

Supplementary Information

Green synthesis of highly stable CsPbBr₃ perovskite nanocrystals using natural deep eutectic solvents as solvents and surface ligands

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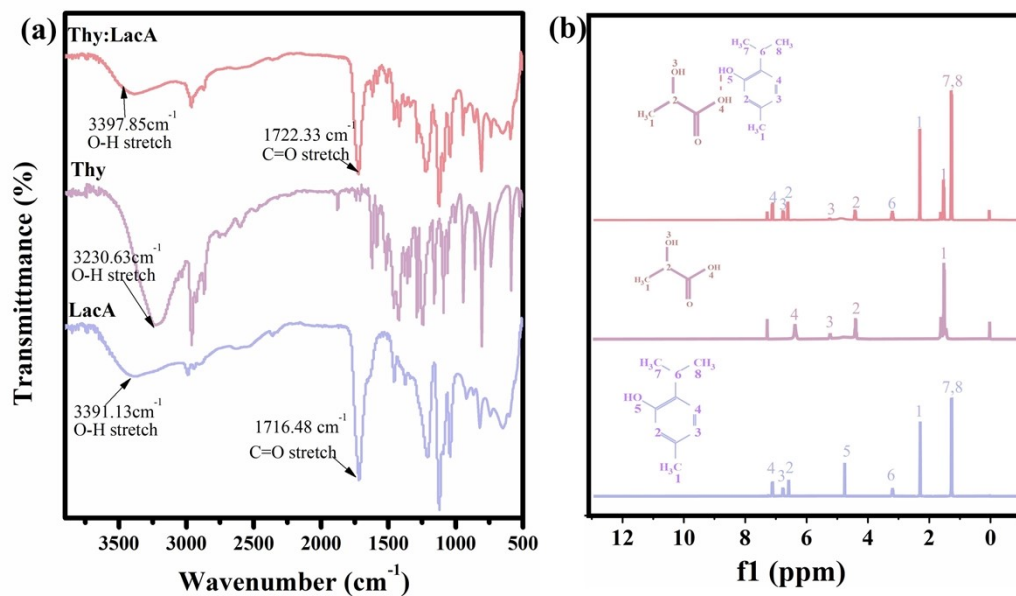


Fig. S1. (a) The FT-IR spectra of thymol, L-lactic acid and Thy:LacA; (b) ^1H NMR spectra of thymol, L-lactic acid and Thy:LacA.

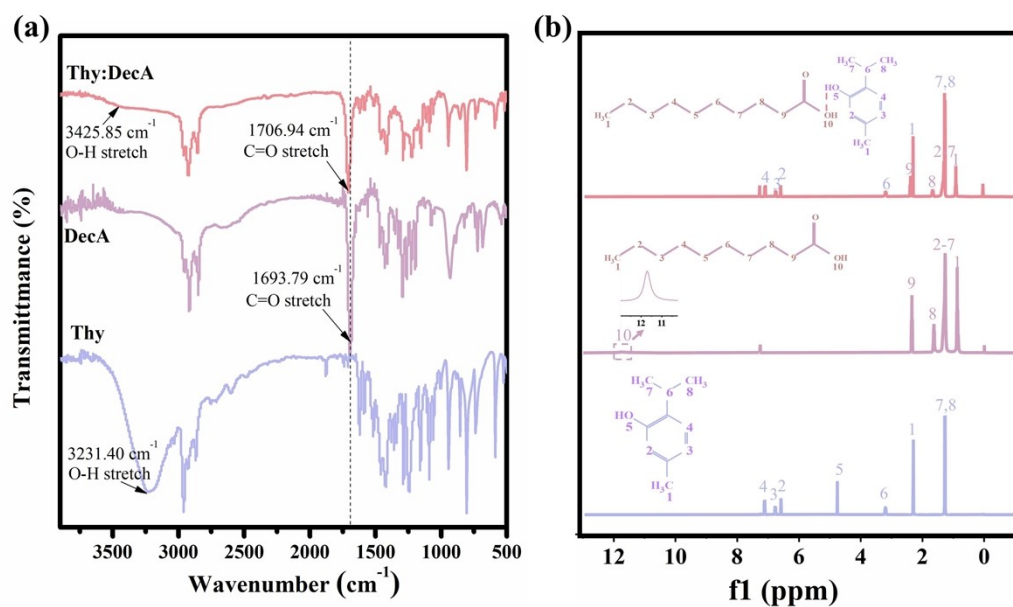


Fig. S2. (a) The FT-IR spectra of thymol, decanoic acid and Thy:DecA; (b) ^1H NMR spectra of thymol, decanoic acid and Thy:DecA.

