

Electronic Supporting Information

Mn-Doped CsPbCl₃ Perovskite Nanocrystals: Solvothermal Synthesis, Dual-Color Luminescence and Improved Stability

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Table S1 Determination of Cs, Pb, Mn and Cl mole contents from EDX data for the Mn-doped CsPbCl₃ NCs with different Mn-to-Pb feeding ratios (0:1, 2:1, 6: 1, 10: 1).

	Cs	Pb	Mn	Cl	Cs: (Pb+Mn): Cl	Mn: (Pb+Mn)
0:1	0.234	0.245		0.711	1: 1.05: 3.04	0
2:1	0.259	0.221	0.002	0.791	1: 0.86: 3.05	0.01
6:1	0.252	0.196	0.073	0.821	1:1.07: 3.26	0.27
10:1	0.278	0.178	0.114	0.815	1: 1.05: 2.93	0.39

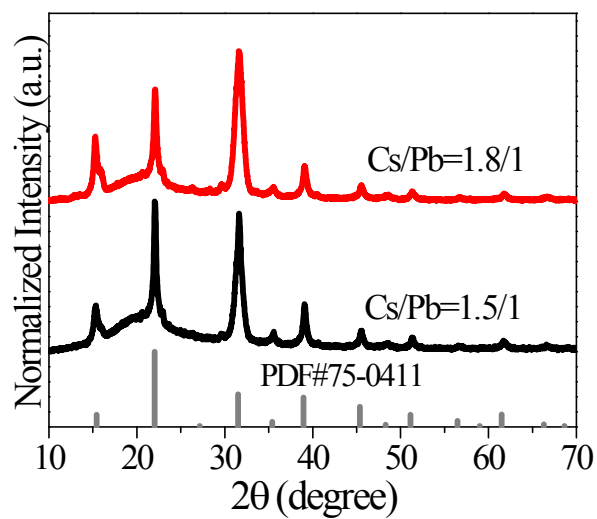


Figure S1 XRD patterns of samples prepared with high Cs-to-Pb feeding ratio (1.5:1 and 1.8:1) and fixed Mn-to-Pb feeding ratio of 6:1.

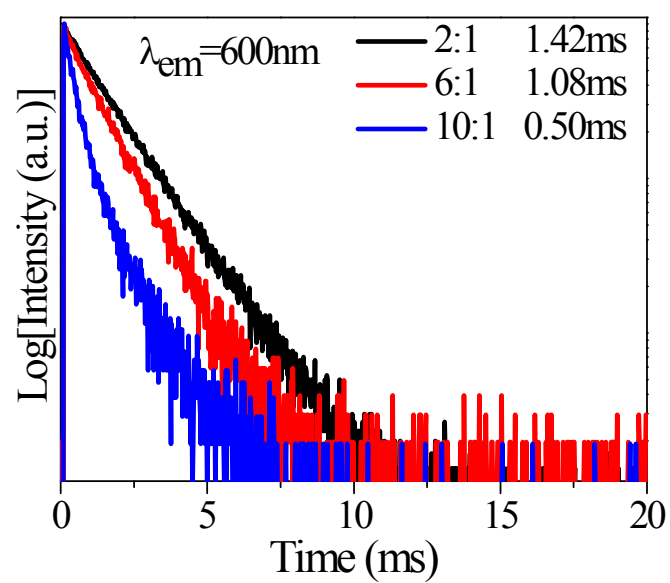


Figure S2 PL decay curves of Mn²⁺ luminescence ($\lambda_{em}=600$ nm, assigned to Mn²⁺: ⁴T₁→⁶A₁ transition) in the Mn-doped CsPbCl₃ NCs synthesized with different Mn-to-Pb feeding ratios (2:1, 6: 1, 10: 1).

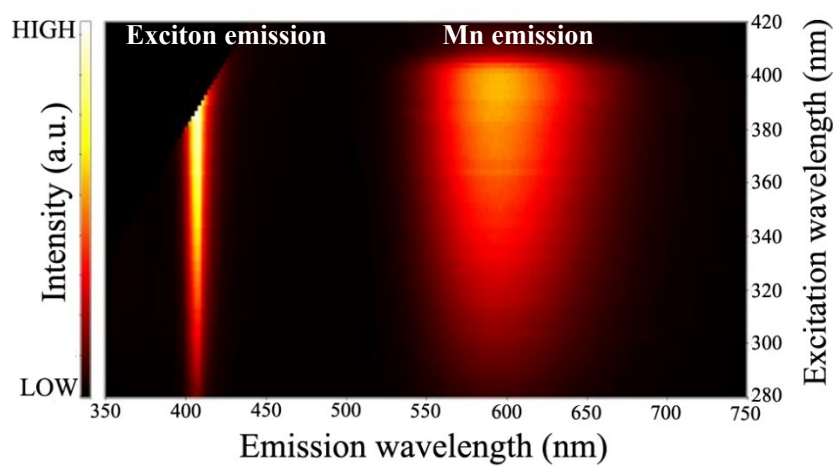


Figure S3 Excitation-emission mapping for the as-prepared Mn-doped CsPbCl₃ NCs, showing the excitation wavelength independent emissions for both exciton and Mn²⁺.

