Supporting Information

Brightly Luminescent and Color-Tunable Green-violet-emitting Halide Perovskite $CH_3NH_3PbBr_3$ Colloidal Quantum Dots: An Alternative for Lighting and Display Technology

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Table S1. X-ray diffraction data of $MAPbBr_3$ QDs. h, k and l are indices of a lattice plane. The "exp" and "cal" in symbol suffixes represent the experimental data from the XRD pattern and calculated results according to equations 1 and 2, respectively. Δ: difference between experimental data and calculated data.

hkl	$2\theta_{exp}$/°	$2\theta_{calc}$/°	$\Delta 2\theta$/nm	d_{exp}/nm	d_{calc}/nm	Δd/nm
100	15.440	14.999280	0.44072	0.57342	0.59016	0.01674
110	21.640	21.274460	0.36554	0.41032	0.41730	0.00698
200	30.600	30.264750	0.33525	0.29191	0.29508	0.00317
210	34.260	33.938690	0.32131	0.26152	0.26393	0.00241
211	37.639	37.291985	0.34702	0.23878	0.24093	0.00215
220	43.660	43.330110	0.32989	0.20715	0.20865	0.00150
300	46.300	46.104449	0.19555	0.19593	0.19672	0.00079

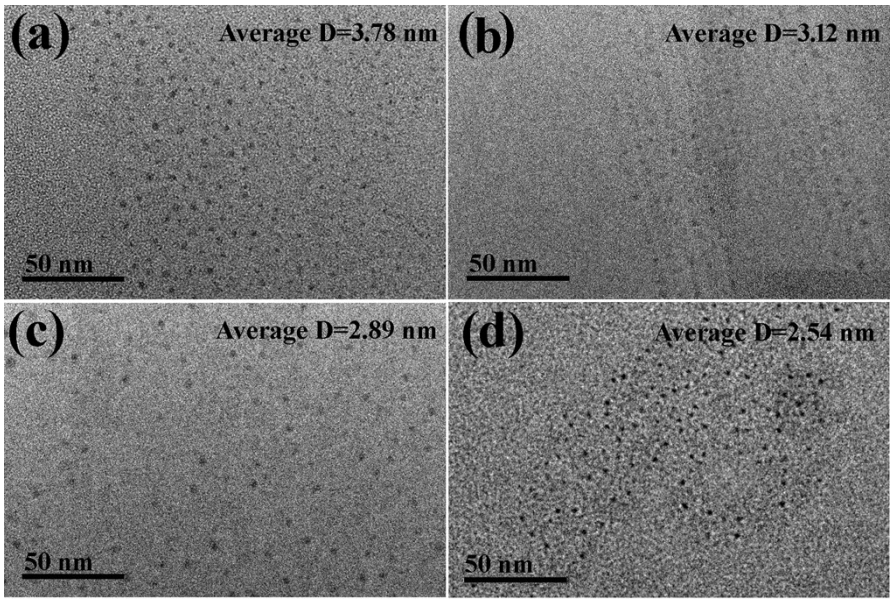

Figure S1. TEM images of $MAPbBr_3$ QDs with varied amount of OLAM. (a) 10 µL, (b) 50 µL, (c) 80 µL, and (d) 100 µL. Scale bar: 50 nm.

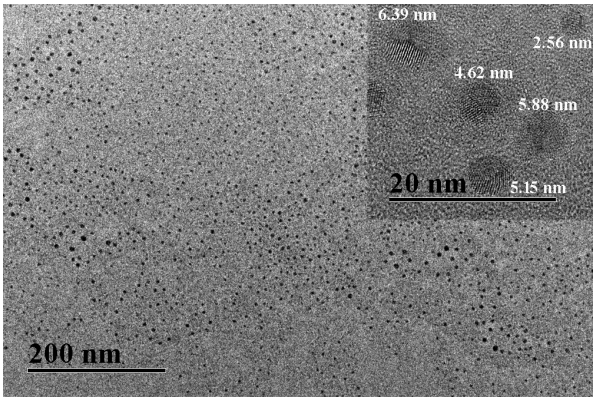

Figure S2. Low-resolution TEM image of $MAPbBr_3$ QDs with 80 µL OLAM. The corresponding High-resolution TEM image and particle size were listed in the inset.

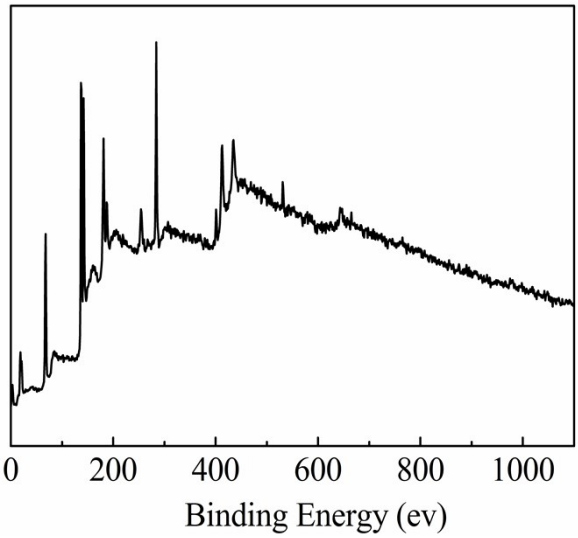

Figure S3. A typical XPS spectrum of $MAPbBr_3$ QDs (20 µL OLAM amount).

