

Supporting Information

Highly stable CsPbBr₃ perovskite phases from new lead β-diketonate glyme adducts

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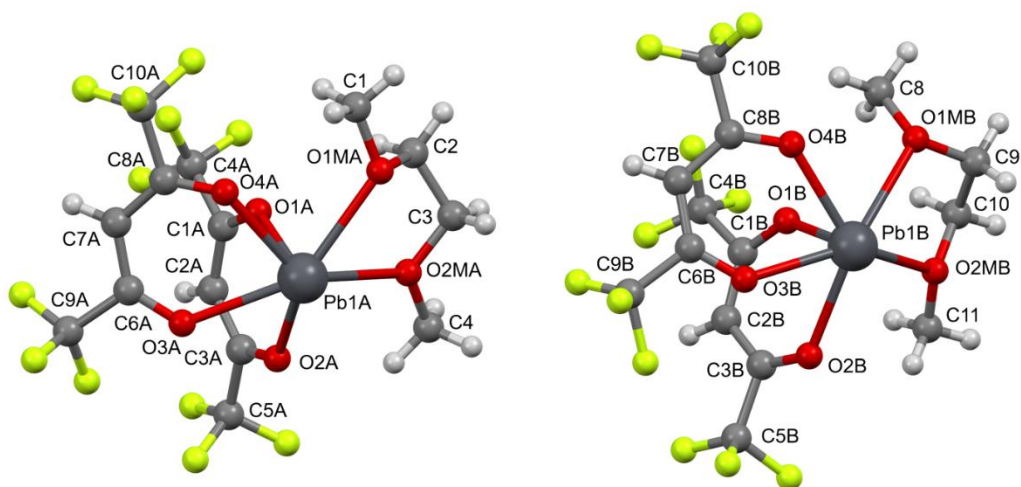


Fig. S1. Ball and stick view of the two independent molecules of $\text{Pb}(\text{hfa})_2 \cdot \text{monoglyme}$ showing the atom labelling for the Pb, O and C atoms. For the sake of clarity only one model was reported for the disordered moieties.

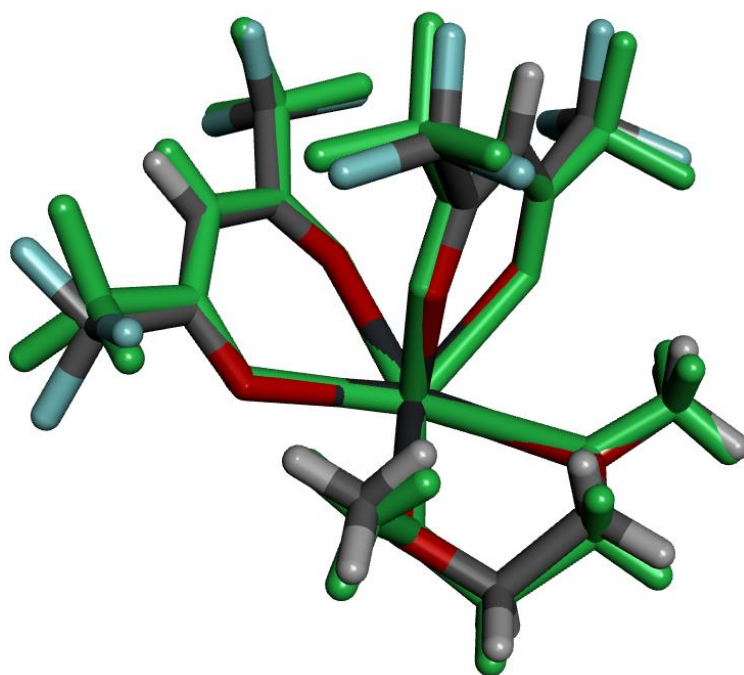


Fig. S2. Superimposition of the two independent Pb (II) complexes in $\text{Pb}(\text{hfa})_2 \cdot \text{monoglyme}$. (stick, color by elements: Pb1A complex; stick, pale green: Pb1B complex)

Table S1. Selected bond lengths (Å) and angles (°) in **Pb(hfa)₂monoglyme**.

