

## Electronic Supporting Information (ESI)

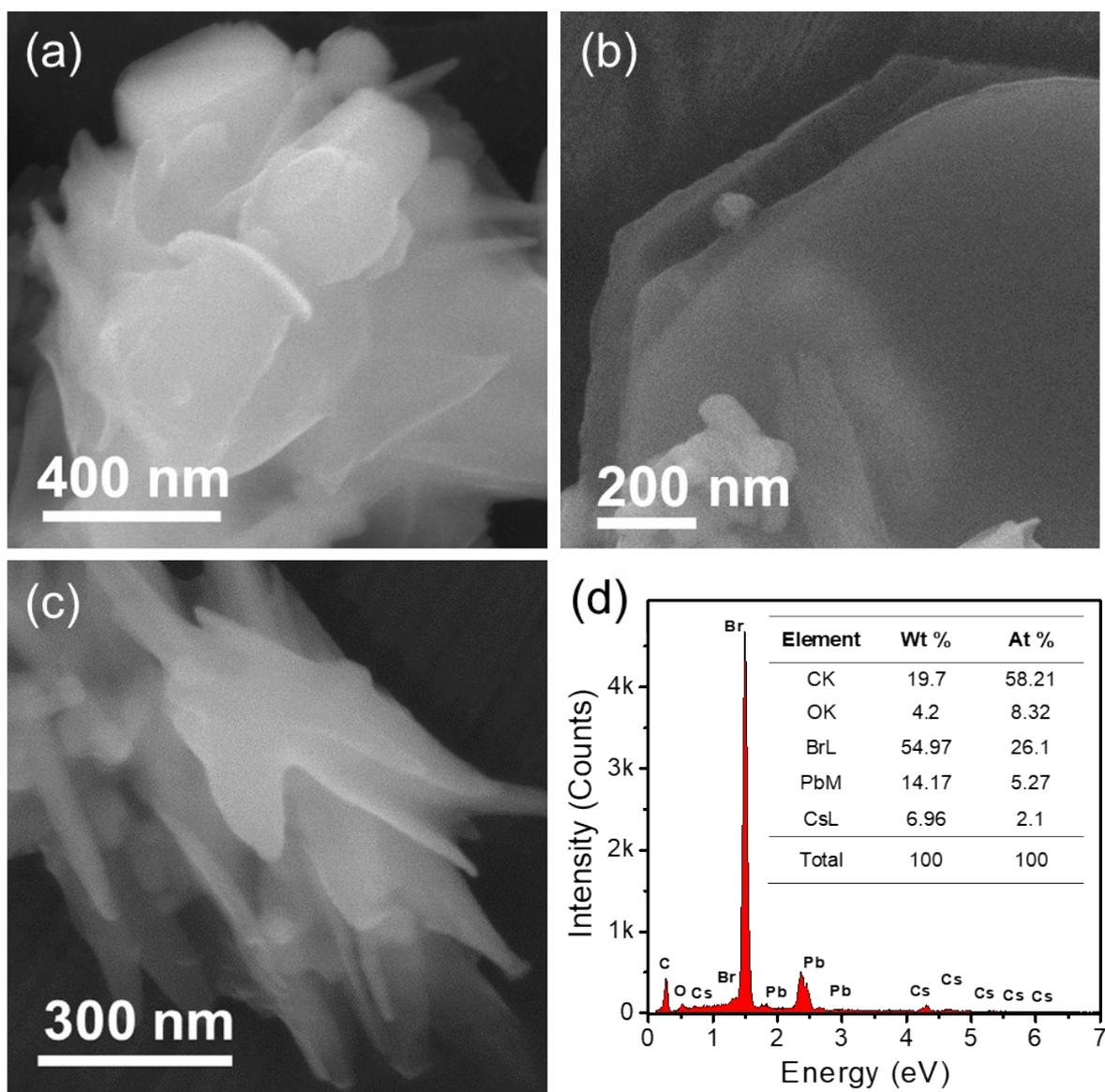
### **Single pot synthesis of indirect band gap 2D CsPb<sub>2</sub>Br<sub>5</sub> nanosheets from direct band gap 3D CsPbBr<sub>3</sub> nanocrystals and the origin of their luminescence properties**

