**Supporting information**

# Synthesis of Highly Photoluminescent All-Inorganic $CsPbX_3$ Nanocrystals via Interfacial Anion Exchange Reactions

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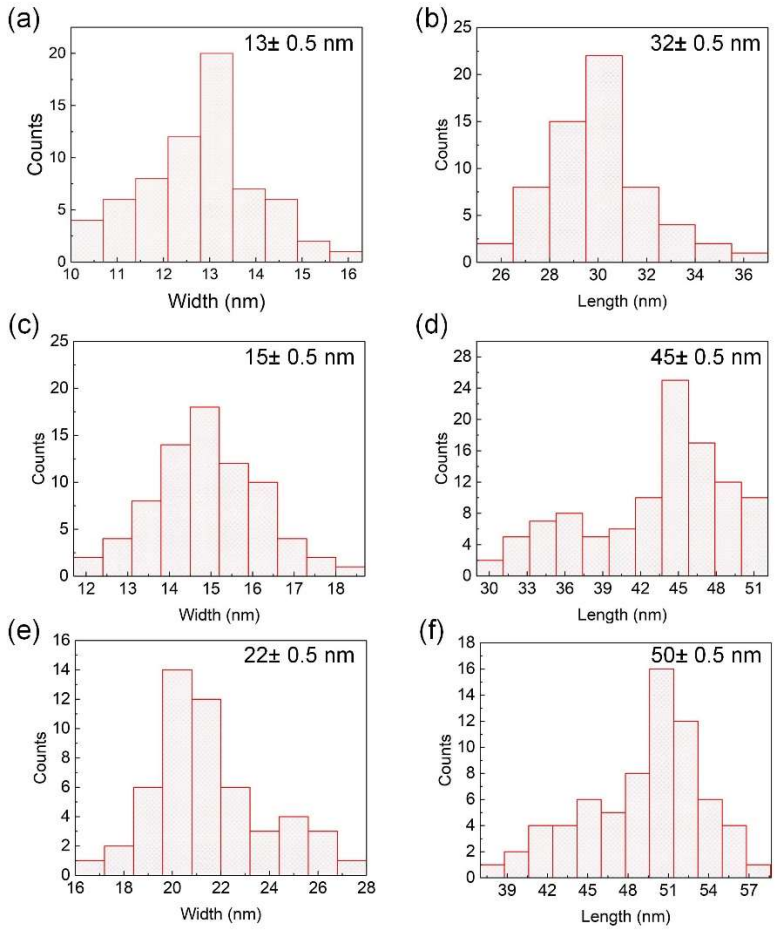


**Figure S1.** (a)-(b) The statistics of width and length of the samples when KCl was added. (c)-(d) The statistics of width and length of the samples when KBr was added. (e)-(f) The statistics of width and length of the samples when KI was added.

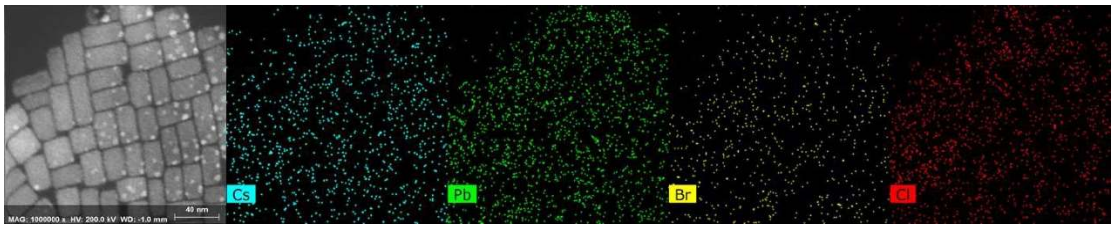


**Figure S2.** Element mapping of the samples prepared by $Cs_4PbBr_6$ transformation with KCl aqueous solution.

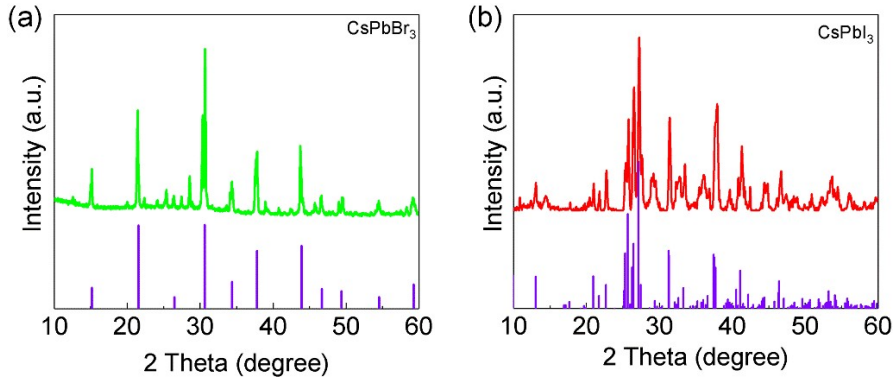


**Figure S3.** XRD patterns of the samples prepared by $Cs_4PbBr_6$ transformation with (a) KBr and (b) KI aqueous solution.