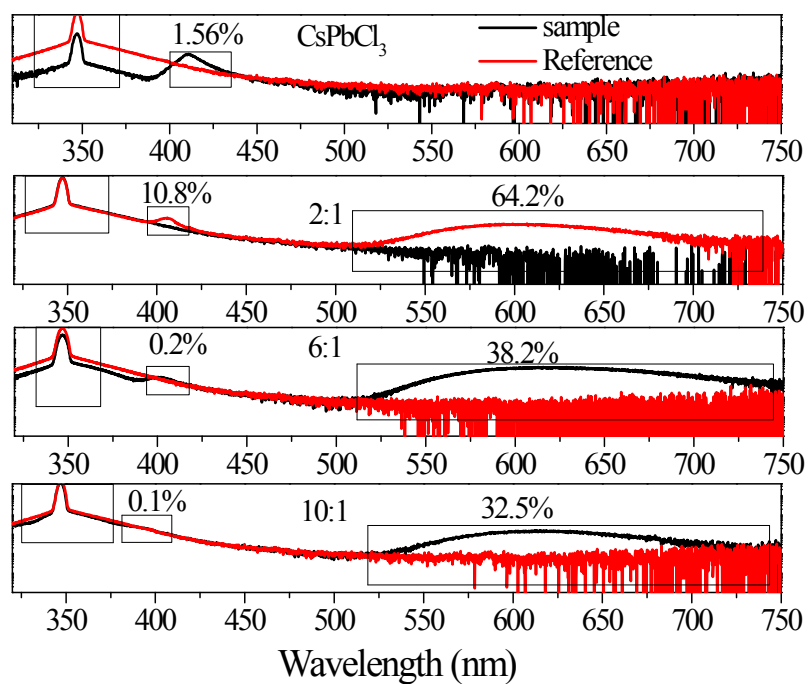


Figure S4 Quantitative excitation and emission spectra ($\lambda_{\text{ex}}=345$ nm) of the reference and Mn-doped CsPbCl₃ NCs with different Mn-to-Pb feeding ratio recorded by a spectrofluorometer equipped with an integrating sphere for PLQY measurement.

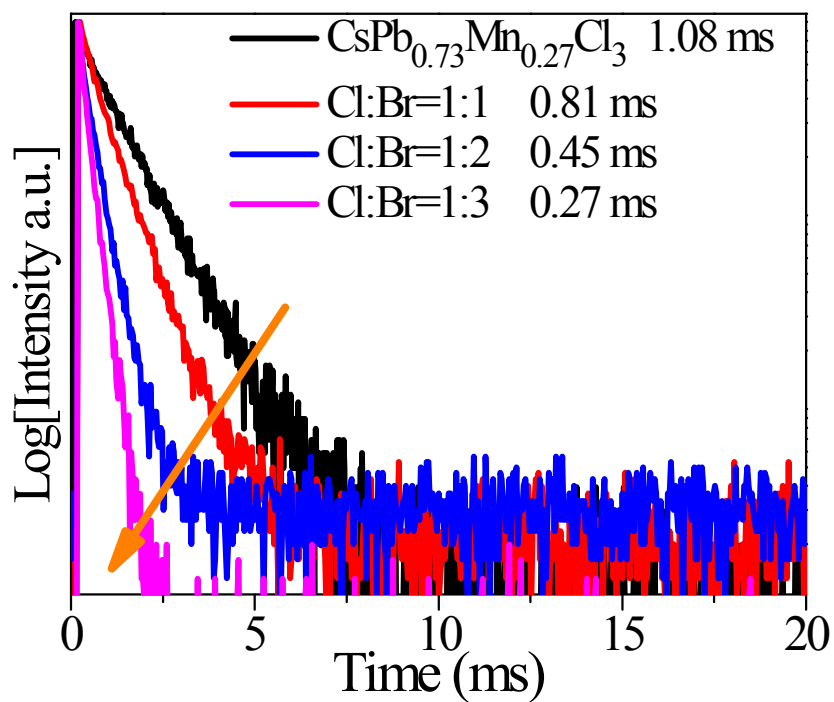


Figure S5 PL decay curves of Mn²⁺ luminescence in Mn-doped CsPb(Cl/Br)₃ NCs prepared via Cl-to-Br anion exchange.