Pb-X			
Pb1A-O1A	2.369(6)	Pb1B-O1B	2.347(5)
Pb1A-O2A	2.509(4)	Pb1B-O2B	2.523(5)
Pb1A-O3A	2.546(5)	Pb1B-O3B	2.476(5)
Pb1A-O4A	2.509(5)	Pb1B-O4B	2.466(4)
Pb1A-O1MA	2.620(5)	Pb1B-O1MB	2.729(6)
Pb1A-O2MA	2.665(6)	Pb1B-O2MB	2.738(5)
Pb1A...Pb1A ¹	3.8012(5)	Pb1B...Pb1B ²	3.9518(6)
X-Pb-Y			
O1A-Pb1A-O2A	73.5(2)	O1B-Pb1B-O2B	73.6(2)
O1A-Pb1A-O3A	81.0(2)	O1B-Pb1B-O3B	82.7(2)
O1A-Pb1A-O4A	72.6(2)	O1B-Pb1B-O4B	74.9(2)
O1A-Pb1A-O1MA	79.5(2)	O1B-Pb1B-O1MB	76.4(2)
O1A-Pb1A-O2MA	78.8(2)	O1B-Pb1B-O2MB	76.3(2)
O2A-Pb1A-O3A	65.8(2)	O2B-Pb1B-O3B	66.3(2)
O2A-Pb1A-O4A	127.5(2)	O2B-Pb1B-O4B	129.6(2)
O2A-Pb1A-O1MA	132.7(2)	O2B-Pb1B-O1MB	134.7(1)
O2A-Pb1A-O2MA	73.6(2)	O2B-Pb1B-O2MB	77.3(2)
O3A-Pb1A-O4A	70.3(2)	O3B-Pb1B-O4B	71.5(2)
O3A-Pb1A-O1MA	146.1(2)	O3B-Pb1B-O1MB	141.1(1)
O3A-Pb1A-O2MA	138.3(2)	O3B-Pb1B-O2MB	141.9(2)
O4A-Pb1A-O1MA	77.5(2)	O4B-Pb1B-O1MB	71.5(1)
O4A-Pb1A-O2MA	134.9(2)	O4B-Pb1AB-O2MB	130.5(2)
O1MA-Pb1A-O2MA	63.3(2)	O1MB-Pb1B-O2MB	63.1(2)