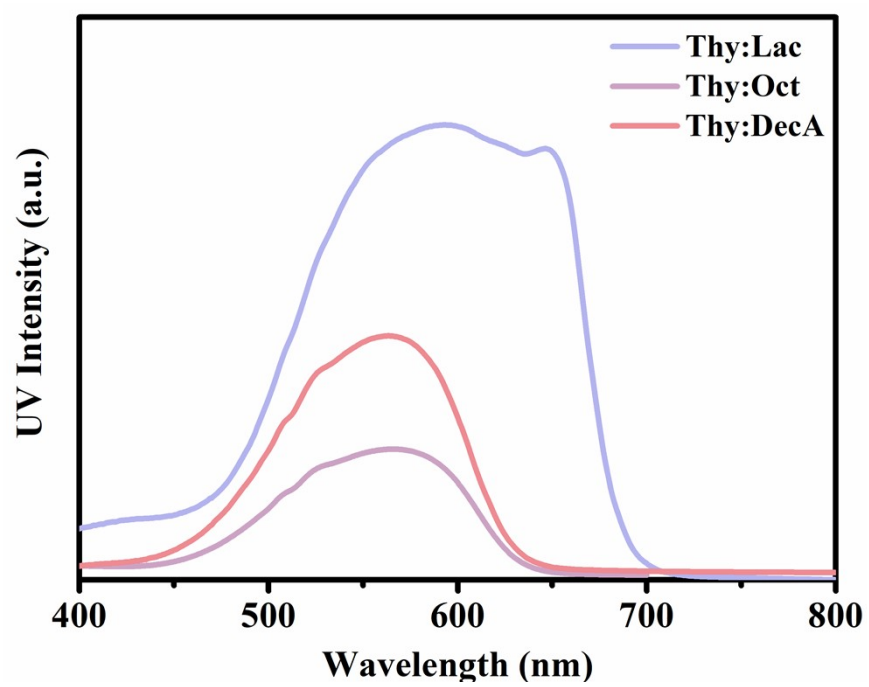


Fig. S3. UV-Vis spectra of Thy:LacA; Thy:Oct; Thy:DecA.