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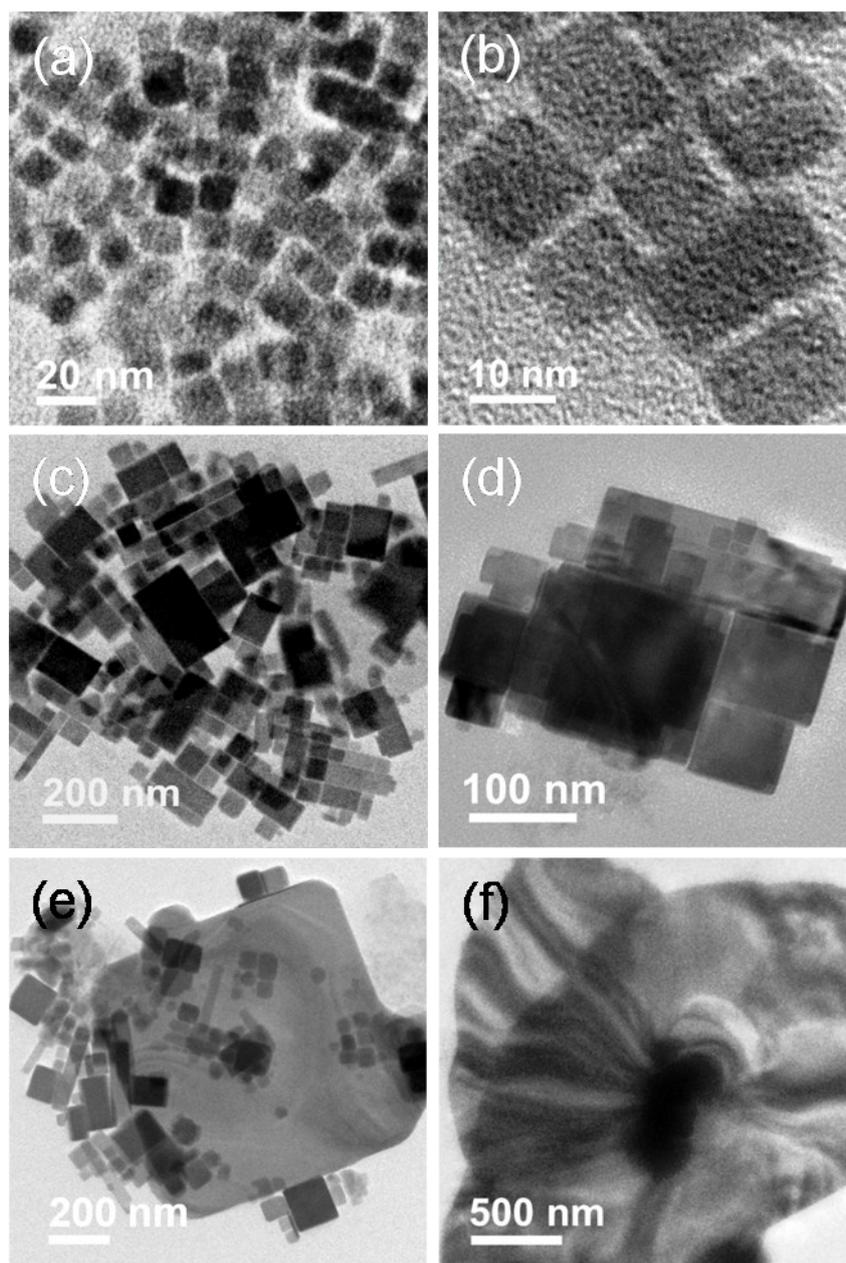
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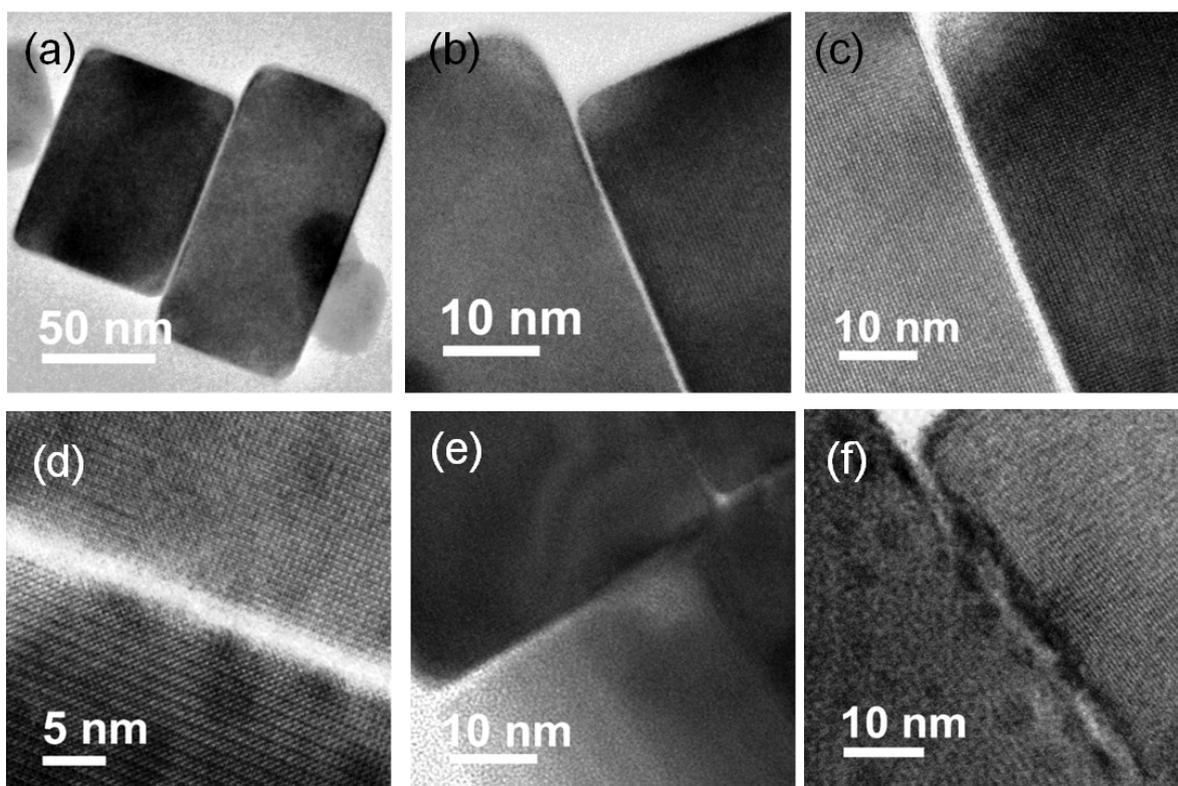
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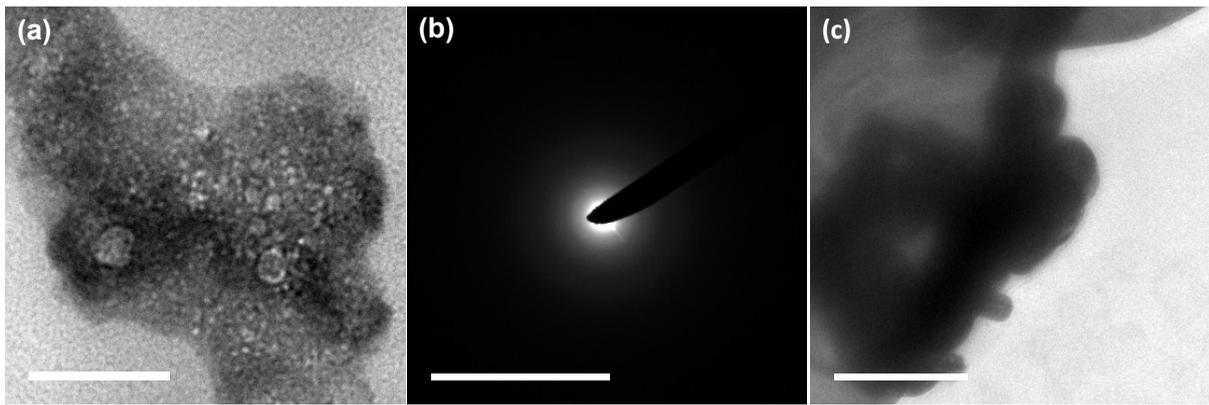
**Fig. S1.** FESEM images of the CsPb<sub>2</sub>Br<sub>5</sub> nanosheets (a-c) and (d) EDAX spectra of CsPb<sub>2</sub>Br<sub>5</sub>