¹ = -x, -y, 1-z; ² = 1-x, 1-y, -z

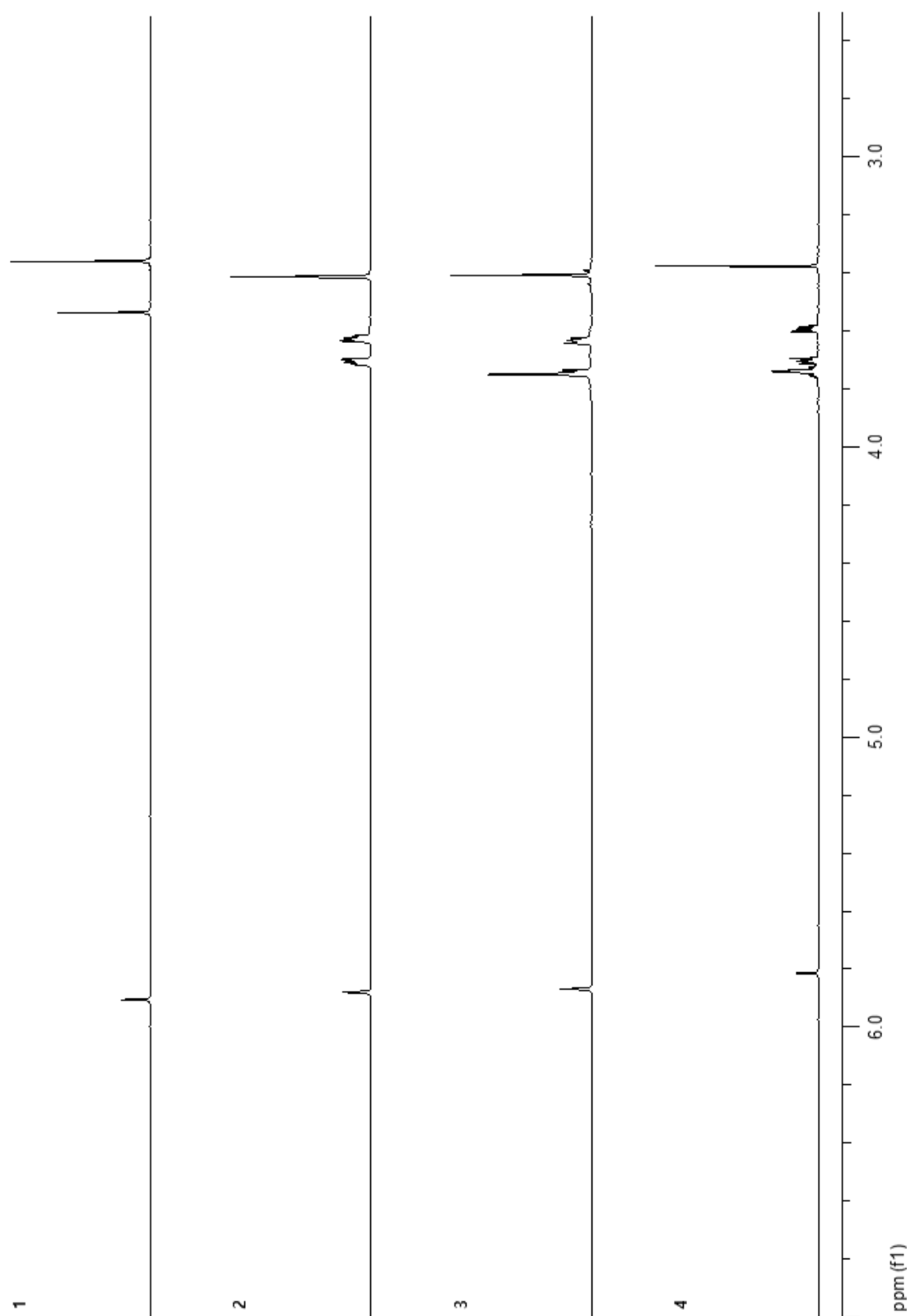


Fig. S3. ¹H NMR spectra of the Pb(hfa)₂•glyme complexes 1-4 (CD₃CN, 500 MHz, 27 °C).

