

Supporting Information

Ligand and adjuvant Dual-assisted synthesis of highly luminescent and stable Cs₄PbBr₆ nanoparticules used for LED

Zikuan Shi^{a#}, Yu Yang^{a#}, Xin-Yuan Sun^b, Feng Lang^a, Yu Xiang^a, Liangwu Lin^{a*}

a. *National Key Laboratory of Science and Technology on High-strength Structural Materials,
Central south University, Changsha Hunan 410083, People's Republic of China, E-mail:
linliangwu@csu.edu.cn*

b. *Department of Physics, Jingtangshan University, Ji'an Jiangxi 343009, People's Republic of
China*

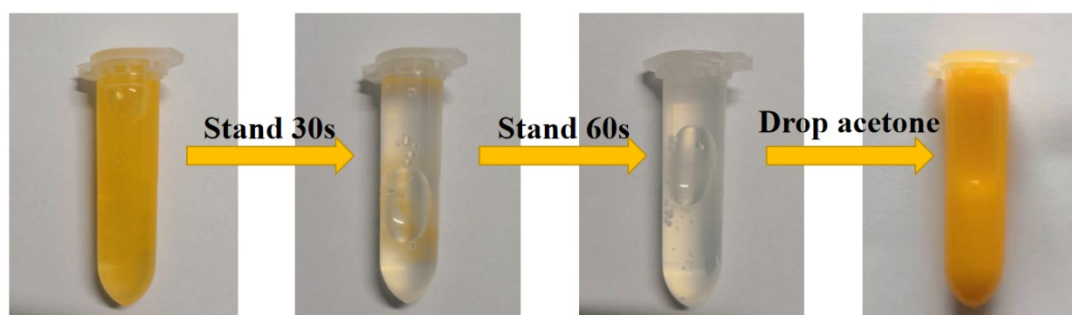


Fig. S1. Samples synthesized with water and DMSO only. After mixing, yellow precipitate was formed immediately. After 30 s, the precipitate gradually dissolved until it was completely dissolved in 60 s. when dropping acetone, yellow precipitate appeared immediately

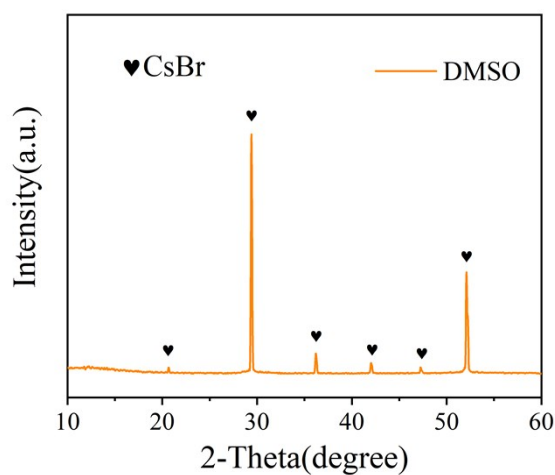


Fig. S2. The XRD of sample only adding DMSO

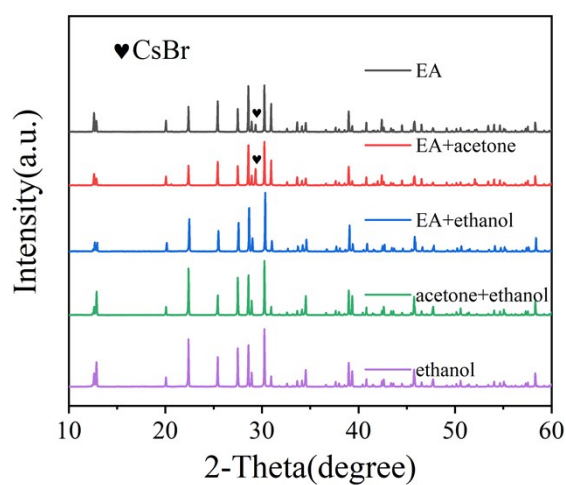


Fig. S3. The XRD of samples synthesized in different solution (25ml EA; 12.5ml EA+12.5ml acetone; 12.5ml EA+12.5ml ethanol; 12.5ml acetone+12.5ml ethanol; 25ml ethanol)