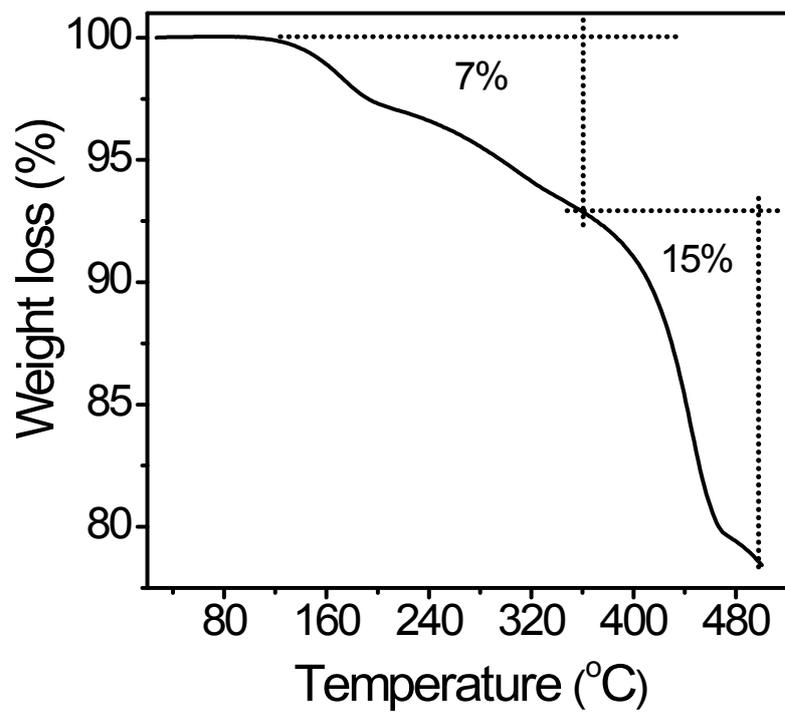
**Fig. S2.** (a) and (b) TEM images of the nanocrystals after immediate quenching of reaction mixture, (c) and (d) TEM image of the nanocrystals obtained after 3 and 5 min of reactions respectively, contain mixture of  $\text{CsPbBr}_3$  and  $\text{CsPb}_2\text{Br}_5$ , (e) TEM image of  $\text{CsPb}_2\text{Br}_5$  nanoplate along with small nanocrystals obtained in 10 mins of reaction, (f) TEM image of the  $\text{CsPb}_2\text{Br}_5$  nanosheets in 20 mins.