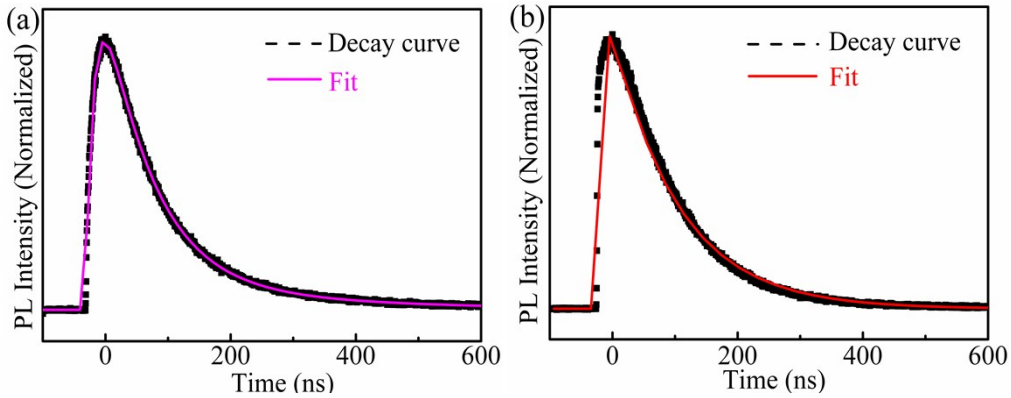

Figure S4. Time-resolved PL decay and the fitting curve of a typical sample of $MAPbBr_3$ QDs with (a) 20 µL and (b) 100 µL OLAM amount.

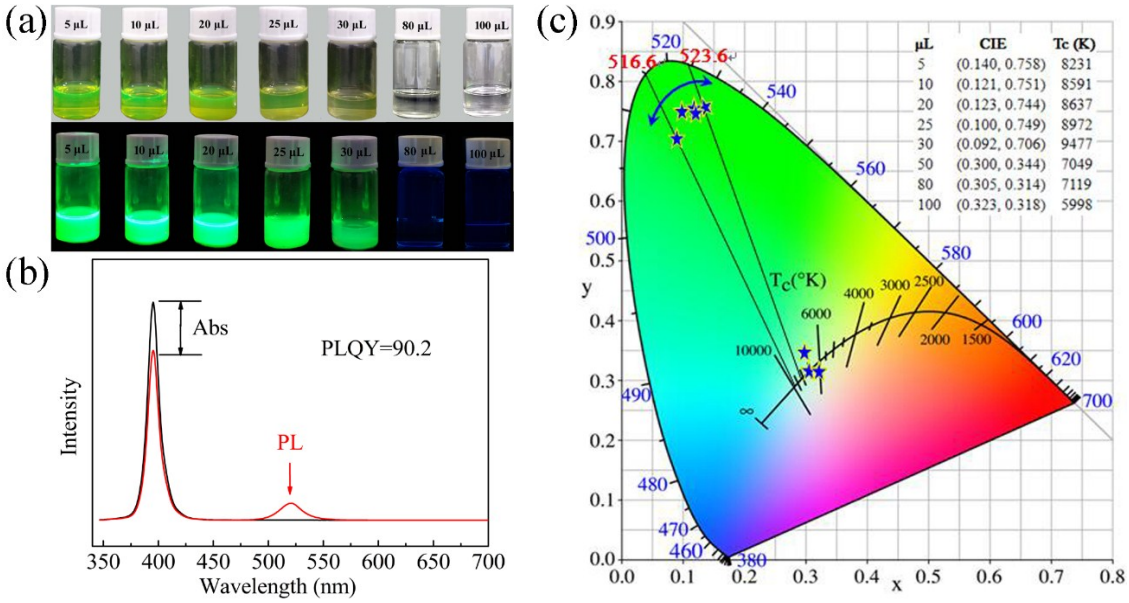

Figure S5. (a) Luminescent photographs of the corresponding $MAPbBr_3$ QDs under ambient light and the irradiation of UV lamp (in dark). (b) PLQY measurements of $MAPbBr_3$ QDs (20 μL) in the form of colloidal. (c) CIE color coordinates corresponding to the $MAPbBr_3$ QDs. The blue star denotes the position of CIE chromaticity coordinates.

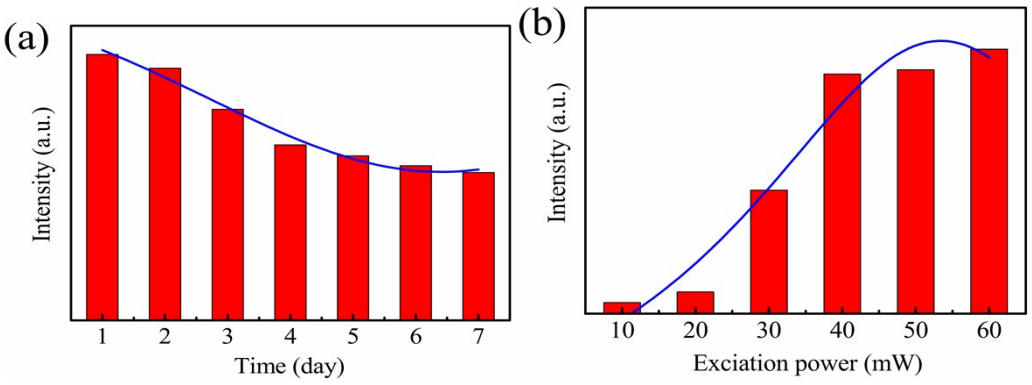

Figure S6. (a) PL spectra of $MAPbBr_3$ QDs after different days. (b) Exciation power dependent PL spectra of optimal OLAM content (20 μL).

Fitting functions for time-resolved PL spectra by a bi-exponential function:

$$I(t) = A_1 \exp(\frac{-t}{\tau_1}) + A_2 \exp(\frac{-t}{\tau_2}) + A_3 \exp(\frac{-t}{\tau_3}) \qquad \text{(Seq 1)}$$

Where I(t) is the PL intensity at time t, and A_i is the constants corresponding to the fractions of slow decay and long decay, respectively.