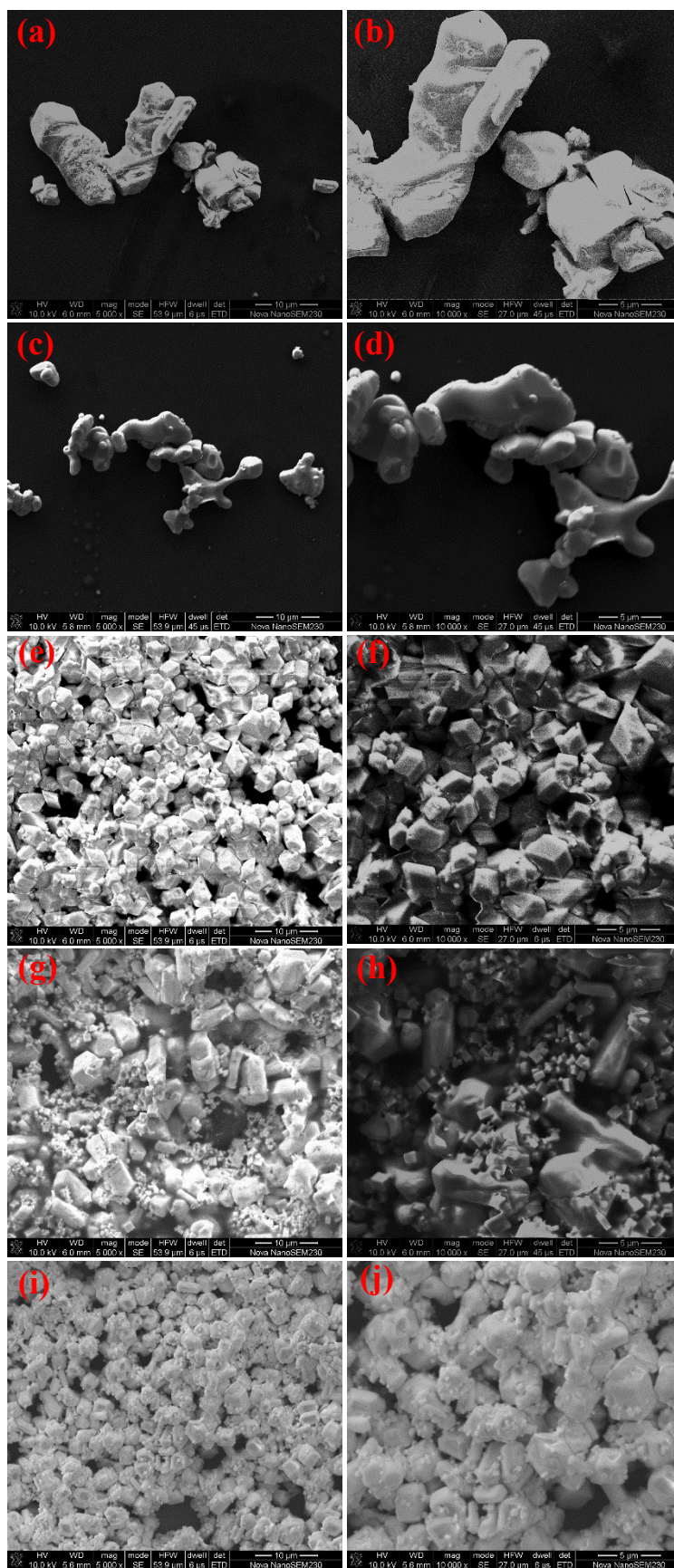


Fig. S4. The SEM of samples synthesized in different solution ((a)-(b):25ml EA; (c)-(d):12.5ml EA+12.5ml acetone; (e)-(f):12.5ml EA+12.5ml ethanol; (g)-(h):12.5ml acetone+12.5ml ethanol; (i)-(j): 25ml ethanol)

