Supporting Information

Core-Shell $FAPbBr_3$@GA_2PbBr_4 Quantum Dots: One Step Fabrication and Potantial Applications for Light-Emitting Diodes

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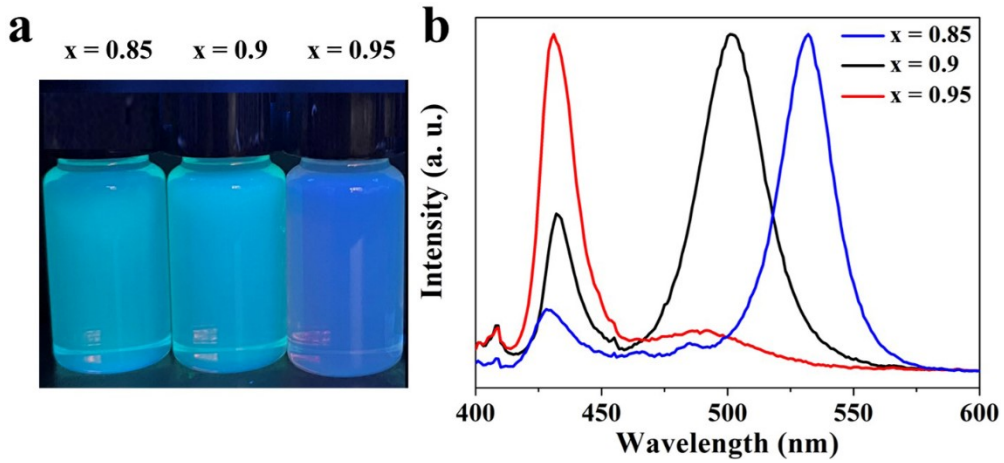

Figure S1. (a) Photographs of sample x = 0.85, x = 0.9, and x = 0.95 under UV radiation. (b) PL spectra of corresponding samples shown in **Figure S1a**.

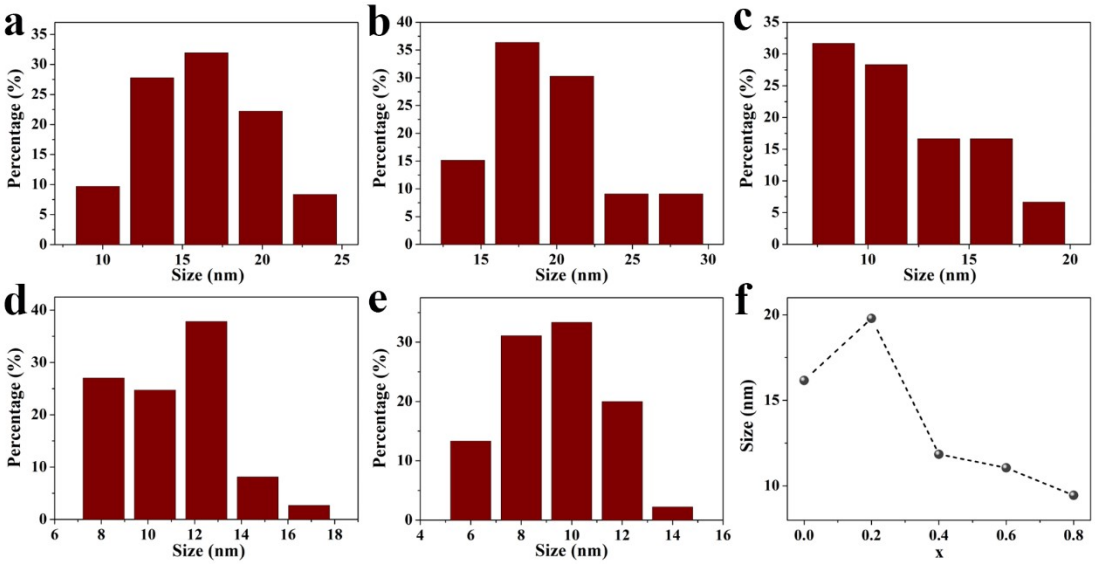

Figure S2. Analysis of size distribution for sample x = 0 (a), x = 0.2 (b), x = 0.4 (c), x = 0.6 (d) and x = 0.8 (e). (f) The average size variation of as fabricated QDs with addition amount of GABr.

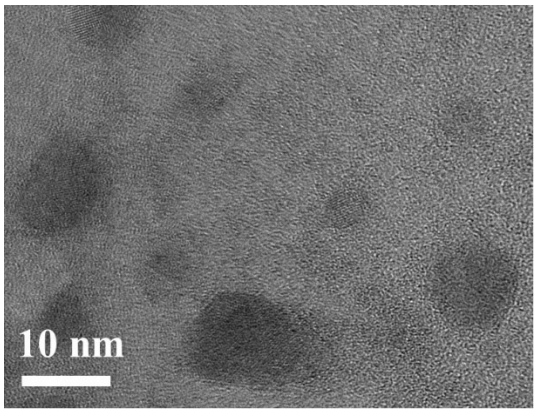

Figure S3. High resolution TEM image of sample x = 0.8.