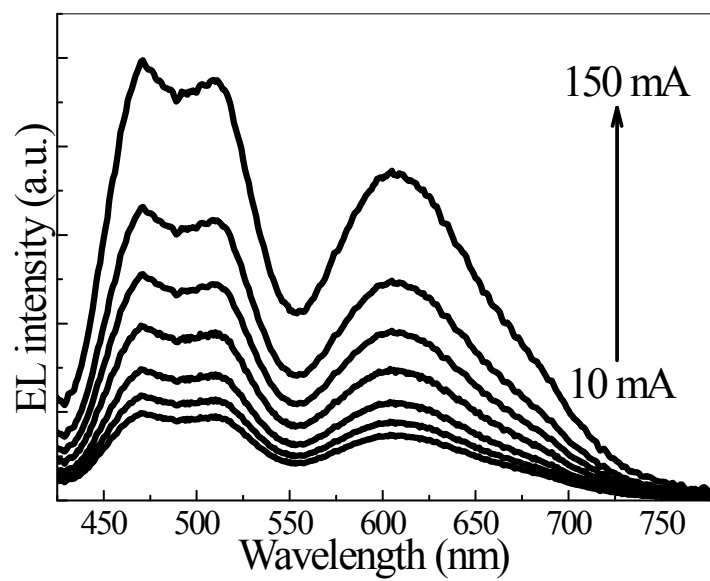


Figure S6 EL spectra of WLED as a function of operating current.

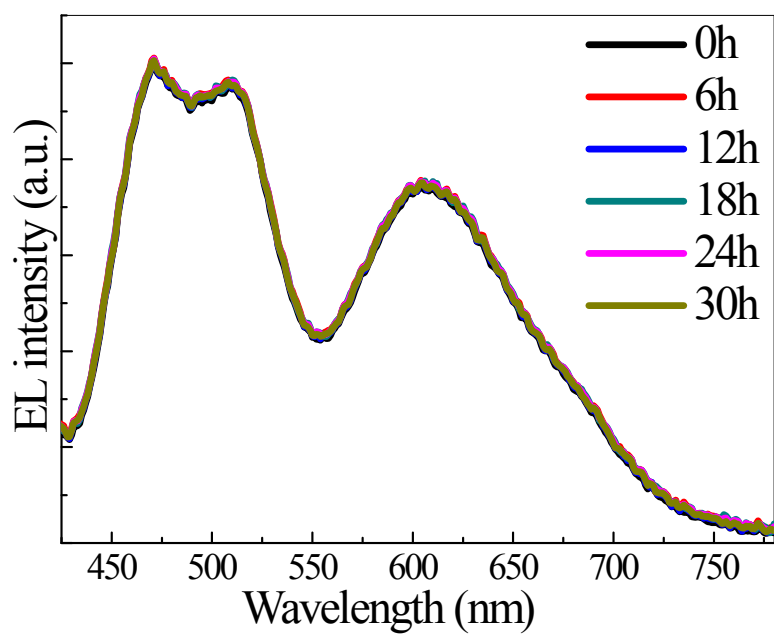


Figure S7 EL spectra of WLED as a function of different working time intervals.

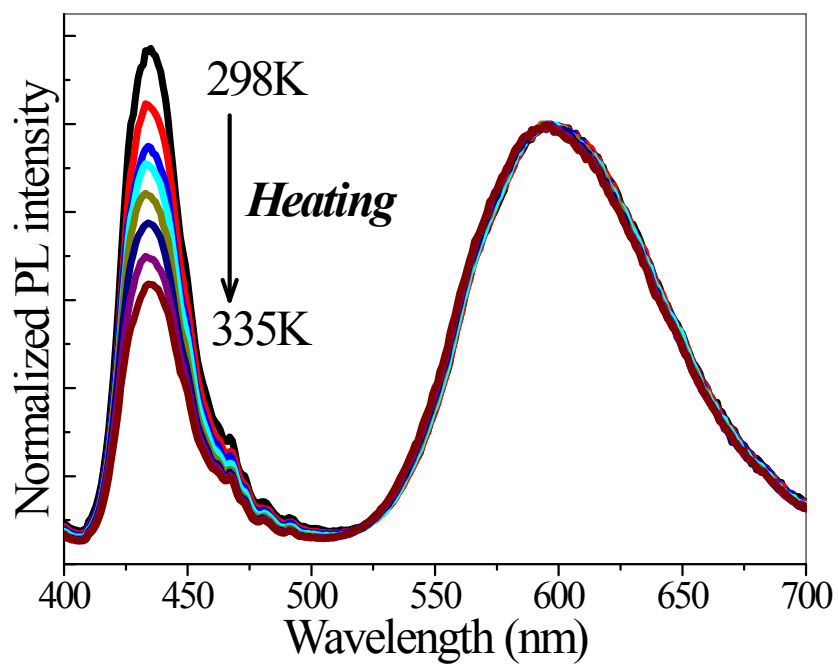


Figure S8 PL spectra of Mn-doped CsPb(Cl/Br)₃ NCs recorded with elevation of temperature from 298 K to 335 K.

