Supplementary Material

Highly Luminescent and Ultrastability Cesium Lead Halide Perovskite Nanocrystals glass for Plant-growth Lighting Engineering

Jianming Liu, Linli Shen, Ya Chen, Yi Zhao, Yaqian Zhang, Mengfeifei Jin, Haisheng Yang, Yujie Zhang, Weidong Xiang(*), Xiaojuan Liang(*)

College of Chemistry and Materials Engineering, Wenzhou University, Wenzhou 325 035, China
E-mail: Xiangweidong001@126.com, lxj6126@126.com

Sample	B_2O_3	ZnO	SiO_2	Na_2CO_3	Cs_2CO_3	PbO	NaCl	NaBr	NaI
$CsPbCl_3$	11.50	31.20	34.00	6.30	6.50	4.00	6.50	0	0
$CsPbCl_2Br_1$	11.50	31.20	34.00	6.30	6.50	4.00	4.33	2.17	0
$CsPbCl_{1.5}Br_{1.5}$	11.50	31.20	34.00	6.30	6.50	4.00	3.25	3.25	0
$CsPbCl_1Br_2$	11.50	31.20	34.00	6.30	6.50	4.00	2.17	4.33	0
$CsPbBr_3$	11.50	31.20	34.00	6.30	6.50	4.00	0	6.50	0
$CsPbBr_2I_1$	11.50	31.20	34.00	6.30	6.50	4.00	0	4.33	2.17
$CsPbBr_{1.5}I_{1.5}$	11.50	31.20	34.00	6.30	6.50	4.00	0	3.25	3.25
$CsPbBr_1I_2$	11.50	31.20	34.00	6.30	6.50	4.00	0	2.17	4.33
$CsPbI_3$	11.50	31.20	34.00	6.30	6.50	4.00	0	0	6.50

Table S1 Specific content of all $CsPbX_3$(Cl, Br and I) NCs glass samples.

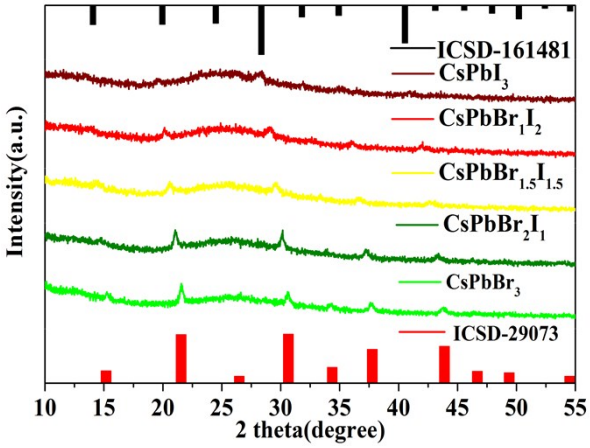

Fig. S1 XRD patterns of the $CsPbBr_xI_{3-x}$ (x= 3, 2, 1.5, 1 and 0) (ICSD-29073 and ICSD-161481).

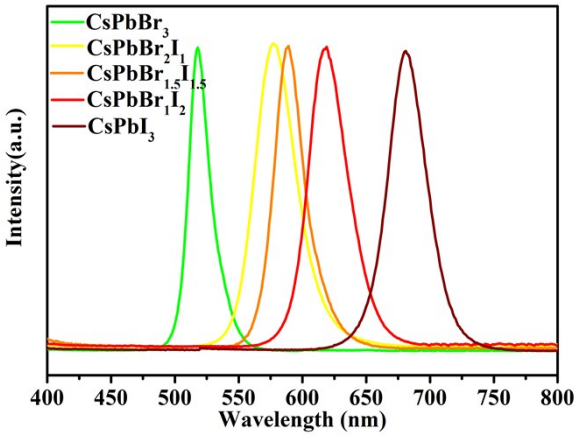

Fig. S2 PL emission spectra of $CsPbBr_xI_{3-X}$ (x= 3, 2, 1.5, 1 and 0) NCs glass.

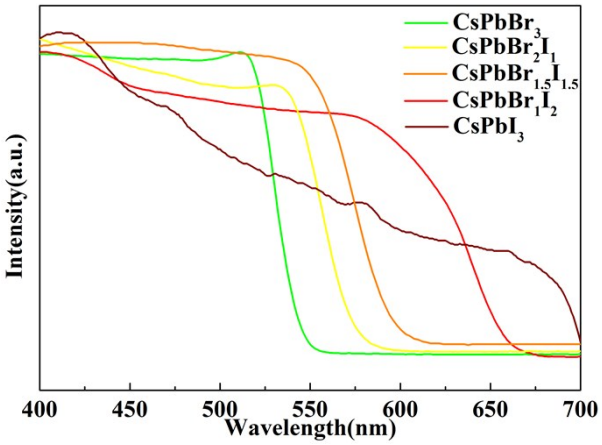

Fig.S3 The absorption spectra $CsPbBr_xI_{3-X}$ (x= 3, 2, 1.5, 1 and 0) NCs glass.

