Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Size- and Temperature-dependent Photoluminescence Spectra of Strongly Confined $CsPbBr_3$ Quantum Dots

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A. Spectral line shape analysis

The raw PL spectra, $I(\lambda)$, expressed in count/nm vs wavelength (nm), is converted into the spectra on energy axis, $I(E)$, counts/eV vs eV through Jacobian conversion.[1] $I(E)$ is further converted to the spectral line shape, $L(E)$, which is directly proportional to Frank-Condon factor as shown in eqn (1).[2] c, n and M are the speed of light, optical dielectric constant, and transition dipole moment, respectively.

$$L(E) = I(E)/E^3 = (32\pi^3/3\hbar^4c^3)n^3|M|^2FC(E) \quad (1)$$

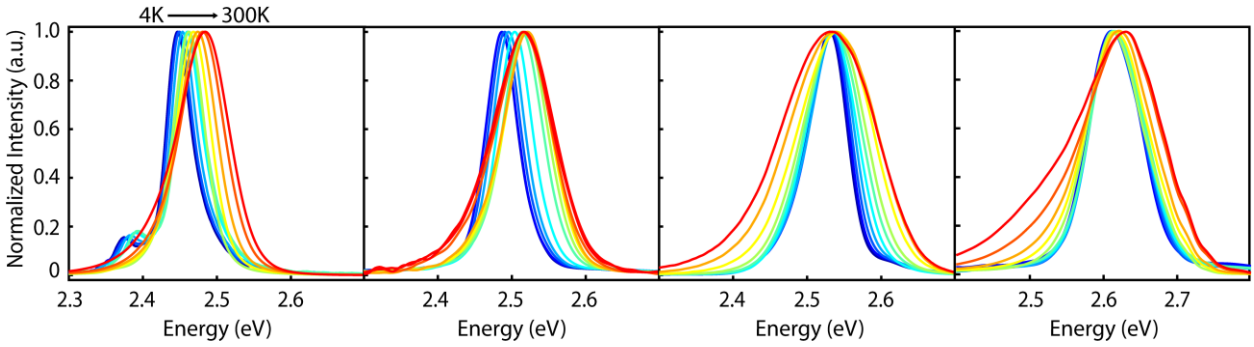

Fig. S1 Normalized spectral line shape, $L(E)$, of (a) 6.3 nm (b) 5.3 nm (c) 4.7 nm (d) 3.9 nm $CsPbBr_3$ QDs samples at temperatures between 4 and 300K.

1. J. Mooney and P. Kambhampati, *J. Phys. Chem. Lett.*, 2013, **4**, 3316-3318.
2. H.-Y. Chen, S. Maiti, C. A. Nelson, X. Zhu and D. H. Son, *The Journal of Physical Chemistry C*, 2012, **116**, 23838-23843.