Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Optical Properties of Mn^{2+} doped Cesium Lead Halide Perovskite Nanocrystals via a Caiton-Anion Cosubstitution Exchange Reaction

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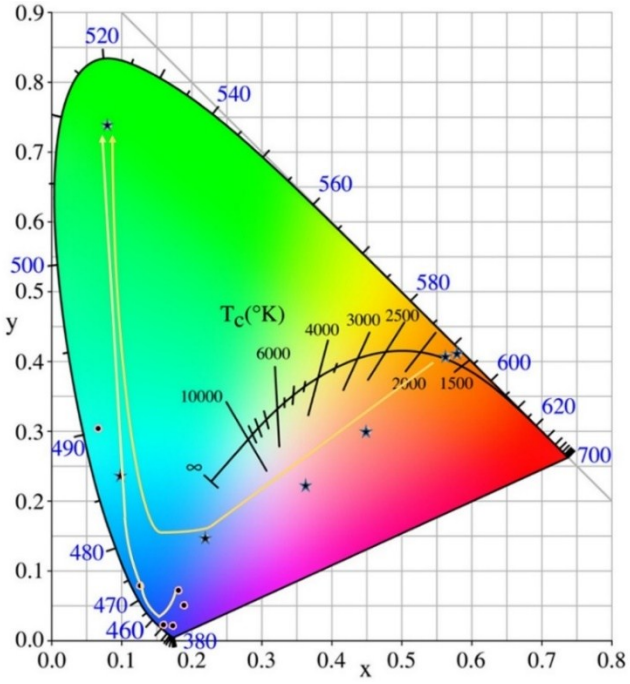

Fig. S1 CIE chromaticity diagram for a series of Mn^{2+} doped and undoped samples, synthesized by in situ ion exchange method, excited at 365 nm.

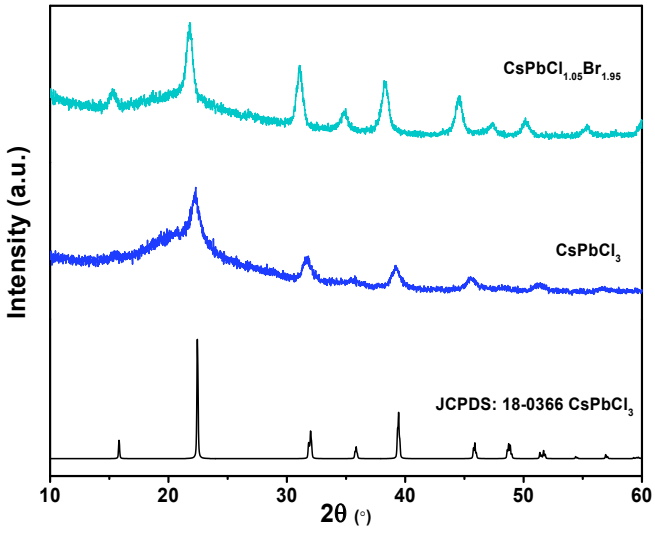

Fig. S2 XRD patterns of $CsPbCl_3$ QDs and $CsPbCl_{1.05}Br_{1.95}$ QDs. The latter one prepared by the in situ ion exchange method.

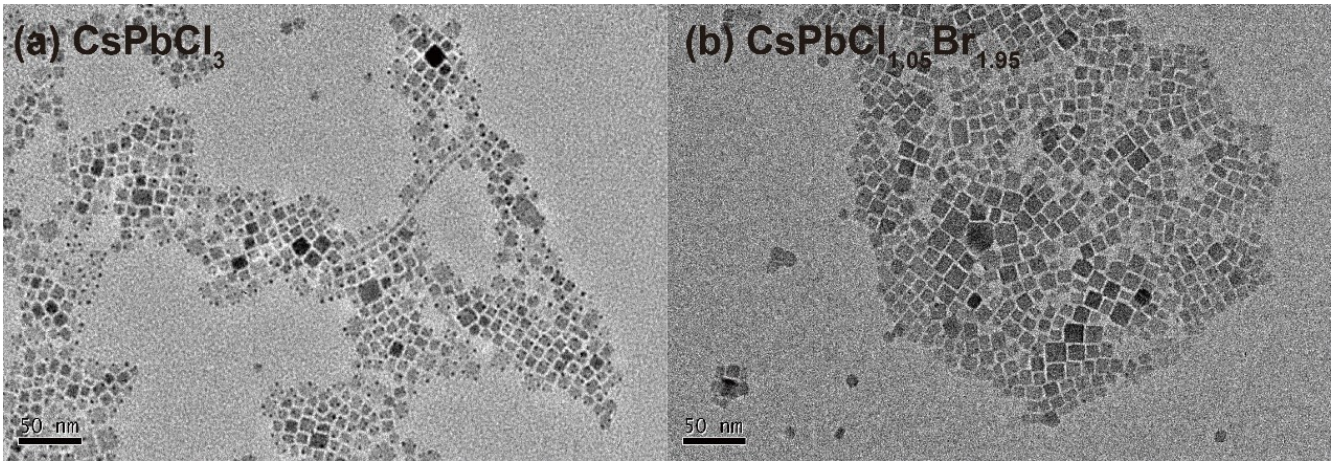

Fig. S3 TEM images of (a) $CsPbCl_3$ QDs; (b) $CsPbCl_{1.05}Br_{1.95}$ QDs obtained by in situ ion exchange method.

