Supporting Information

High optical performance of cyan-emissive $CsPbBr_3$ perovskite quantum dots embedded in molecular organogels

Marta Vallés-Pelarda, Andrés F. Gualdrón-Reyes, Carles Felip-León, César A. Angulo-Pachón, Said Agouram, Vicente Muñoz-Sanjosé, Juan F. Miravet, Francisco Galindo*, Iván Mora-Seró**

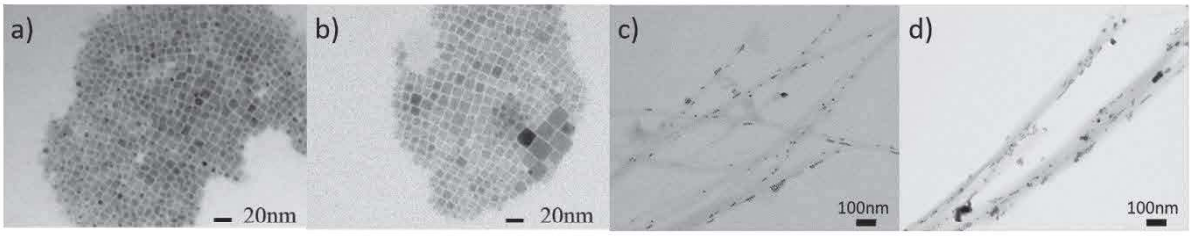

Figure S1. TEM images of PQDs solution a) as prepared and b) heated. c) and d) TEM images of Hx-PQDs and Chx-PQDs, respectively.

Table S1. Characterization of Hx-PQDs samples prepared at different temperatures.

Conditions	λ (nm)	PLQY (%)
PQD solution	516	49
200ºC	466	75
220ºC	471	77
240ºC	471	71

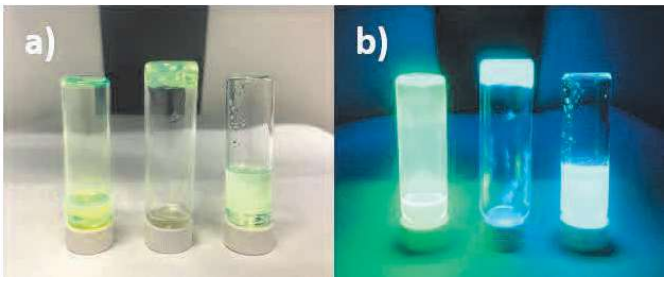

Figure S2. Picture of $CsPbBr_3$ PQDs solution (left), Hx-PQDs (gel, middle) and Hx-PQDs (low concentration, right) under a) ambient light and b) UV lamp.

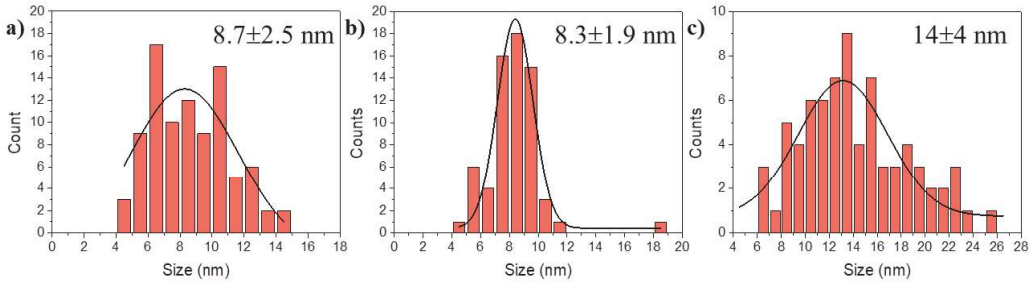

Figure S3. a), b) and c) Size distribution histograms of $CsPbBr_3$ PQDs solution, PQDs embedded in Hx and Chx, respectively.