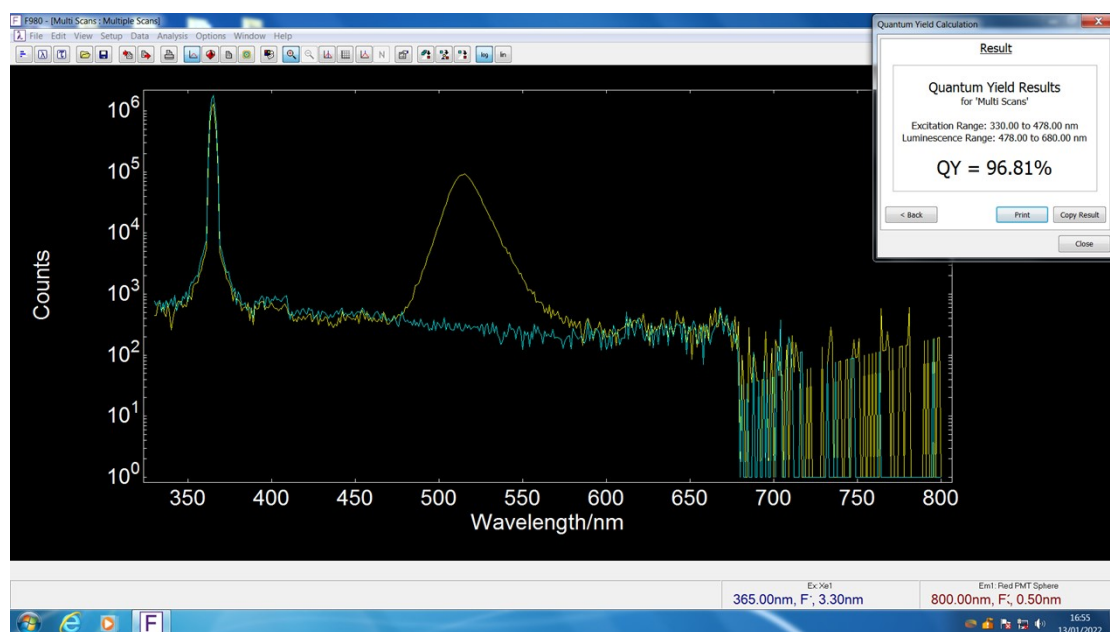


Fig. S4. PLQY measurement results of NADESs-CsPbBr₃ PNCs.

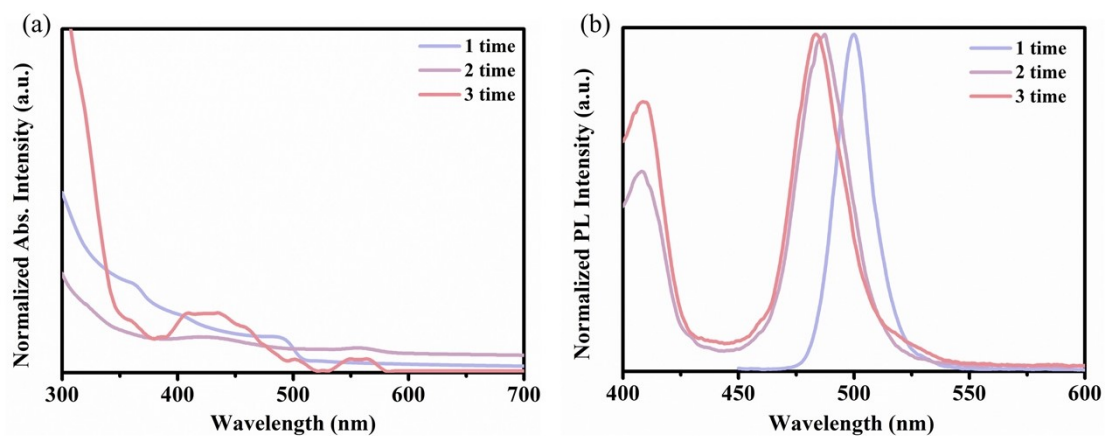


Fig. S5 (a-b) UV-Vis spectra and PL spectra changes of typical LARP-synthesized CsPbBr₃

