

Synthesis of Cesium lead bromide nanoparticles by ultrasonic bath: A polar-solvent-free approach at room temperature

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Supplementary Information File

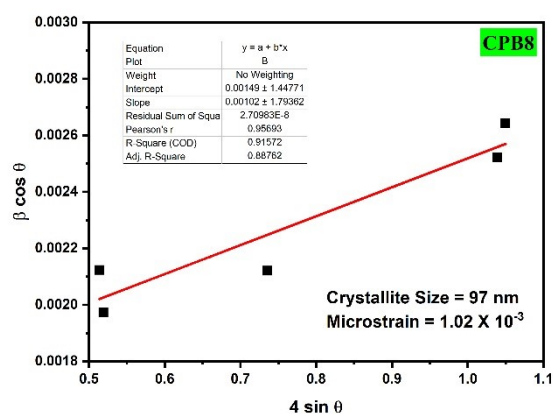


Fig. S1 Williamson-Hall (W-H) plot of CPB8 NPs.

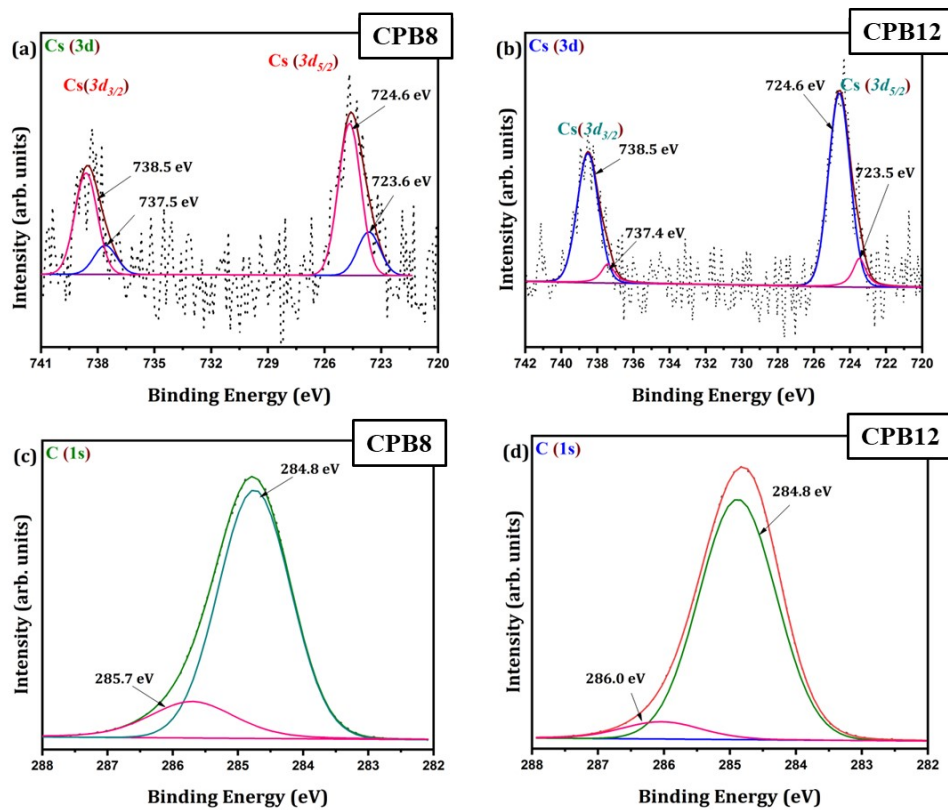


Fig. S2 Narrow scan XPS spectra of (a, b) Cs 3d, (c, d) C 1s regions in the CPB8 and CPB12 NPs, respectively.

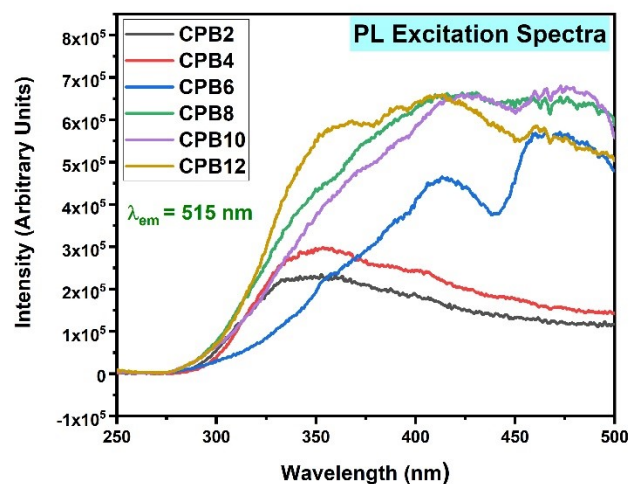


Fig. S3 PL excitation spectra of the cesium lead bromide NPs prepared under different durations of ultrasonication.