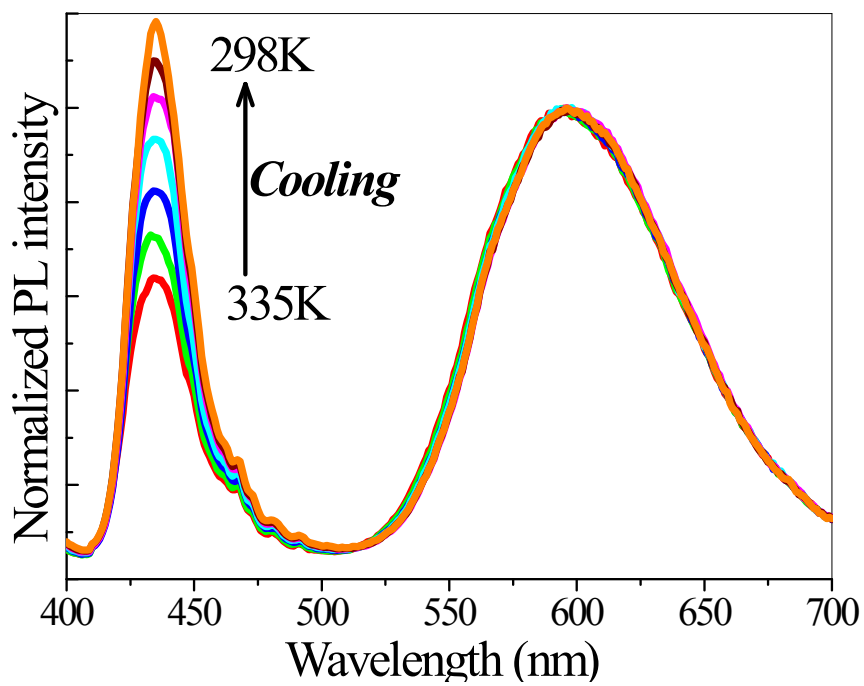


Figure S9 PL spectra of Mn-doped CsPb(Cl/Br)₃ NCs recorded with decrease of temperature from 335 K to 298 K.

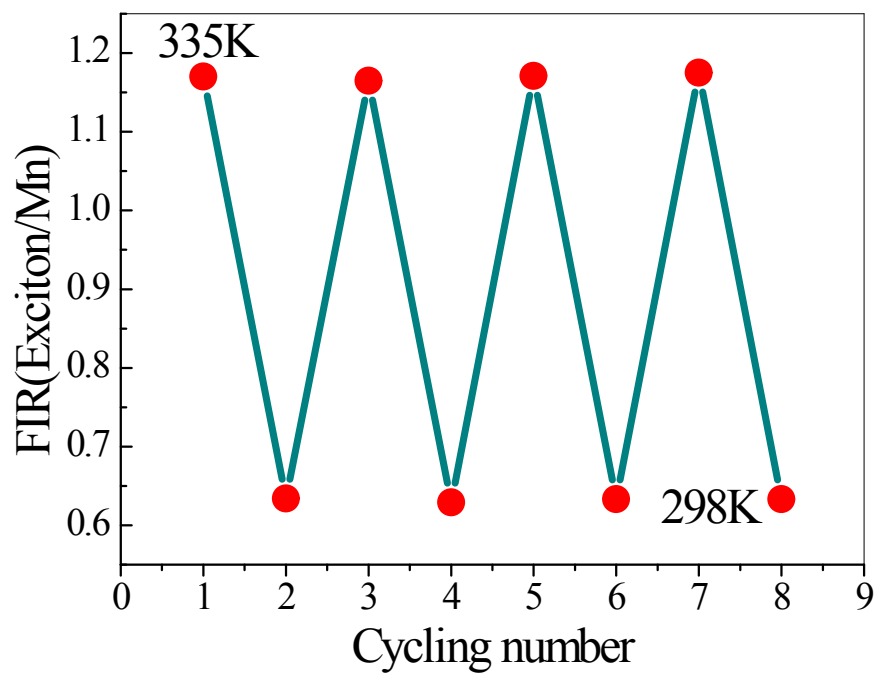


Figure S10 Temperature-induced switching of FIR between exciton emission and Mn one (alternating between 335 K and 298 K).