

Supporting Information

Thioacetamide-ligand-mediated synthesis of CsPbBr₃-CsPbBr₃ homostructured nanocrystals with enhanced stability

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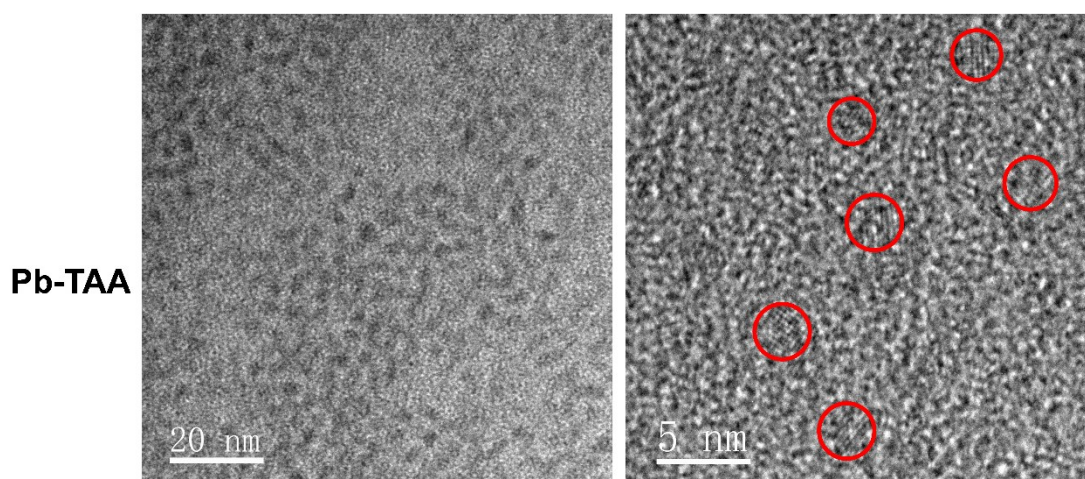


Figure S1. TEM images of Pb precursor after adding 5%TAA ligand. The marked circles are Pb-S clusters.

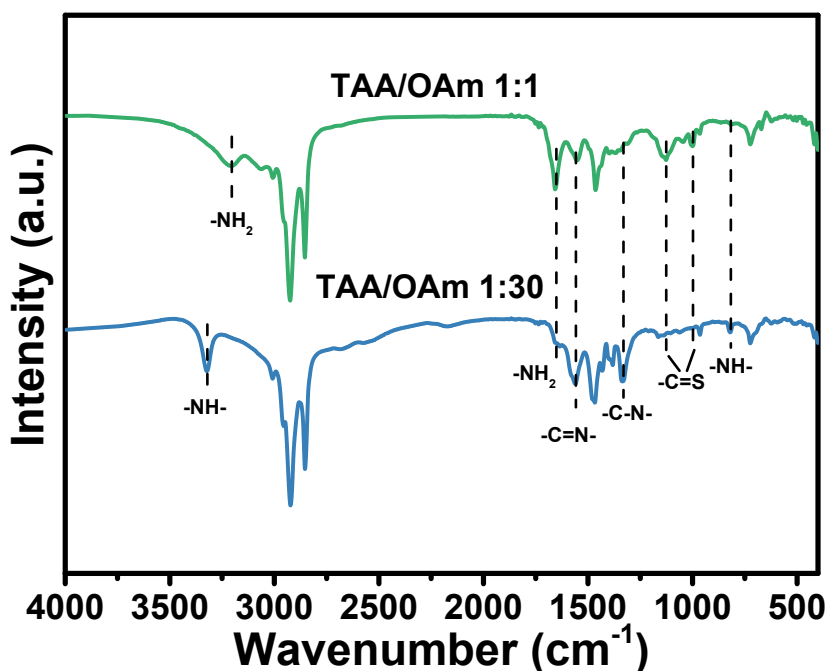


Figure S2. FTIR spectra of TAA-OAm ligand solution with different TAA/OAm molar ratio of 1:1 and 1:30. The representative peaks are marked to verify the terminal production of the reaction between TAA and OAm. The sample with 1:1 molar ratio provides insufficient OAm to finish substitution, still remaining obvious peaks of -C=S and -NH₂. The sample with 1:30 molar ratio ensures excess OAm to react with TAA, which appears significant weakened -C=S and -NH₂ peaks and remarkably enhanced -C=N-, -C-N- and -NH- signals.