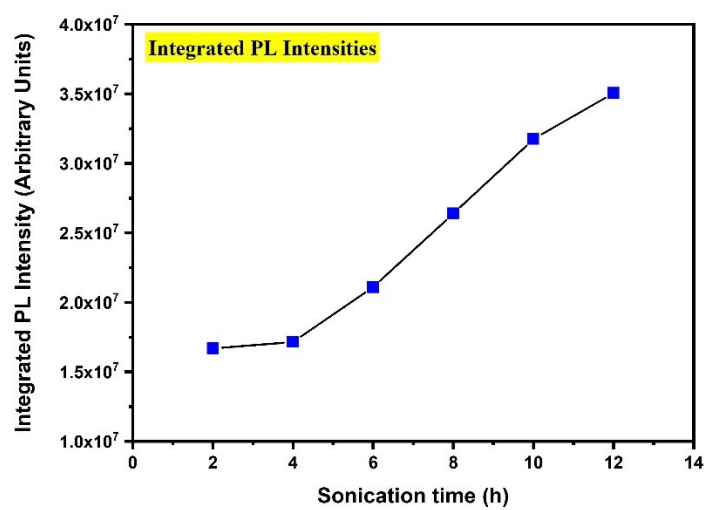


Fig. S4 Variation of integrated PL intensity of CPB NPs versus the sonication time.

