

Supporting Information

Inverted Semitransparent Perovskite Nanocrystal Light-Emitting Diodes with
Conjugated Polymer as Electron Transport layer

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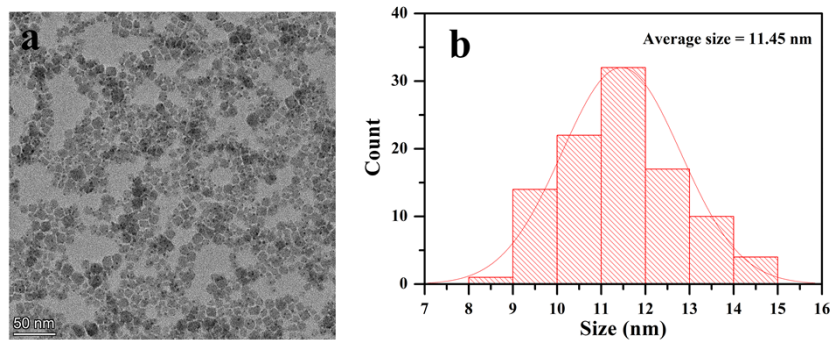


Fig. S1 a) The TEM image and b) size distribution of FA: CsPbBr₃ NCs synthesized through a triple ligand surface engineering at room temperature.

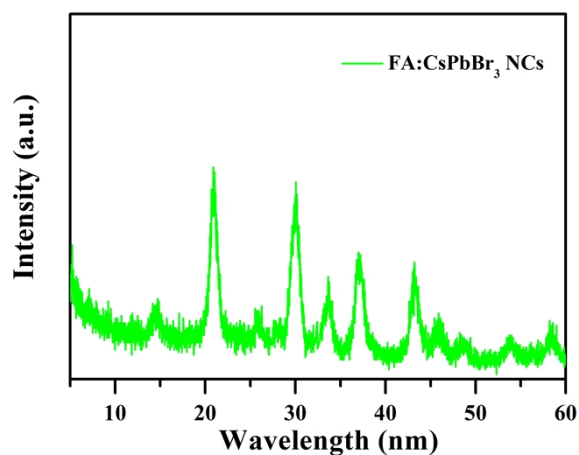


Fig. S2 The XRD pattern of FA:CsPbBr₃ NCs.

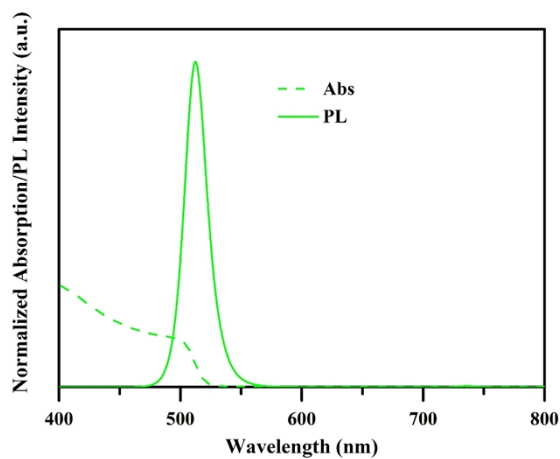


Fig. S3 The absorption and PL spectra of FA:CsPbBr₃ NC solution (in octane).

Table S1. The parameter of the PL decay in Fig. 3c.

Film	τ_1 (ns)	A_1 (%)	τ_2 (ns)	A_2 (%)	τ_3 (ns)	A_3 (%)	τ_{aver} (ns)
ITO/FA:CsPbBr ₃ NCs	1.82	54.81	7.76	39.42	41.87	5.77	19.58
ITO/PFN-0.1/FA:CsPbBr ₃ NCs	1.97	56.73	8.24	36.54	44.93	6.73	22.77
ITO/PFN-0.5/FA:CsPbBr ₃ NCs	1.75	54.37	8.23	38.84	53.15	6.80	28.35
ITO/PFN-1.0/FA:CsPbBr ₃ NCs	2.17	61.90	9.73	31.42	60.83	6.67	33.04

Table S2. The performance of semitransparent LEDs based on perovskite or perovskite NCs with forward or inverted structure.

Device structure	Max. EQE		Transmittance	Year ^{Ref.}
	Top	Bottom		
Forward structure				
ITO/PEDOT:PSS/ CH ₃ NH ₃ PbBr ₃ /TPBi/LiF/Al/Ag/MoO ₃	0.36%	0.85%	47% (Average, 380-780 nm)	2017 ¹
ITO/AZO/PEIE/FAPbI ₃ /poly-TPD/MoO ₃ /Al/ITO/Ag/ITO	1.2%	4.5%	55% (Average, 450-650 nm)	2020 ²
ITO/PEDOT:PSS/PTAA/FA-doped CsPbBr ₃ NCs/TPBi/Ca/Ag	2.8%	9.6%	52% (Average, 400-780 nm)	2021 ³
Inverted structure				
ITO/ZnO/PEI/CsPbBr ₃ NCs/ CBP/TCTA/MoO _x /Au	0.23%	0.35%	73% (Average, 400-700 nm)	2017 ⁴
ITO/PFN/FA:CsPbBr ₃ NCs/NPB/MoO ₃ /Au/MoO ₃	0.40%	0.41%	61% (Average, 380-780 nm)	This work

NCs, Nanocrystals, Max. maximum, EQE external quantum efficiency, Ref. reference.

Reference

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