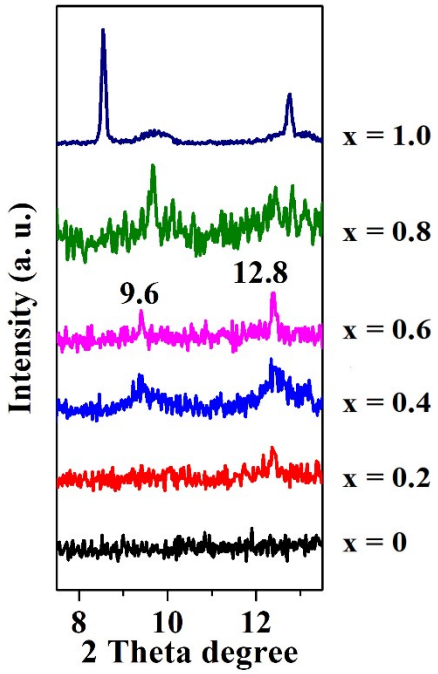

Figure S4. Enlarged XRD patterns (from 7.5° to 13.5°) for x = 0, x = 0.2, x = 0.4, x = 0.6, x = 0.8 and x = 1.0.

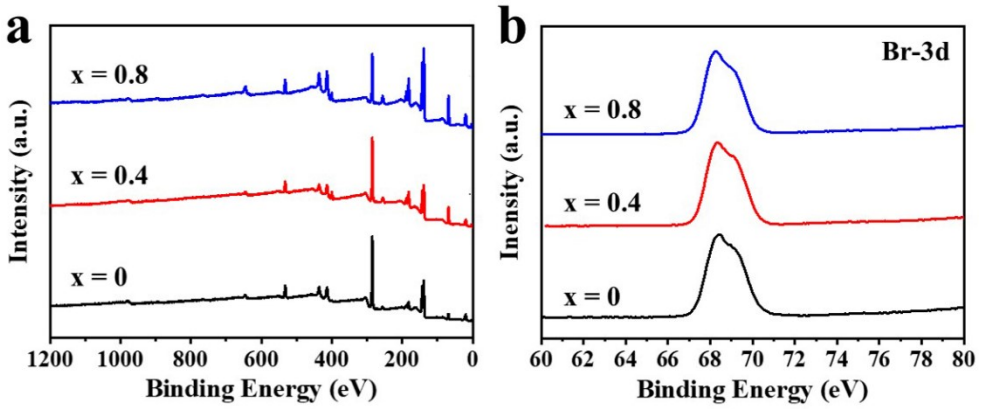

Figure S5. XPS results for sample x = 0, x = 0.4 and x = 0.8. (a) XPS full spectra. (b) XPS Br-3d spectra.

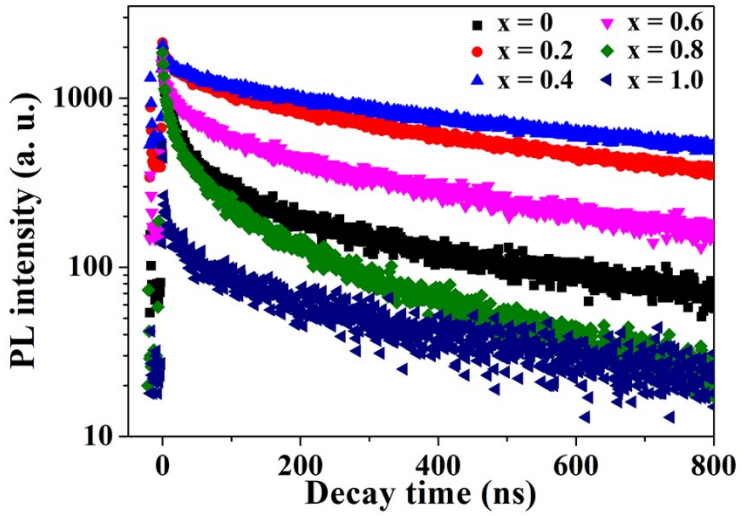

Figure S6. Time resolved PL spectra of QDs in solid state with x ranging from 0 to 1.

