Supporting Information

The correlation between phase transition and photoluminescence properties of CsPbX₃ (X= Cl, Br, I) perovskite nanocrystals

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Figure S1. Normalized 3D PLE contour maps of CsPbBr₃ from 80 to 300 K
Table S1. Extracted relatively weights $A_1$ and $A_2$, time constants $t_1$ and $t_2$, and average lifetime $t_{av}$ of CsPbI$_3$ NCs

| Temperature (K) | $A_1$  | $t_1$ (ns) | $A_2$  | $t_2$ (ns) | $t_{av}$ (ns) |
|-----------------|--------|------------|--------|------------|---------------|
| 80              | 71%    | 4.33       | 29%    | 24.74      | 10.25         |
| 100             | 64%    | 4.01       | 36%    | 24.19      | 11.27         |
| 120             | 60%    | 4.25       | 40%    | 25.1       | 12.59         |
| 140             | 56%    | 4.41       | 44%    | 26.4       | 14.09         |
| 160             | 52%    | 4.18       | 48%    | 27.2       | 15.23         |
| 180             | 50%    | 4.3        | 50%    | 27.68      | 15.99         |
| 200             | 45%    | 4.2        | 55%    | 33.6       | 20.37         |
| 220             | 44%    | 3.41       | 56%    | 37.3       | 22.39         |
| 240             | 43%    | 2.75       | 57%    | 38.3       | 23.01         |
| 260             | 42%    | 3.95       | 58%    | 40.38      | 25.08         |
| 280             | 27%    | 4.56       | 73%    | 40.1       | 30.50         |
| 300             | 30%    | 4.56       | 70%    | 40.1       | 33.60         |