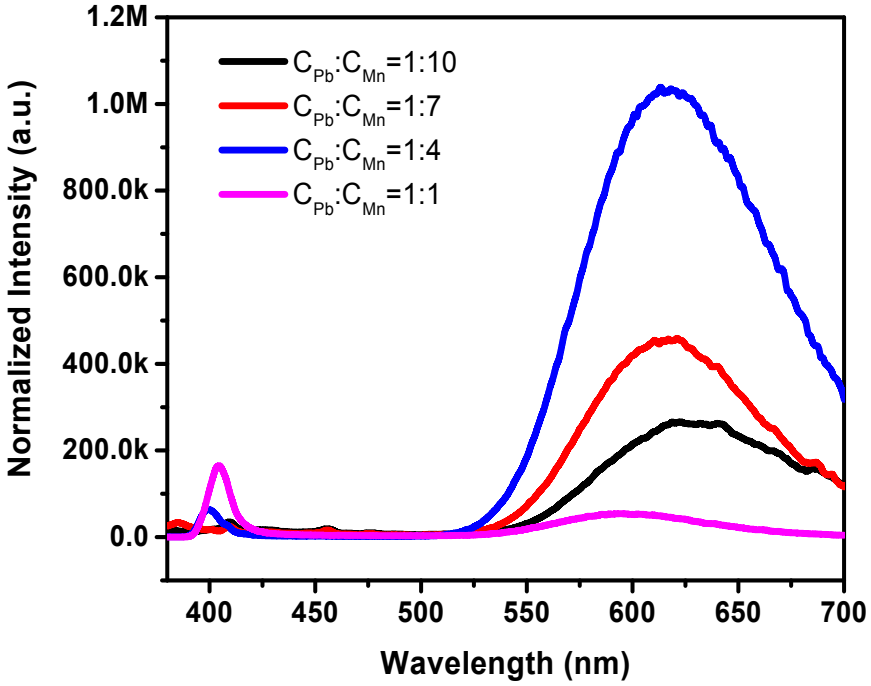

Fig. S4 Photoluminescence spectra of $CsPb_xMn_{1-x}Cl_3$ QDs synthesized with different Pb-to-Mn ratio.

Table S1 Summary of the Photoluminescence Tunability of $CsPb_xMn_{1-x}Cl_3$ QDs

Pb-to-Mn molar feed ratio	Element composition	PLQYs (%)
1:1	$CsPb_{0.95}Mn_{0.05}Cl_3$	7
1:4	$CsPb_{0.88}Mn_{0.12}Cl_3$	48
1:7	$CsPb_{0.79}Mn_{0.21}Cl_3$	36
1:10	$CsPb_{0.64}Mn_{0.36}Cl_3$	19

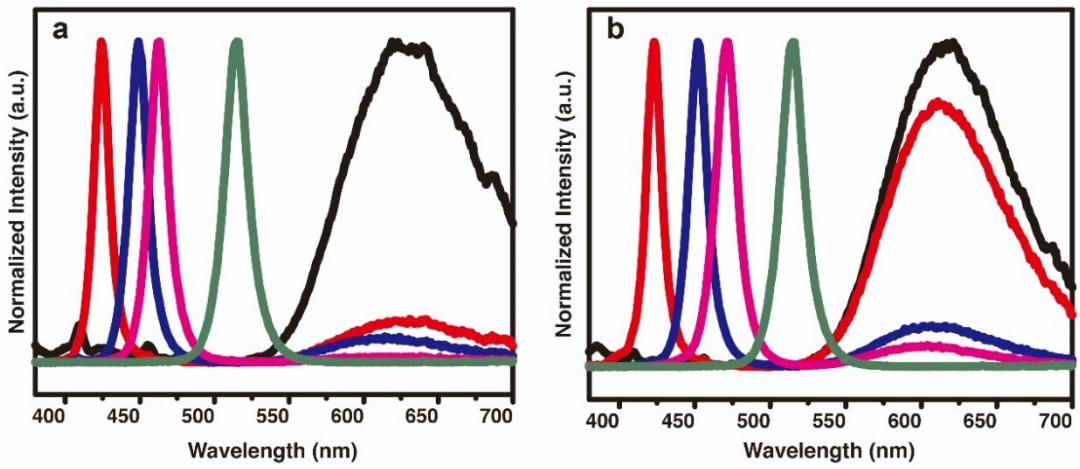

Fig. S5 Photoluminescence spectra of the corresponding $Cs(Pb_xMn_{1-x})(Cl_yBr_{1-y})_3$ QDs obtained by in situ ion exchange method with different end member of $CsPb_xMn_{1-x}Cl_3$. (a) $CsPb_{0.64}Mn_{0.36}Cl_3$ (b) $CsPb_{0.79}Mn_{0.21}Cl_3$.