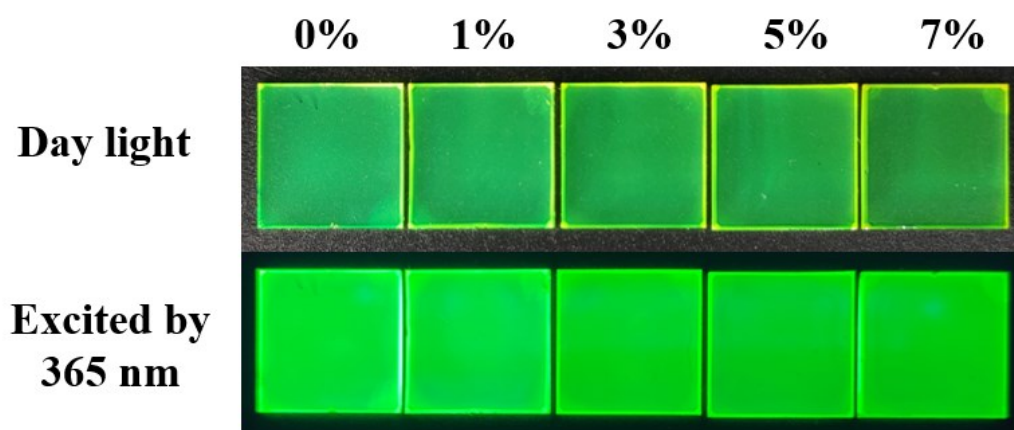


Figure S3. Photographs of initial thin films fabricated by as-prepared CsPbBr₃ NCs with different TAA/Pb molar ratios under day light and 365 nm UV light.

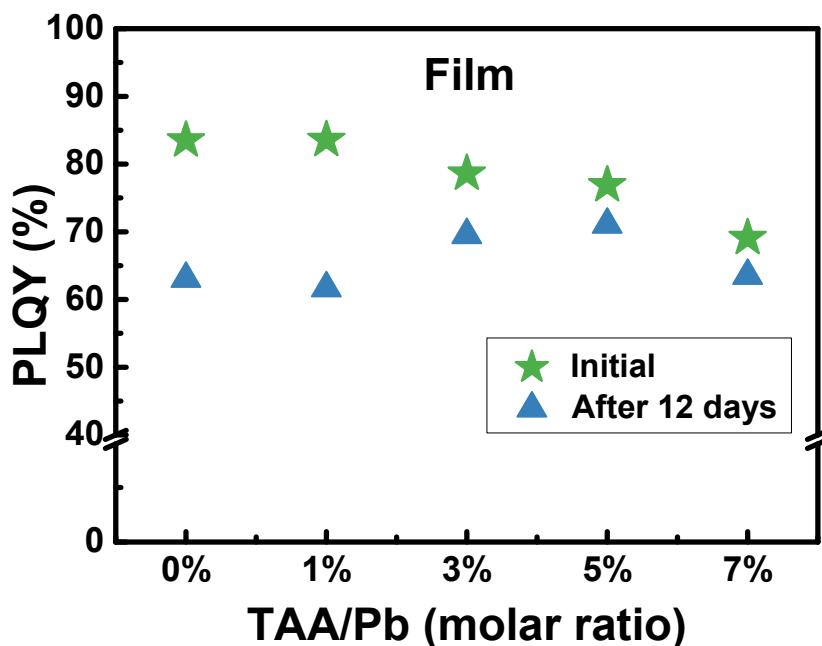


Figure S4. PLQYs and stability of thin films fabricated by as-prepared CsPbBr₃ NCs with different TAA/Pb molar ratios. The initial PLQYs of thin films are 83%, 83%, 78%, 76% and 69% for 0%, 1%, 3%, 5%, 7% TAA CsPbBr₃ NCs, respectively. After being stored in air at room temperature for 12 days, their corresponding PLQYs decrease to 63%, 61%, 69%, 71% and 63%, respectively.

