ps	τ_3/ps	τ_{ave}/ps
$CsPbBr_3$	55(56.7%)	220(16.47%)	4500(26.83%)	1281.55
$CsPbBr_3$-PTZ(55wt%)	48(41.75%)	208.88(32.1%)	2426.55(26.15%)	721.63
$CsPbBr_3$-PTZ(90wt%)	20.59(34.92%)	104.32(45.62%)	1198.96(19.46%)	287.95
$CsPbBr_3$-TCNE(55wt%)	40(55.6%)	200(21.32%)	3200(23.08%)	803.44
$CsPbBr_3$-TCNE(90wt%)	45.73(44.67%)	103.07(23.7%)	700(31.63%)	266.26
$CsPbI_3$	92(42.27%)	500(33.23%)	6700(25.50%)	1877.92
$CsPbI_3$-PTZ(55wt%)	70(31.95%)	350(43.38%)	6000(24.67%)	1654.39
$CsPbI_3$-PTZ(90wt%)	78.55(46.17%)	460.46(30.77%)	4637.64(23.06%)	1247.24
$CsPbI_3$-TCNE(55wt%)	42.85(58.84%)	270(21.53%)	6000(19.63%)	1224
$CsPbI_3$-TCNE(90wt%)	75(33.16%)	390(48.61%)	5300(18.14%)	1165

Table S1 Best-fit parameters of absorption bleach transients

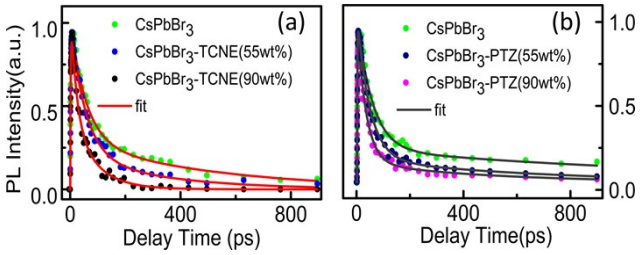

Figure S2 (a) Femtosecond time-resolved TA dynamics of $CsPbBr_3$ QDs, $CsPbBr_3$-TCNE (55wt %) and $CsPbBr_3$-TCNE (90wt %). (b) Femtosecond time-resolved TA dynamics of the $CsPbBr_3$ QDs, $CsPbBr_3$-PTZ (55wt %) and $CsPbBr_3$-PTZ (90wt %) (Probed at 515 nm) at 400 nm excitation.

Sample	τ_{ave}/ps
$CsPbBr_3$	432
$CsPbBr_3$-TCNE(55wt%)	150.42
$CsPbBr_3$-TCNE(90wt%)	62.78
$CsPbBr_3$-PTZ(55wt%)	253
$CsPbBr_3$-PTZ(90wt%)	110.54

Table S2. Multiexponential Fitting for Femtosecond Time Resolved Fluorescence Dynamics.