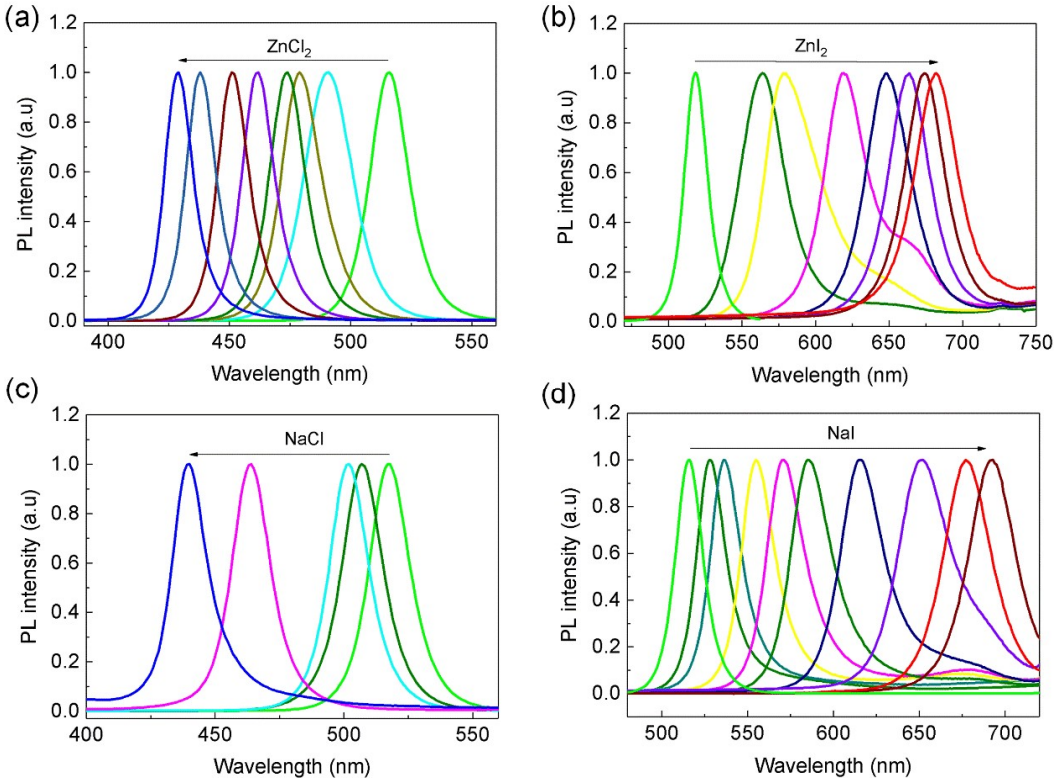


**Figure S4.** The PL spectra of the samples that were synthesized by $Cs_4PbBr_6$ transformation with different halide solutions (a) $ZnCl_2$, (b) $ZnI_2$, (c) NaCl, and (d) NaI.

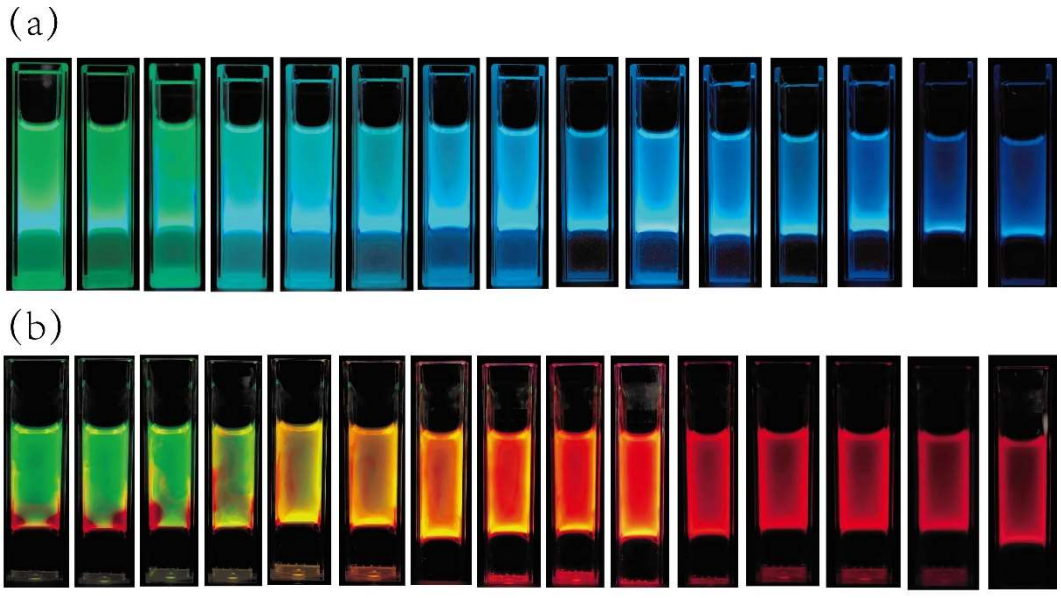


**Figure S5.** The colour change of the samples that were synthesized by the $Cs_4PbBr_6$ transformation with different concentrations of (a) $ZnCl_2$ and (b) $ZnI_2$ aqueous solution.

**Table S1.** The luminous efficiency of different types of perovskite light emitting-diodes

| Type | Luminous efficiency (lm/W) | References |
|---|---|---|
| $CsPb_{1-x}Sn_xBr_3$ QD-LED | 6.76 | 1 |
| POSS-$CsPbBr_3$ NCs LED | 14.1 | 2 |
| $CsPb(Br_{0.3}I_{0.7})_3$ QDs-LED | 19 | 3 |
| MA-POSS $CsPbBr_3$ NCs LED | 26.3 | 4 |
| $CsPbBr_3$ QDs-LED | 27.8 | 5 |
| $CsPbBr_3$ QD-LED | 30 | 6 |
| $CsPbBr_3$ QD-LED | 31.92 | 7 |
| $Ce^{3+}/Mn^{2+}$-doped $CsPbBr_3$ QD-LED | 42 | 8 |
| $CH_3NH_3PbBr_3$ QD-LED | 48 | 9 |
| $CsPbBr_3$ NCs LED | 32.7 | This work |

## References:


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