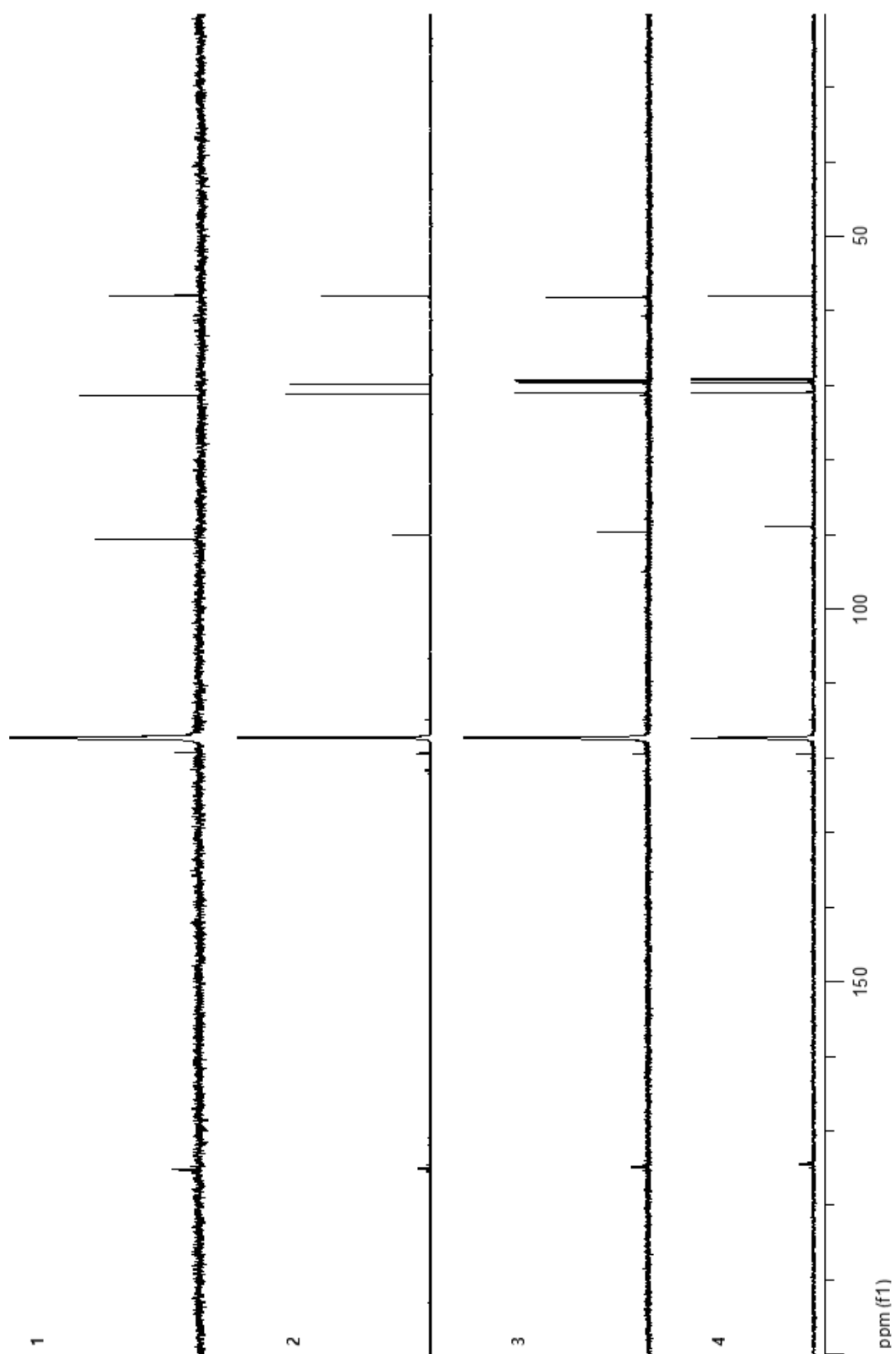


Fig. S4. ^{13}C NMR spectra of the $\text{Pb}(\text{hfa})_2 \cdot \text{glyme}$ complexes 1-4 (CD_3CN , 125 MHz, 27°C).