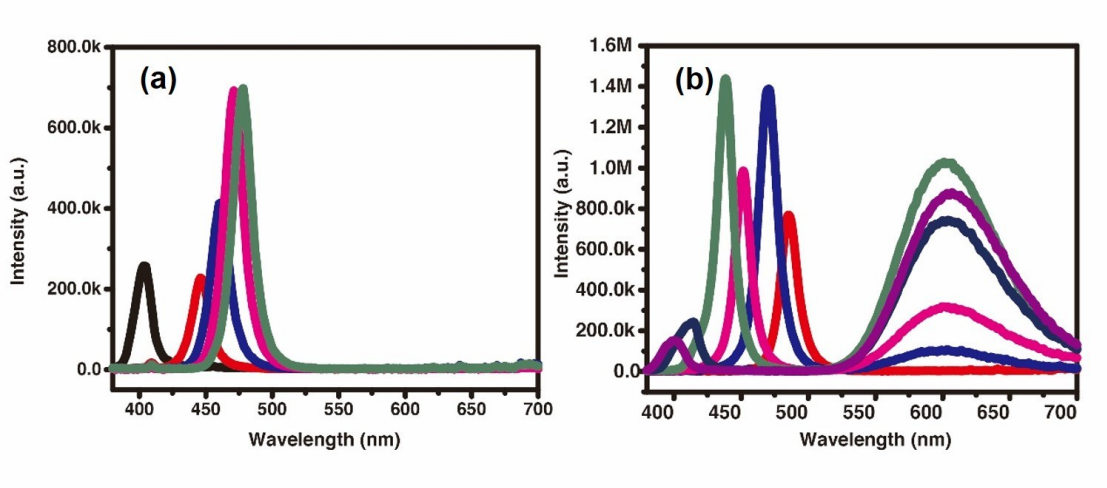

Fig. S6 Photoluminescence spectra of the corresponding (a) $CsPb(Cl_xBr_{1-x})_3$ QDs and (b) $Cs(Pb_xMn_{1-x})(Cl_yBr_{1-y})_3$ QDs obtained by in situ ion exchange method.

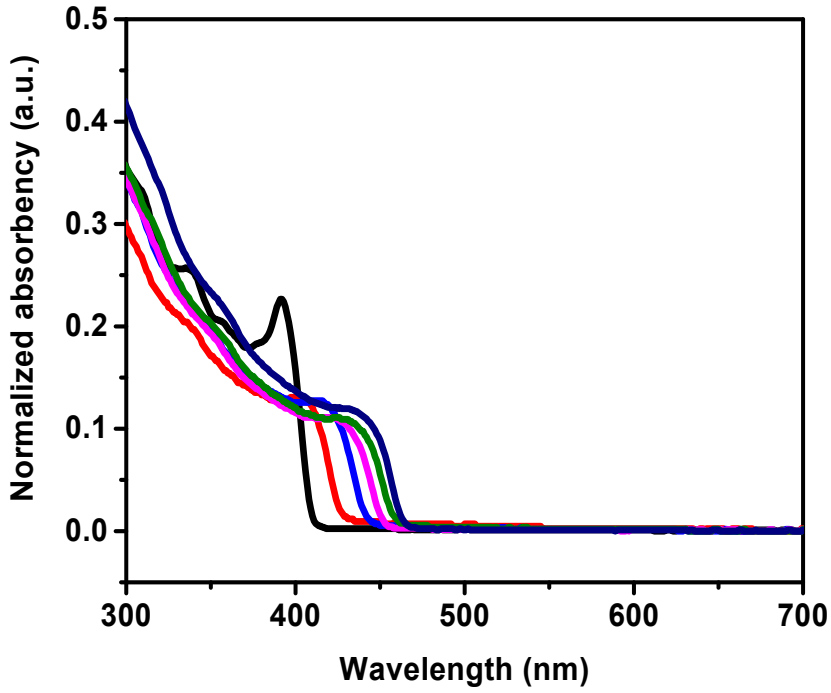

Fig. S7 UV-visible optical absorption of the corresponding $CsPb(Cl_xBr_{1-x})_3$ QDs obtained by in situ ion exchange method.