Supplementary Information: Ultrafast Carrier Trapping in Thick-Shell Colloidal Quantum Dots

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Spatial Location of Trap

Table S1: The variation of trapping lifetime for trapping through process (iii) for traps located at 60 meV above the VBM.

Trapping Lifetime (ns)	interface	outer surface
Config-1	3.8×10^{-5}	0.001
Config-2	4.2×10^{-5}	0.001
Config-3	4.0×10^{-5}	0.001

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Participation Ratio

We calculate the participation ratio, PR, of a given state, i, as:

$$\mathrm{PR}_i = \frac{\left(\sum_a |e_a^i|^2\right)^2}{\sum_a |e_a^i|^4}, \tag{S1}$$

where e^i is the eigenvector of electronic state i and summations are over all atoms, a. PR is equal to unity for a localized state and is equal to number of atoms for completely a delocalized state.