Table S2. Energy Dispersive X-Ray analysis. Atomic %

	Cs (%)	Pb(%)	Br(%)
$CsPbBr_3$ PQDs	36.3±2.3	27±3	37±5
Hx + $CsPbBr_3$ PQDs	32.6±1.1	25.7±2.4	41.7±1.8
Chx + $CsPbBr_3$ PQDs	30±3	23.6±0.7	47±3

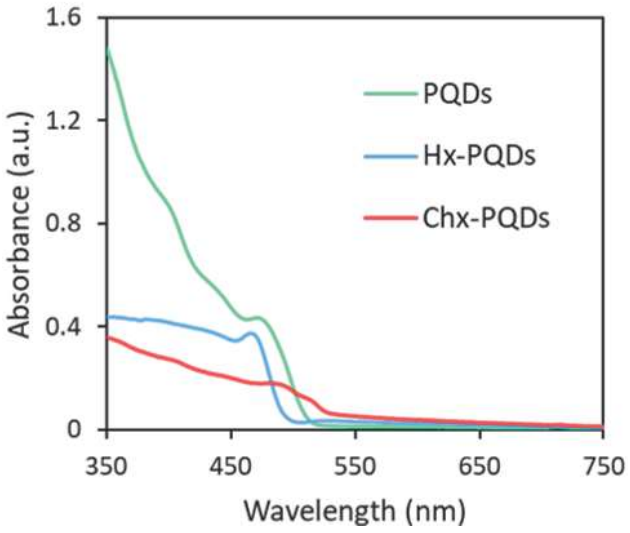

Figure S4. Absorption spectra of the PQDs, Hx-PQDs and Chx-PQDs.

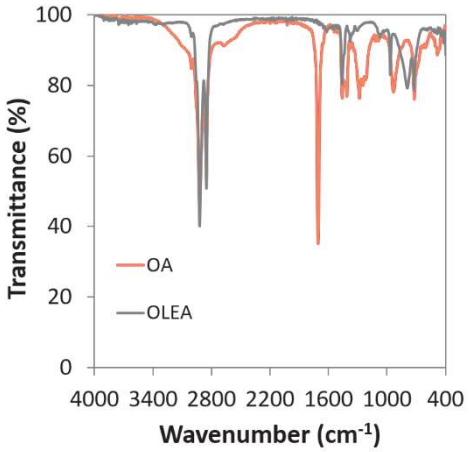

Figure S5. FTIR spectra of oleic acid and oleylamine capping ligands used for conventional $CsPbBr_3$ PQDs synthesis.

Table S3. Determination of radiative and non-radiative recombination decay rate constants, k_r and k_{nr}, respectively by fitting the time-resolved PL decays of $CsPbBr_3$ PQDs, Hx-PQDs and Chx-PQDs (Figure 4c) to a bi-exponential function: $y = y_0 + A_1 e^{-x/\tau 1} + A_2 e^{-x/\tau 2}$. The values of τ_{avg}, k_r and k_{nr} are obtained from their respective definitions: $\tau avg = (\Sigma Aj\tau j^2/\Sigma Aj\tau j)$,[1] $\tau_{avg} = 1/(k_r + k_{nr})$ and $k_r = (PLQY/\tau_{avg})$. PLQY values were used in the 0-1 range.

Samples	A_1 (%)	τ_1 (ns)	A_2 (%)	τ_2 (ns)	PLQY	τ_{avg} (ns)	k_r (10^8 s^{-1})	k_{nr} (10^7 s^{-1})	k_{nr}/k_r
$CsPbBr_3$ PQDs	58.5	2.3	41.5	9.2	0.650	5.2	1.26	6.77	0.54
Hx-PQDs	76.3	4.3	23.7	1.3	0.725	6.4	1.14	4.32	0.38
Chx-PQDs	60.7	2.2	39.3	9.1	0.544	5.0	1.10	9.21	0.84

References

[1] V. K. Ravi, R. A. Scheidt, A. Nag, M. Kuno, P. V Kamat, *ACS Energy Lett.* **2018**, *3*, 1049.