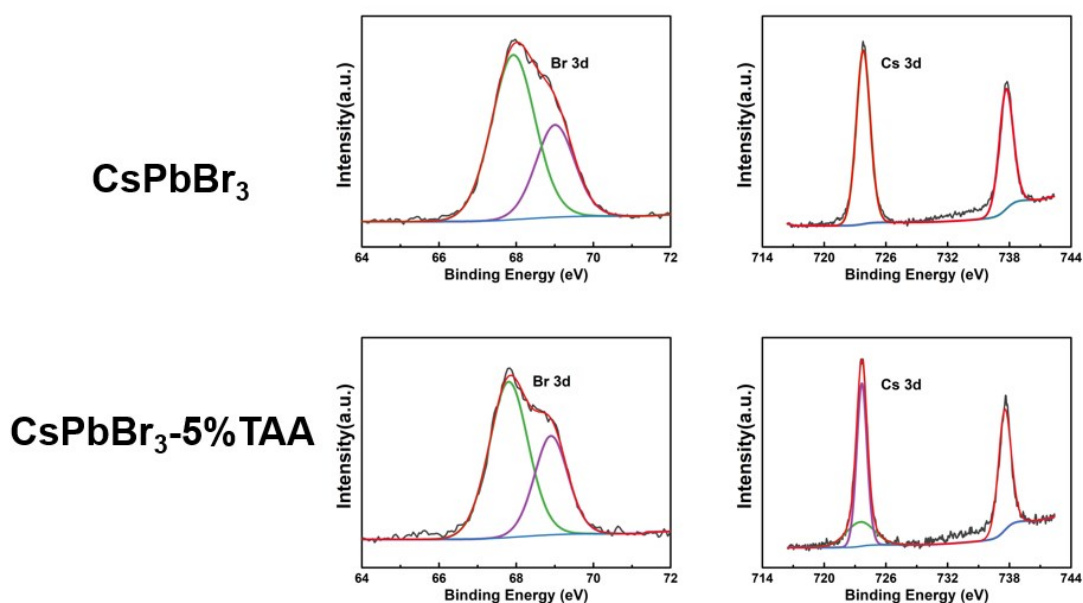


Figure S5. XPS spectra of Br 3d and Cs 3d peaks for as-controlled CsPbBr₃ NCs and CsPbBr₃-TAA NCs.

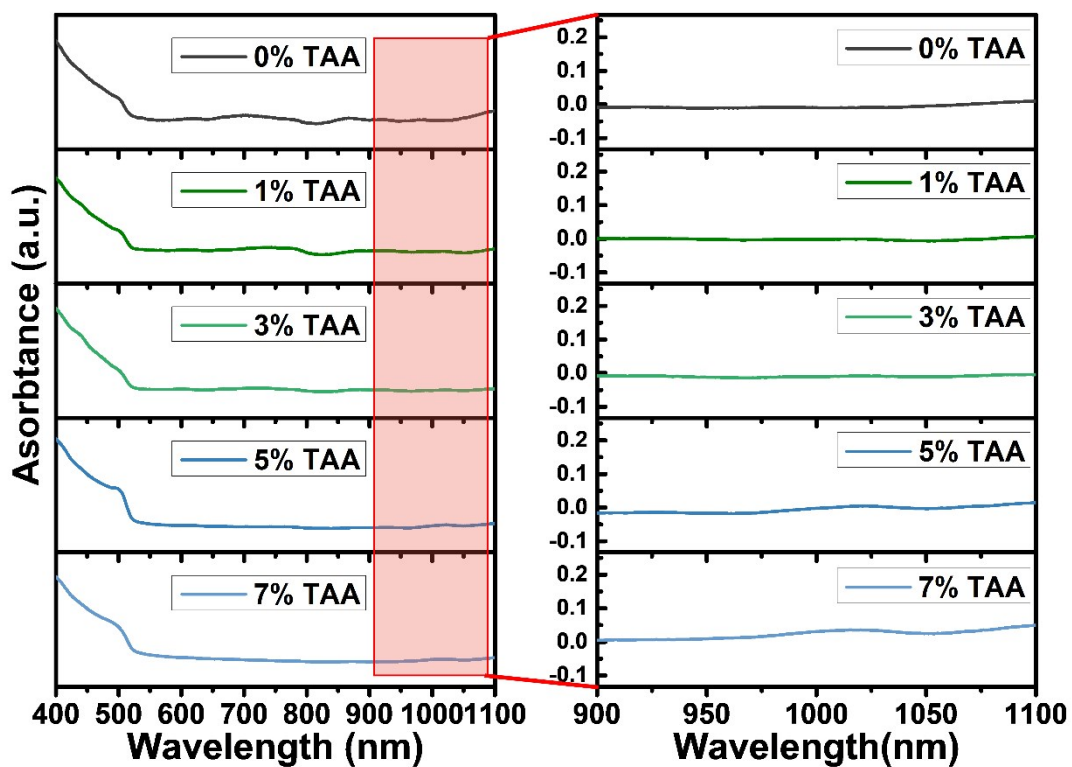


Figure S6. The absorption spectra of CsPbBr₃ NCs with different TAA/Pb molar ratios, and the right are their corresponding magnified absorption features in the NIR region.

Table S1 Lifetime components of CsPbBr₃ NCs with various TAA/Pb molar ratios.

	τ_1 (ns)	τ_2 (ns)	B_1 (%)	B_1 (%)	τ_{ave} (ns)
0%TAA	6.758	52.73	63.33	36.67	23.62
1%TAA	7.573	65.85	57.63	42.35	32.25
3%TAA	6.929	64.3	60.63	39.37	29.52
5%TAA	6.981	53.77	62.66	37.34	24.45
7%TAA	5.877	56.22	63.67	36.33	24.17