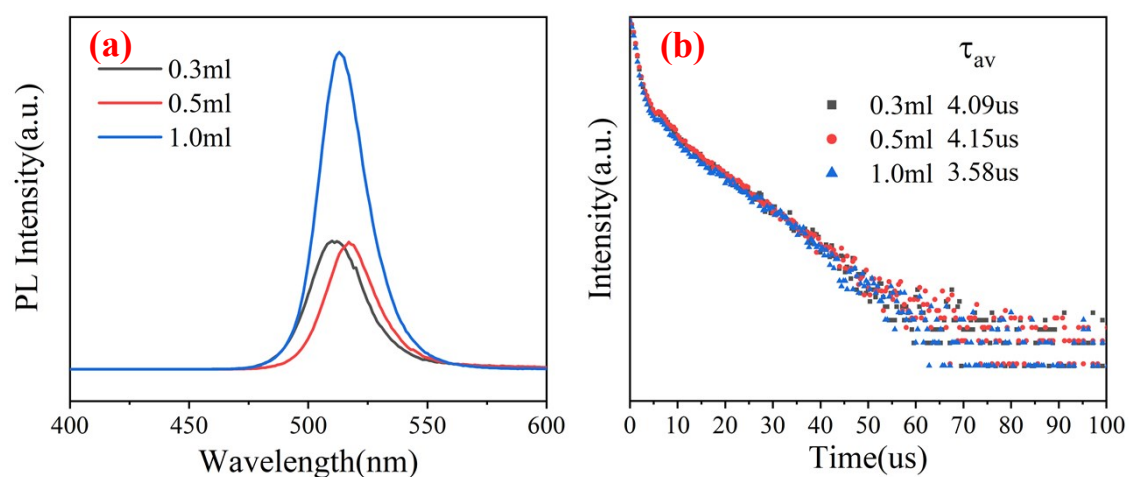


Fig. S5. The photoluminescence emission spectrum (a) and time-resolved PL decays spectra (b) of samples with different water addition

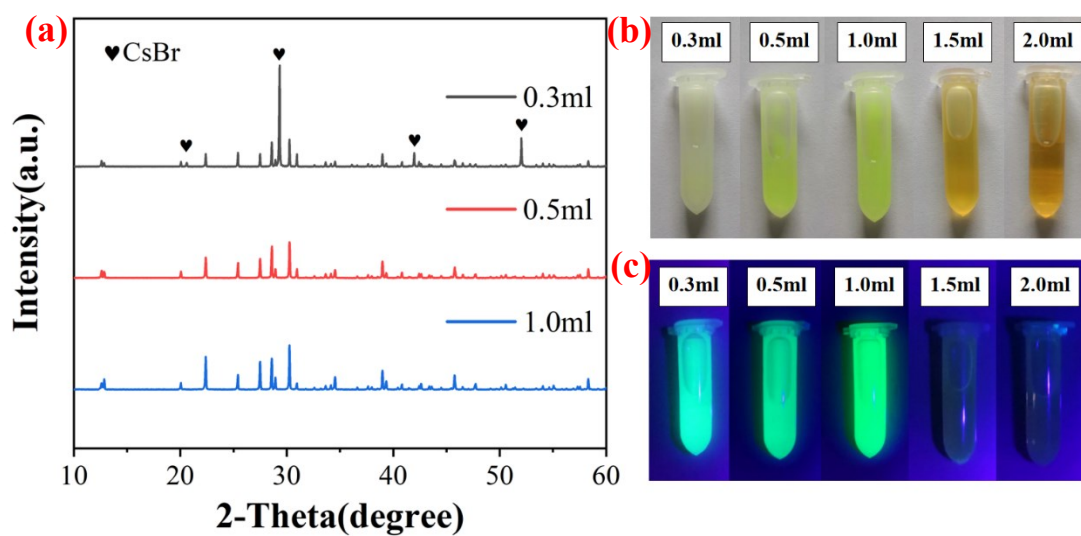


Fig. S6. The XRD (a) and the images of samples with different water addition, under ambient light (b), and under UV lamp (c)