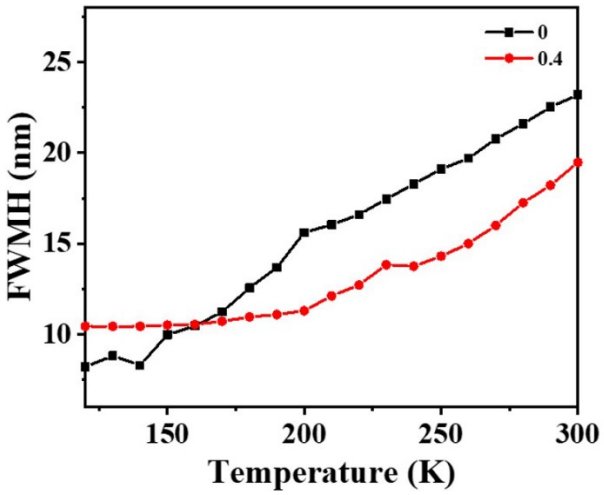

Figure S7. Plots of FWHM as a function of temperature for sample x = 0 and x = 0.4.

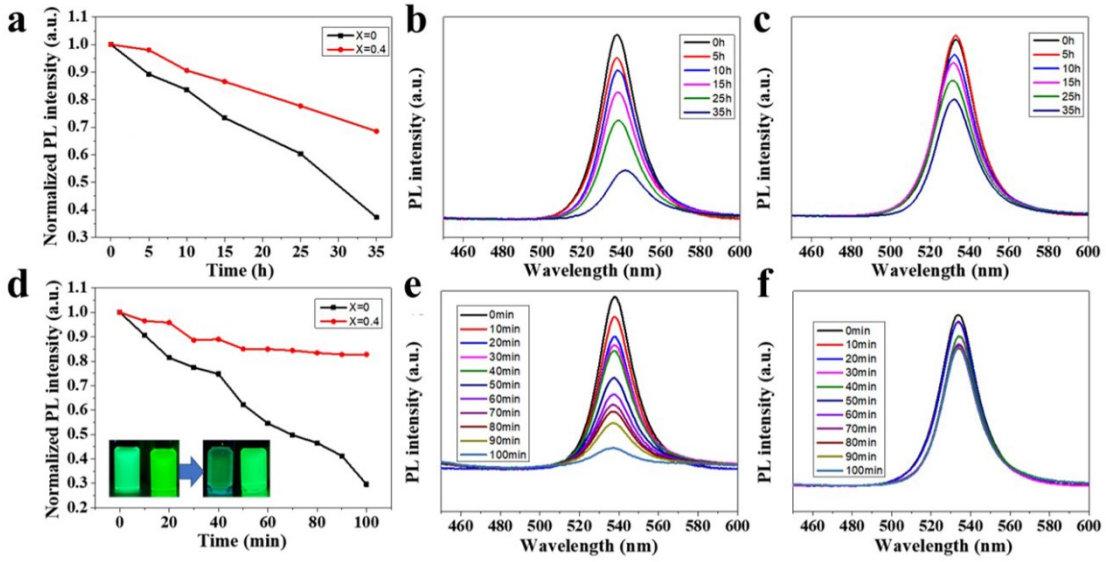

Figure S8. Photostability and moisture stability test for as fabricated $FAPbBr_3$ QDs and $FAPbBr_3/GA_2PbBr_4$ QDs. (a) PL intensity variation of $FAPbBr_3$ QDs and $FAPbBr_3/GA_2PbBr_4$ QDs under UV radiation (365 nm). (b, c) Corresponding PL spectra of $FAPbBr_3$ QDs and $FAPbBr_3/GA_2PbBr_4$ QDs under UV radiation, respectively. (d) PL intensity variation of $FAPbBr_3$ QDs and $FAPbBr_3/GA_2PbBr_4$ QDs after water exposure. (e ,f) Corresponding PL spectra of $FAPbBr_3$ QDs and $FAPbBr_3/GA_2PbBr_4$ QDs after water exposure at different time periods.

Table S1 Detailed addition amount of FABr, GABr, and $PbBr_2$ for sample x = 0, x = 0.2, x = 0.4, x = 0.6, x = 0.8 and x = 1.0.

Sample	FABr	GABr	$PbBr_2$
x = 0	**0.0125 g**	**0 g**	**0.0365 g**
x = 0.2	**0.01 g**	**0.0028 g**	**0.0365 g**
x = 0.4	**0.0075 g**	**0.0056 g**	**0.0365 g**
x = 0.6	**0.005 g**	**0.0084 g**	**0.0365 g**
x = 0.8	**0.0025 g**	**0.0112 g**	**0.0365 g**
x = 1.0	**0 g**	**0.0140 g**	**0.0365 g**

Table S2. Fitting results of average PL lifetime for sample x = 0, x = 0.2, x = 0.4, x = 0.6, x = 0.8 and x = 1.0.

Sample	Average PL lifetime
x = 0	**29.92 ns**
x = 0.2	**70.66 ns**
x = 0.4	**170.38 ns**
x = 0.6	**117.56 ns**
x = 0.8	**40.25 ns**
x = 1.0	**11.76 ns**