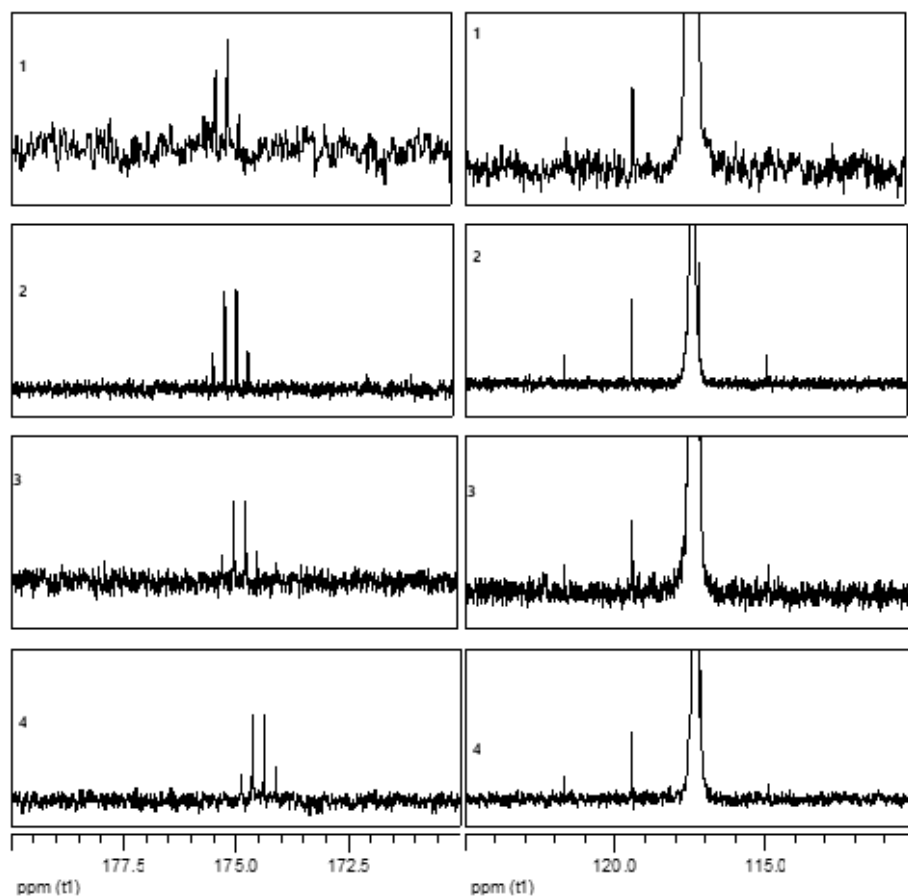


Fig. S5. ^{13}C -NMR signals for the CF_3 and CO groups of the $\text{Pb}(\text{hfa})_2 \cdot \text{glyme}$ complexes 1-4 (CD_3CN , 125 MHz, 27 °C).

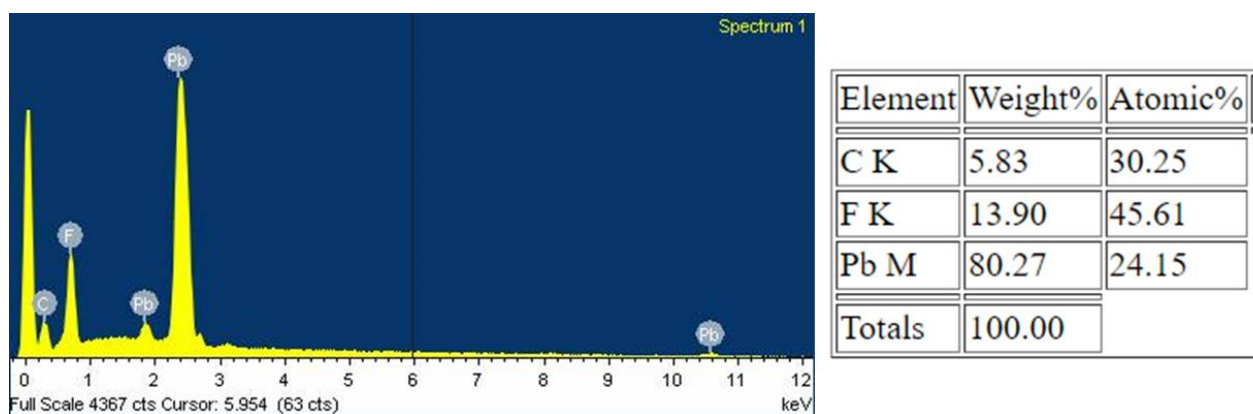


Fig S6. EDX Spectrum of TGA residue of $[\text{Pb}(\text{hfa})_2 \cdot \text{triglyme} \cdot \text{H}_2\text{O}]$ and quantitative analysis of the residue.