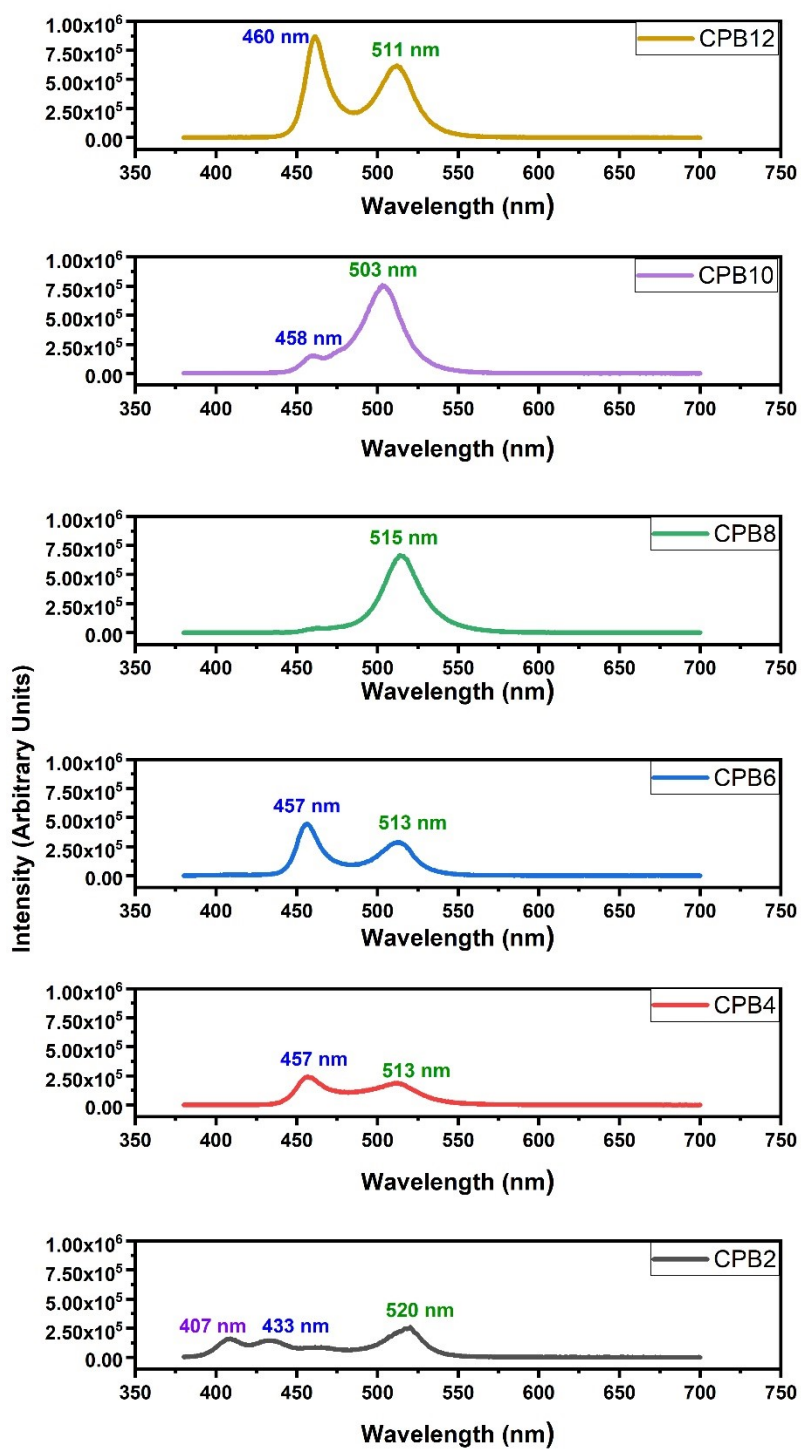


Fig. S5 PL emission spectra of the cesium lead bromide NPs excited at 365 nm.