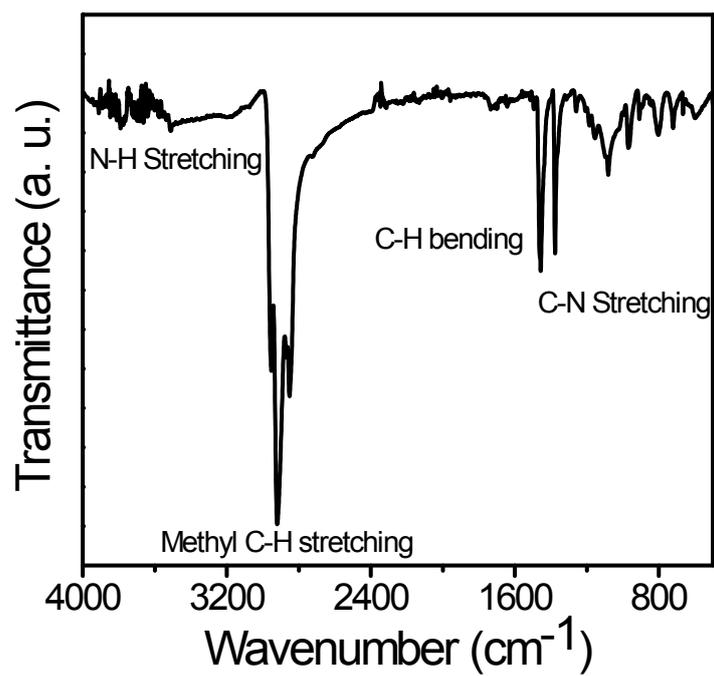
**Fig. S3.** (a) and (b) TEM images of the nanocrystals (NCs) in 3 mins, (c) and (d) TEM/HRTEM images of the nanocrystals in 3 mins contains NCs close to each other, (e) TEM image of square shaped  $\text{CsPbBr}_3$  NCs along with  $\text{CsPb}_2\text{Br}_5$ , after 5 mins, (f) HRTEM image clearly shows that the lateral attachment of NCs to form the larger nanoplate type structure.



**Fig. S4.** (a)TEM image and (b) Selected Area Electron Diffraction pattern of controlled reaction, (c) TEM image of amorphous coating in  $\text{CsPb}_2\text{Br}_5$ .



**Fig. S5.** TGA curve of as-synthesized  $\text{CsPb}_2\text{Br}_5$ .



**Fig. S6.** FTIR spectra of as-synthesized CsPb<sub>2</sub>Br<sub>5</sub>.