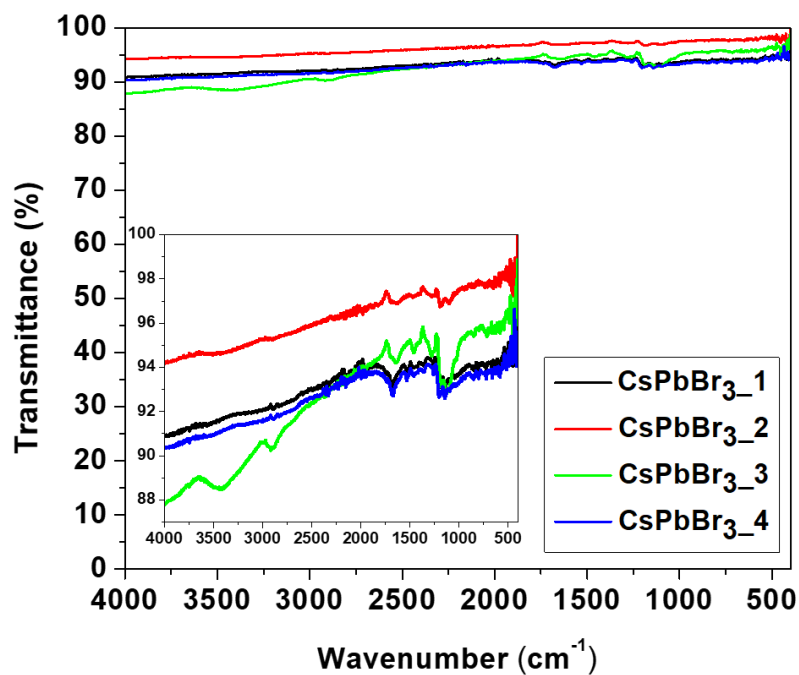


Fig S7. ATR-IR spectra of CsPbBr_3_1 , CsPbBr_3_2 , CsPbBr_3_3 and CsPbBr_3_4 microcrystals.

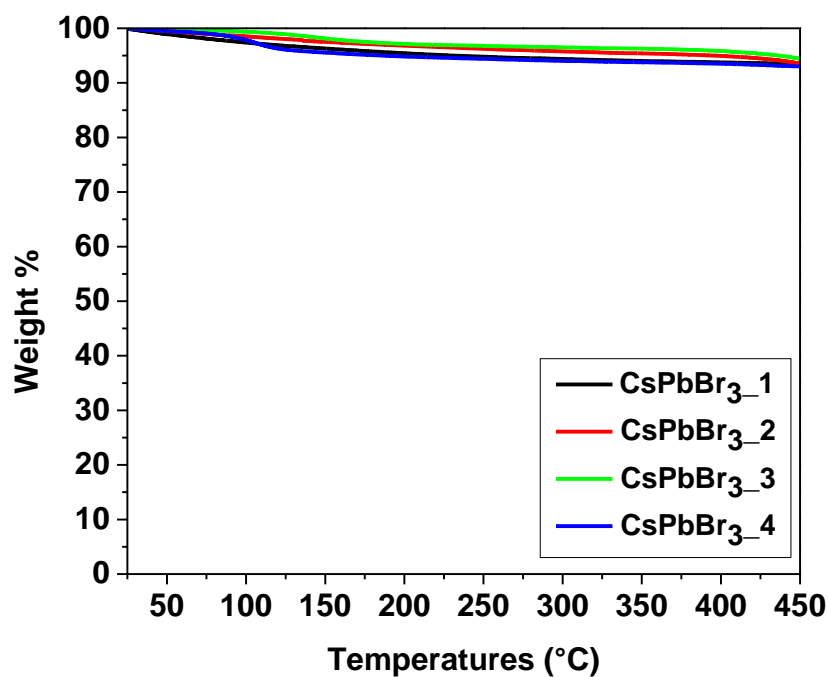


Fig S8. TGA curves of CsPbBr_3_1 , CsPbBr_3_2 , CsPbBr_3_3 and CsPbBr_3_4 microcrystals.

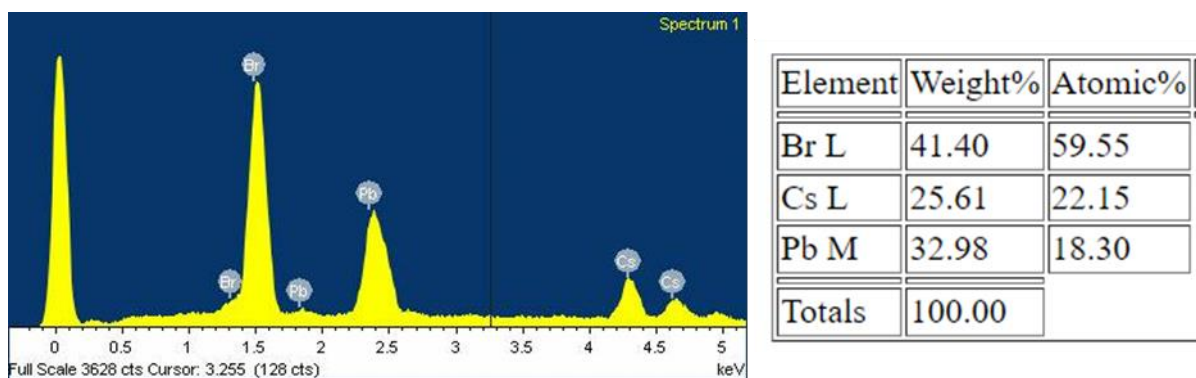


Fig S9. EDX Spectrum of CsPbBr₃_1 and quantitative analysis of the powder.