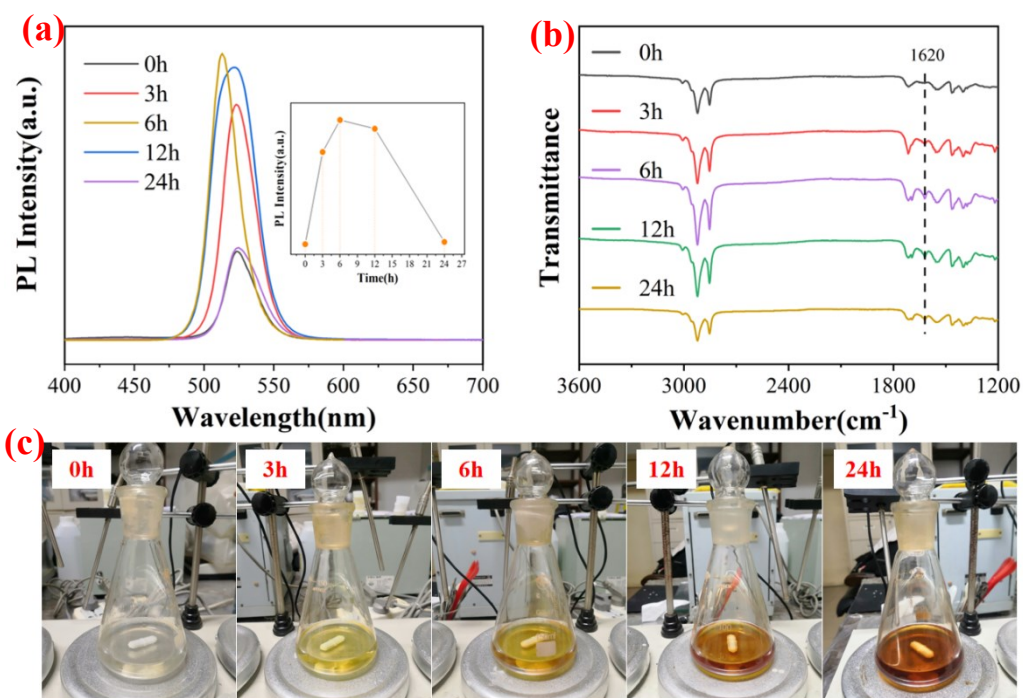


Fig. S7. The photoluminescence emission spectrum (a) of samples with different standing time; The FTIR spectra (b) of precursor (OA+OM+ acetone) and physical image (c) with standing time