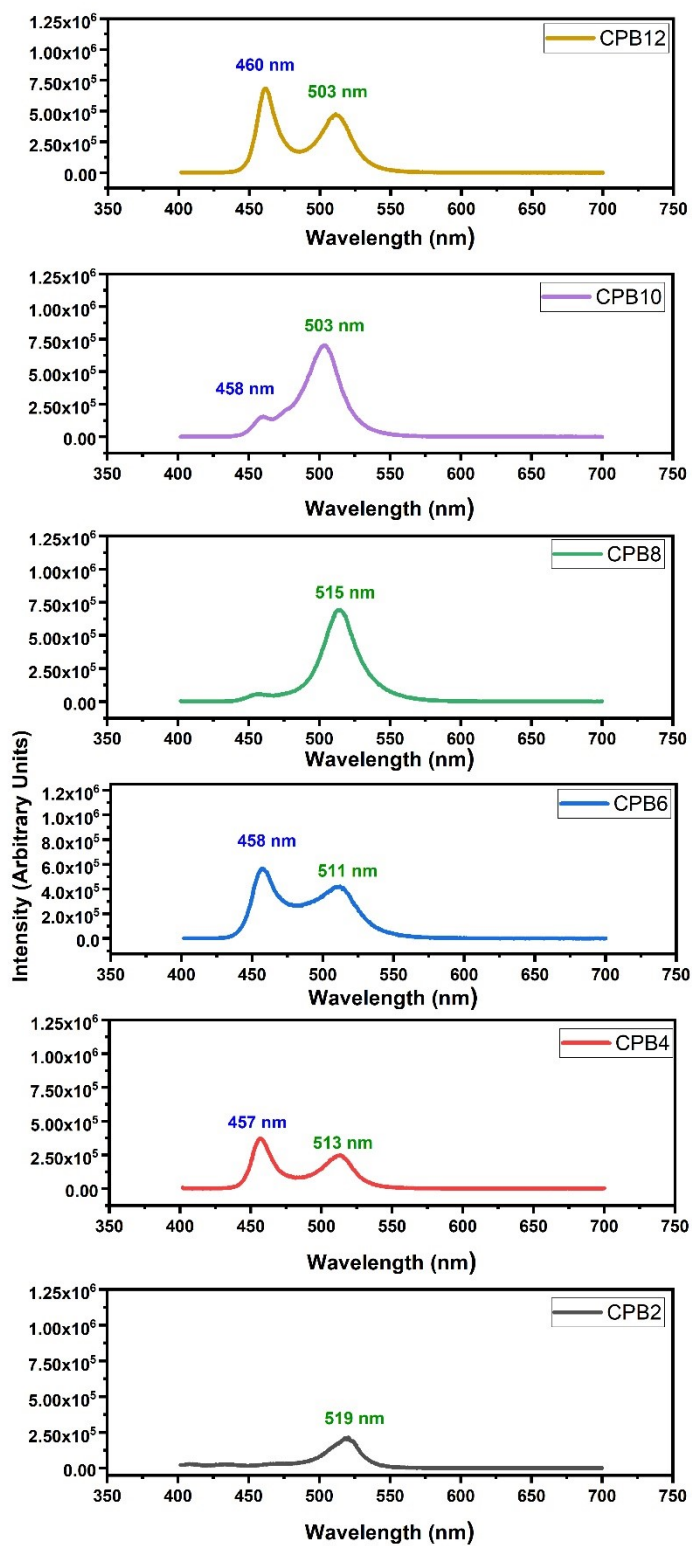


Fig. S6 PL emission spectra of the cesium lead bromide NPs excited at 400 nm.

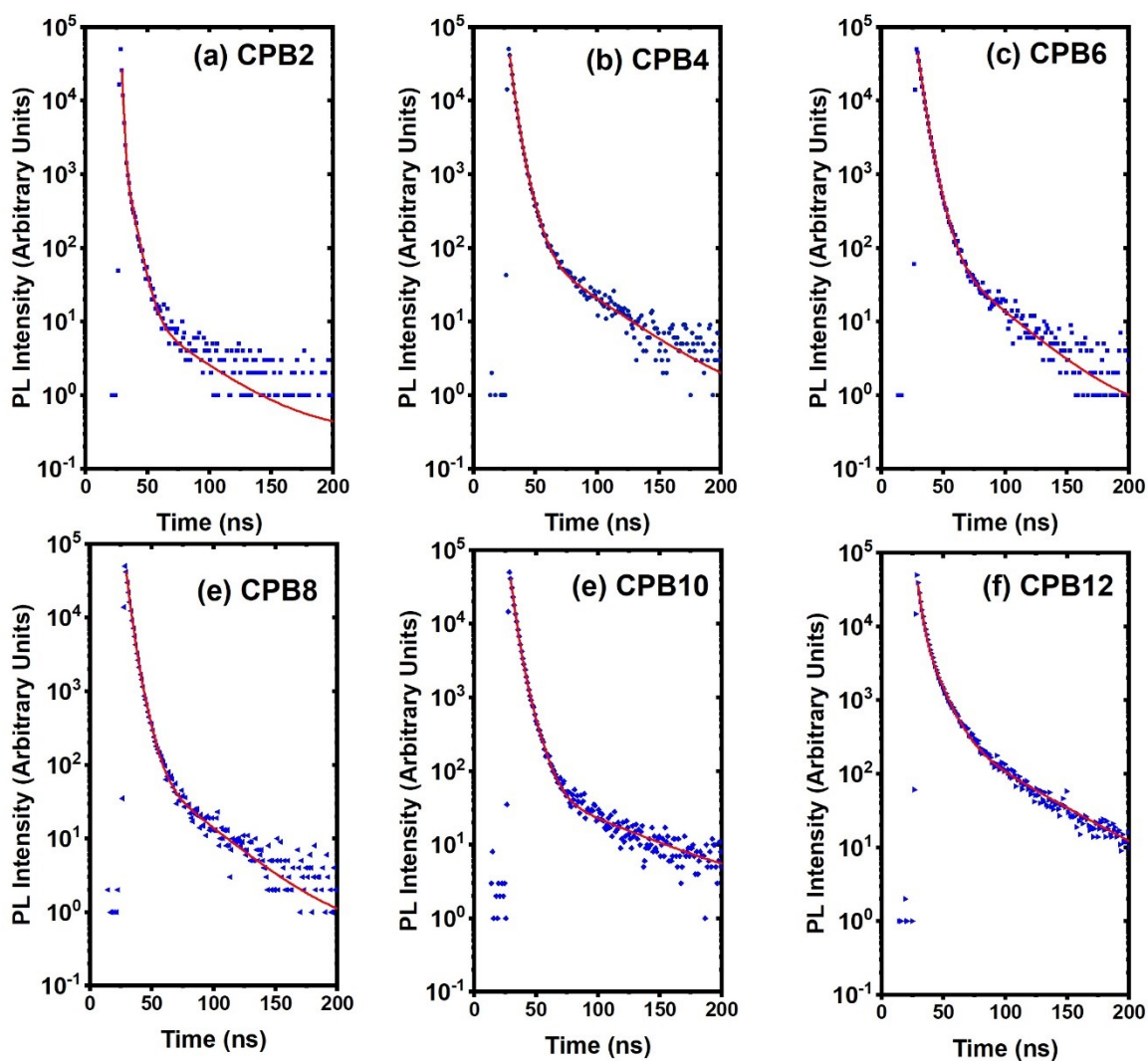


Fig. S7 PL decay curves for **(a)** CPB2, **(b)** CPB4, **(c)** CPB6, **(d)** CPB8, **(e)** CPB10 and **(f)** CPB12 NPs excited at 360 nm and monitored for their blue emission peak.