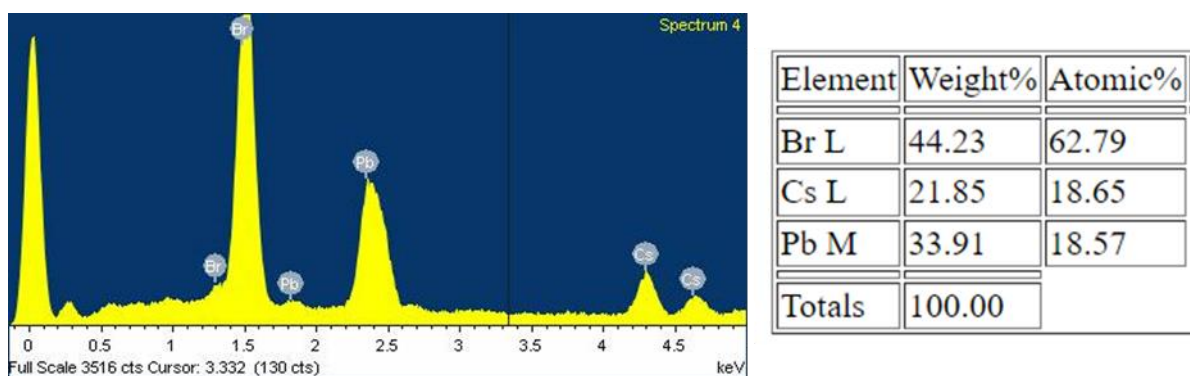
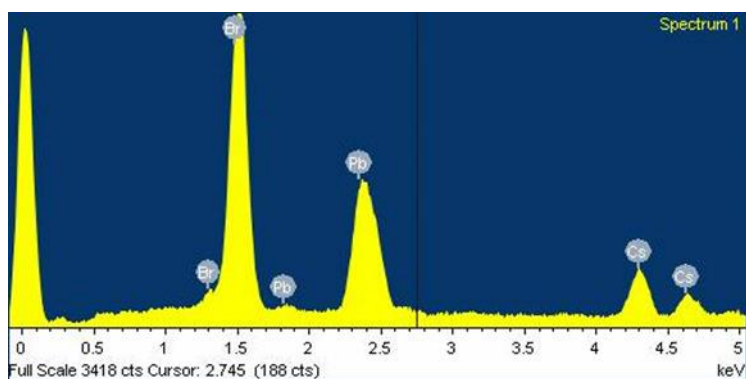
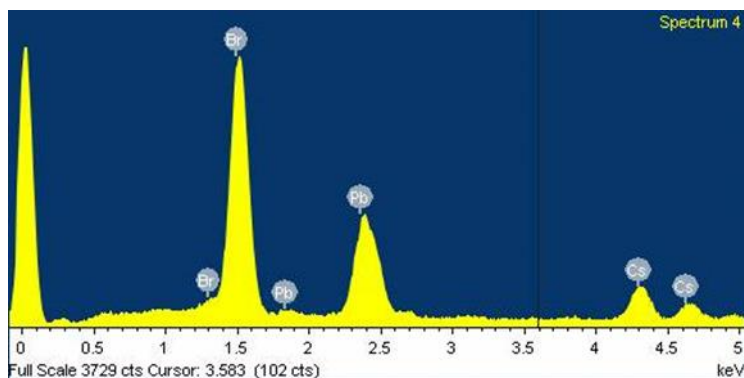


Fig S10. EDX Spectrum of CsPbBr₃_2 and quantitative analysis of the powder.



Element	Weight%	Atomic%
Br L	42.12	60.51
Cs L	24.00	20.73
Pb M	33.87	18.76
Totals	100.00	

Fig S11. EDX Spectrum of CsPbBr₃_3 and quantitative analysis of the powder.



Element	Weight%	Atomic%
Br L	44.53	62.96
Cs L	22.31	18.96
Pb M	33.15	18.08
Totals	100.00	

Fig S12. EDX Spectrum of CsPbBr₃_4 and quantitative analysis of the powder.