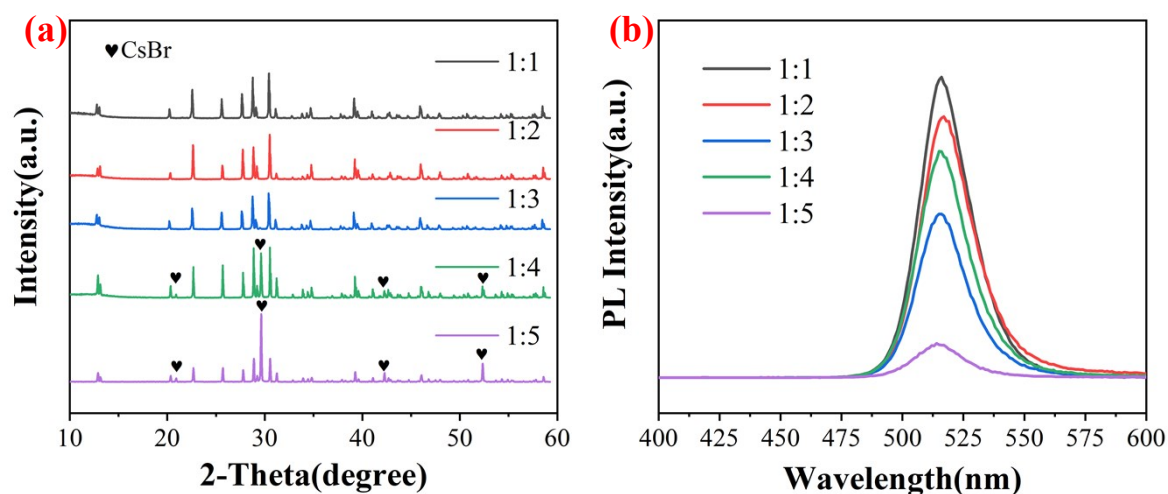


Fig. S8. The XRD (a) and photoluminescence emission spectrum (b) of samples with different raw material ratio

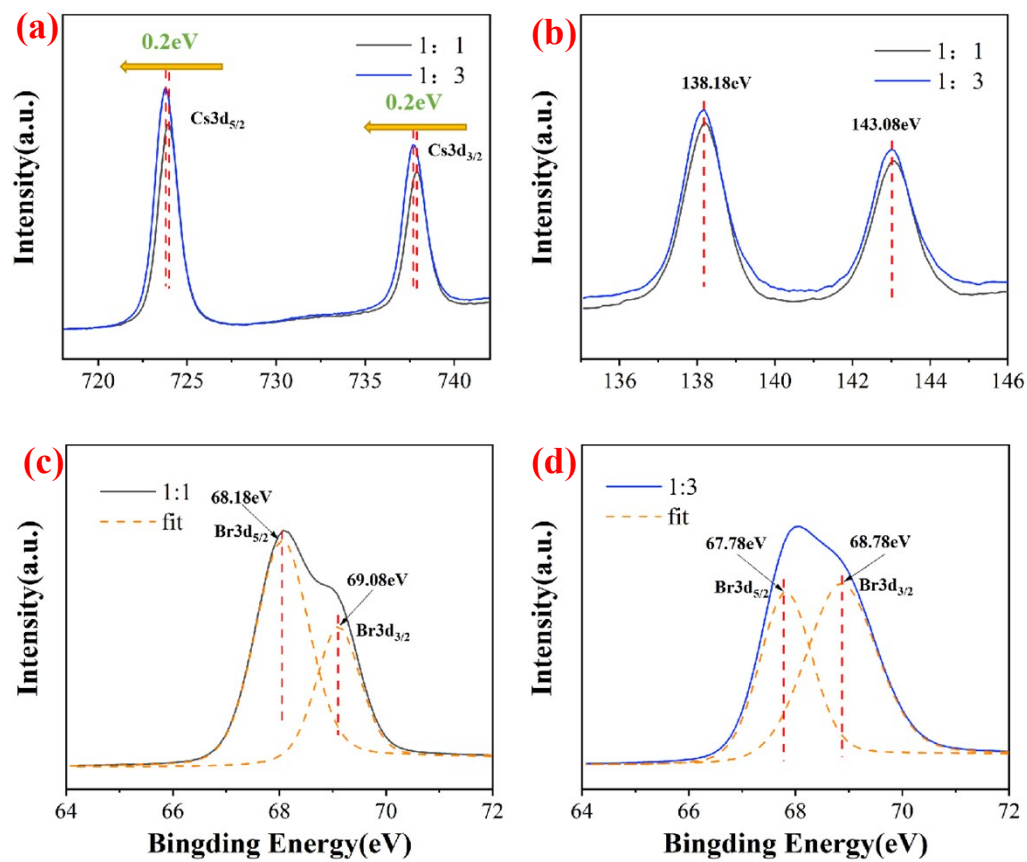


Fig. S9. High resolution XPS of (a) Cs 3d; (b) Pb 4f and the fitted high resolution XPS of (c)-(d) Br 3d of samples with raw material ratio 1:1 and 1:3.