NCs with different washing times

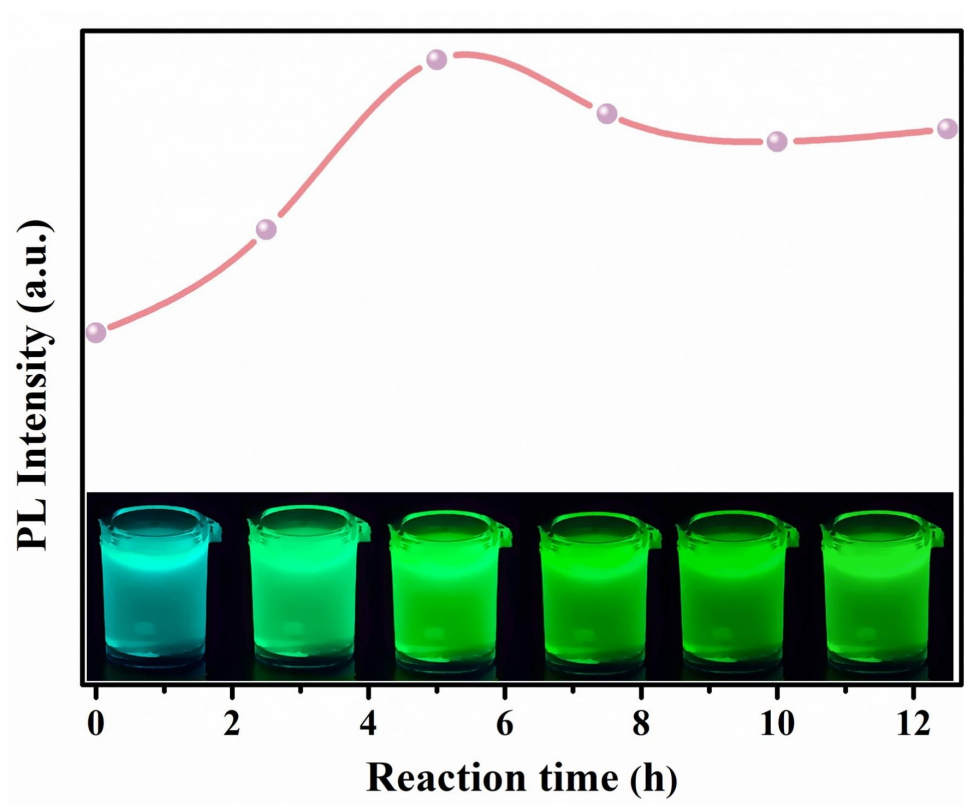


Fig. S6 PL Intensity changes of NADESs-CsPbBr₃ PNCs synthesized of different time with the relative fluorescence images under UV light.

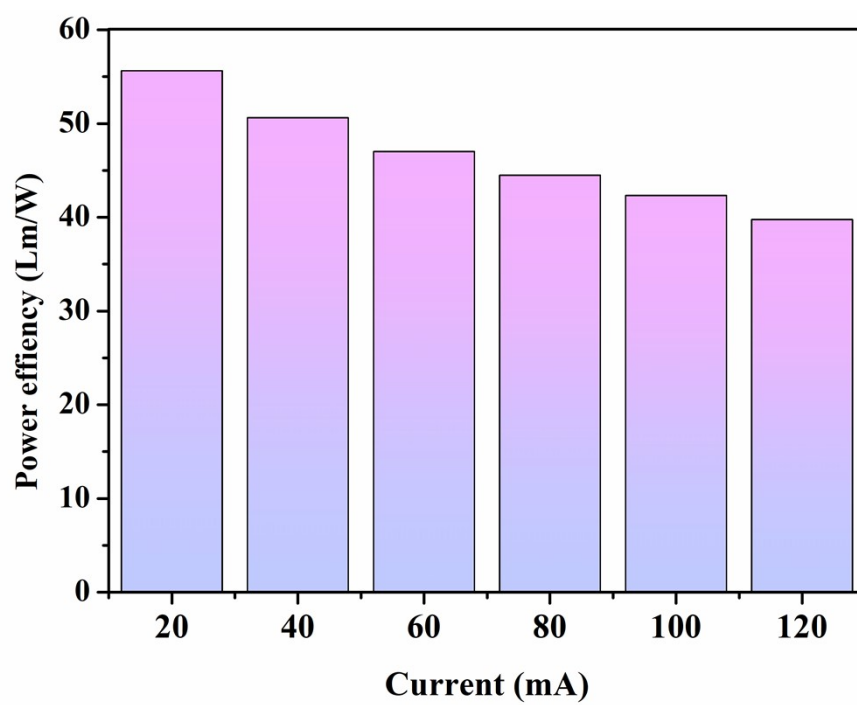


Fig. S7. The power efficiency of the WLED.

Table S1. NADESs and individual components of NADESs.

NaDESs	HBA	HBD
Man:LacA	DL-menthol	L-lactic acid
Man:OctA	DL-menthol	<i>n</i> -Octanoic acid
Man:DecA	DL-menthol	Decanoic acid
Man:LauA	DL-menthol	Lauric acid
Thy:LacA	Thymol	L-lactic acid
Thy:OctA	Thymol	<i>n</i> -Octanoic acid
Thy:DecA	Thymol	Decanoic acid
Thy:LauA	Thymol	Lauric acid
Thy:Eth	Thymol	Ethanol
Thy:But	Thymol	<i>n</i> -Butanol
Thy:Hex	Thymol	<i>n</i> -Hexanol
Thy:Oct	Thymol	<i>n</i> -Octanol
DecA:LauA	Decanoic acid	Lauric acid

Table S2. The NADESs used in the synthesis of NADESs-CsPbBr₃ PNCs.