Table S1 Best fit parameters of PL decay curves for the green emission bands of **(a)** CPB2, **(b)** CPB4, **(c)** CPB6, **(d)** CPB8, **(e)** CPB10 and **(f)** CPB12 NPs.

Sr. No.	Decay time Parameters	Decay time Values (ns)	Coefficients	Coefficient values	Relative %	Average lifetime (ns)	Goodness of Fitting
(a)	CPB2						
	τ_1	5.86	A_1	36388.56	42.53	4.119	1.179
	τ_2	32.06	A_2	3006.63	19.23		
	τ_3	181.42	A_3	585.94	21.17		
	τ_4	972.91	A_4	88.00	17.08		

(b)	CPB4						
	τ_1	6.36	A_1	36632.21	38.51	4.470	1.239
	τ_2	28.82	A_2	5679.32	27.05		
	τ_3	151.56	A_3	800.54	20.05		
	τ_4	887.98	A_4	98.14	14.40		
(c)	CPB6						
	τ_1	7.60	A_1	39415.16	38.35	5.760	1.006
	τ_2	36.69	A_2	5398.37	25.37		
	τ_3	212.03	A_3	722.14	19.61		
	τ_4	1116.43	A_4	116.64	16.68		
(d)	CPB8						
	τ_1	8.88	A_1	32877.30	22.44	20.743	1.130
	τ_2	43.67	A_2	7835.22	26.31		
	τ_3	219.41	A_3	1528.69	25.79		
	τ_4	1143.84	A_4	289.61	25.47		
(e)	CPB10						
	τ_1	6.11	A_1	39409.06	59.86	0.967	0.951
	τ_2	26.28	A_2	3422.65	22.36		
	τ_3	134.19	A_3	350.86	11.71		
	τ_4	591.61	A_4	41.28	6.07		
(f)	CPB12						
	τ_1	6.11	A_1	41522.04	72.53	0.667	0.930
	τ_2	32.96	A_2	2043.72	19.98		
	τ_3	249.29	A_3	63.38	4.73		
	τ_4	711.25	A_4	85.36	2.76		

Table S2 Best fit parameters of PL decay curves for the blue emission bands **(a)** CPB2, **(b)** CPB4, **(c)** CPB6, **(d)** CPB8, **(e)** CPB10 and **(f)** CPB12 NPs.

Sr. No.	Decay time Parameters	Decay time Values (ns)	Coefficients	Coefficient values	Relative %	Average lifetime (ns)	Goodness of Fitting
(a)	CPB2						
	τ_1	1.06	A_1	61815.91	84.67	0.303	0.917
	τ_2	5.16	A_2	2176.29	14.55		
	τ_3	35.76	A_3	16.92	0.78		
(b)	CPB4						
	τ_1	2.77	A_1	45576.74	64.63	0.642	0.904
	τ_2	6.13	A_2	10458.14	32.78		
	τ_3	37.48	A_3	135.22	2.59		
(c)	CPB6						
	τ_1	2.66	A_1	45202.47	63.05	0.507	0.920
	τ_2	5.63	A_2	11796.09	34.87		
	τ_3	32.37	A_3	122.38	2.08		

(d)	CPB8						
	τ_1	3.21	A_1	45623.24	64.28	0.490	1.102
	τ_2	6.07	A_2	12718.63	33.90		
	τ_3	1.38	A_3	134.00	1.82		
(e)	CPB10						
	τ_1	2.79	A_1	40602.65	47.53	0.834	0.586
	τ_2	9.77	A_2	10549.66	43.32		
	τ_3	46.15	A_3	427.07	9.15		
(f)	CPB12						
	τ_1	3.08	A_1	45309.37	67.74	1.489	1.126
	τ_2	7.12	A_2	8754.90	30.24		
	τ_3	60.31	A_3	69.19	2.02		