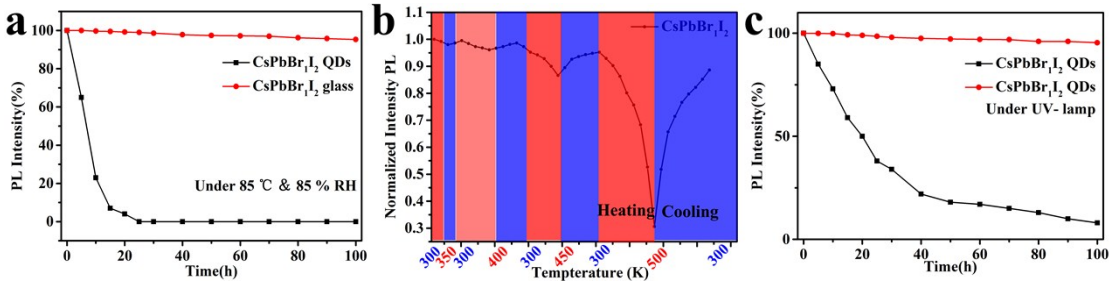

Fig. S4 (a) $CsPbBr_2I_1$ NCs glass exposure to the environment with 85 % RH at 85 ℃, (b) Thermal cycling measurements of $CsPbBr_2I_1$ NCs glass. High set point temperatures are highlighted in red for clarity. (c) $CsPbBr_2I_1$ NCs glass under the UV-lamp with different exposure times and the corresponding PL intensity.

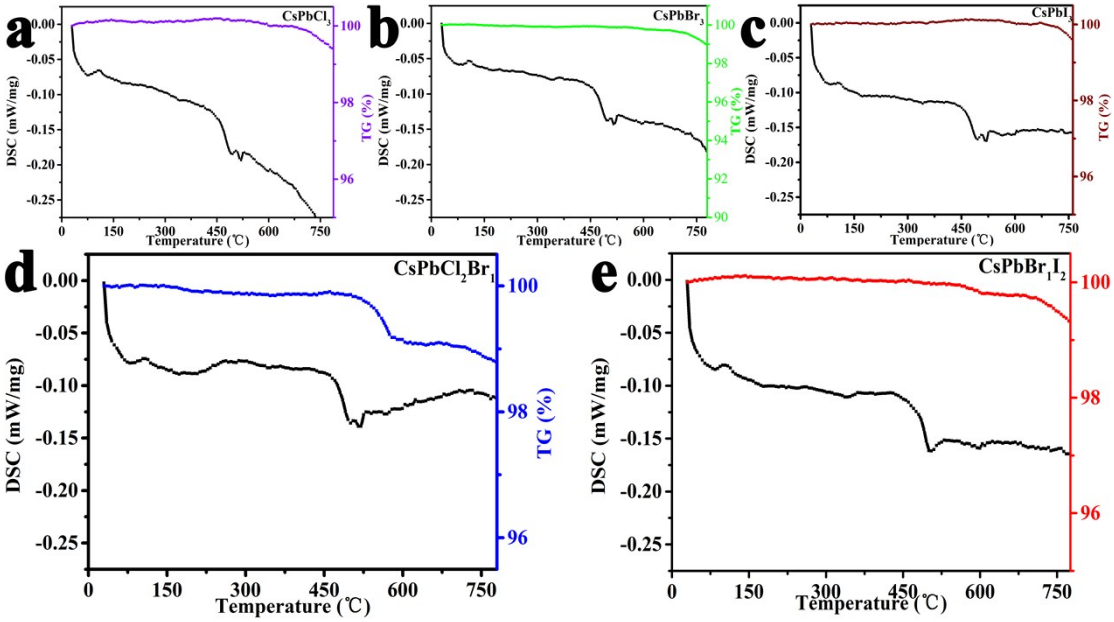

Fig. S5 Tg-DSC curves of $CsPbX_3$ QDs glass.

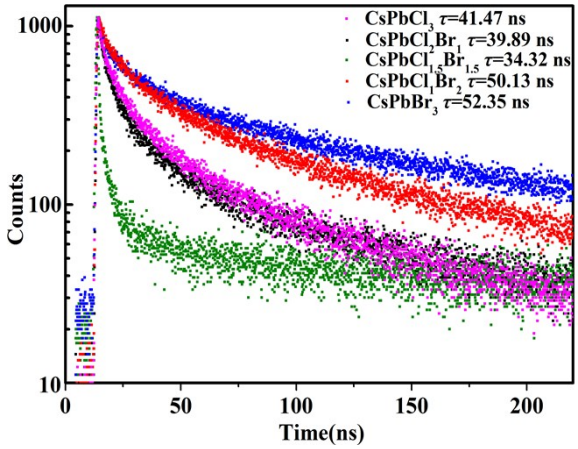

Fig. S6 Time-resolved PL decay profiles of $CsPbX_3$ (X=Cl and Br) NCs glasses.