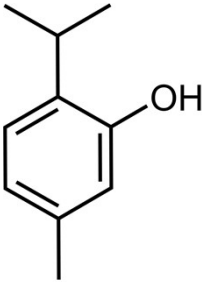
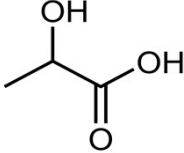
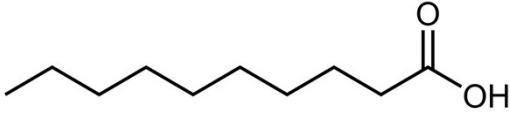
NADESs	HBA	HBD
Thy:LacA		
Thy:Oct		
Thy:DecA		

Table S3. The dissolution of CsBr and PbBr₂ in NADESs.

NaDESs	OA	OAm	CsBr+PbBr ₂	CsBr	PbBr ₂
Man:LacA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Man:OctA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Man:DecA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Man:LauA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Thy:LacA	100 µL	75 µL	Insoluble	Soluble	Insoluble
Thy:OctA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Thy:DecA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Thy:LauA	100 µL	75 µL	Insoluble	Insoluble	Insoluble
Thy:Eth	100 µL	75 µL	Insoluble	Insoluble	Soluble
Thy:But	100 µL	75 µL	Insoluble	Insoluble	Solution
Thy:Hex	100 µL	75 µL	Insoluble	Insoluble	Solution
Thy:Oct	100 µL	75 µL	Insoluble	Insoluble	Solution
DecA:LauA	100 µL	75 µL	Insoluble	Insoluble	Insoluble

Table S4. Selection of different antisolvents and their phases

NaDESs	Proportion	Phases
Man:OctA	1:1	Liquid
Man:DecA	1:1	Liquid
Man:LauA	1:1	Solid
Thy:OctA	1:1	Liquid
Thy:DecA	1:1	Liquid
Thy:LauA	1:1	Solid
Man:Thy:CapA	2:2:1	Liquid
Man:Thy:LauA	2:2:1	Solid
CapA:LauA	1:1	Solid

Table S5. Different concentration of Cs-precursor solutions.

CsBr	Solubility	Antisolvent	PbBr ₂	Dosage
0.02 mol·L ⁻¹	Soluble	Thy:DecA (3 mL)	0.02 mol·L ⁻¹ (600 µL)	1782 µL
0.1 mol·L ⁻¹	Soluble	Thy:DecA (3 mL)	0.02 mol·L ⁻¹ (600 µL)	356 µL
0.2 mol·L ⁻¹	Soluble	Thy:DecA (3 mL)	0.02 mol·L ⁻¹ (600 µL)	187 µL
0.3 mol·L ⁻¹	Soluble	Thy:DecA (3 mL)	0.02 mol·L ⁻¹ (600 µL)	119 µL
0.4 mol·L ⁻¹	Insoluble	Thy:DecA (3 mL)	0.02 mol·L ⁻¹ (600 µL)	None

Table S6. Different concentration of Pb-precursor solutions.

PbBr ₂	OA	OAm	Solubility	Antisolvent	CsBr	Dosage
0.01 mol·L ⁻¹	100 µL	50 µL	Soluble	Thy:DecA (3 mL)	0.3 mol·L ⁻¹ (119 µL)	1200 µL
0.02 mol·L ⁻¹	100 µL	50 µL	Soluble	Thy:DecA (3 mL)	0.3 mol·L ⁻¹ (119 µL)	600 µL
0.03 mol·L ⁻¹	100 µL	50 µL	Insoluble	Thy:DecA (3 mL)	0.3 mol·L ⁻¹ (119 µL)	None
