

## Supporting Information

### **Improvement of X-ray Photoelectric Conversion Performance of MAPbI<sub>3</sub> Perovskite Crystals by Ionic Liquid Treatment**

Xueqiong Su<sup>a,\*</sup>, Ruimin Wang<sup>a</sup>, Huimin Yu<sup>a</sup>, Jin Wang<sup>a</sup>, Ruixiang Chen<sup>a</sup>, He Ma<sup>a</sup>, Li Wang<sup>a,\*</sup>

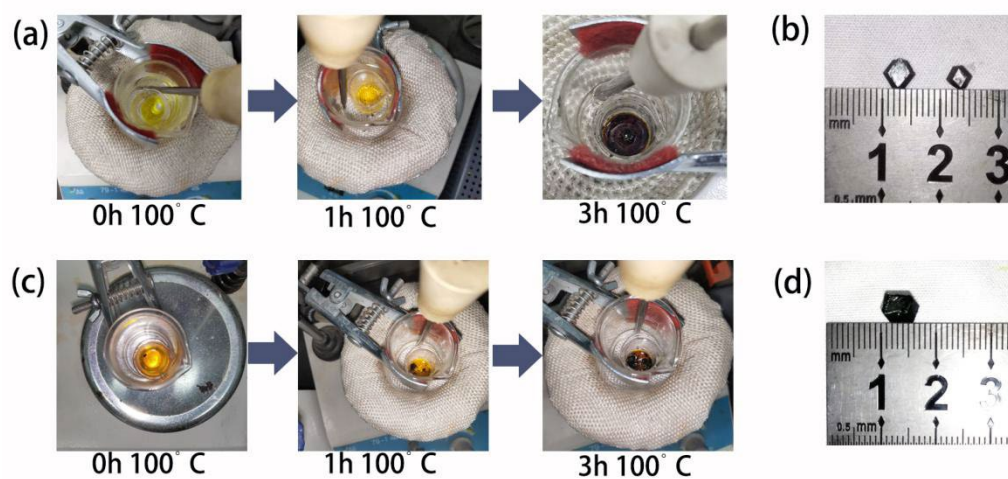
a. School of Physics and Optoelectronic Engineering, Beijing University of Technology, Beijing 100124, China

\* Corresponding Author

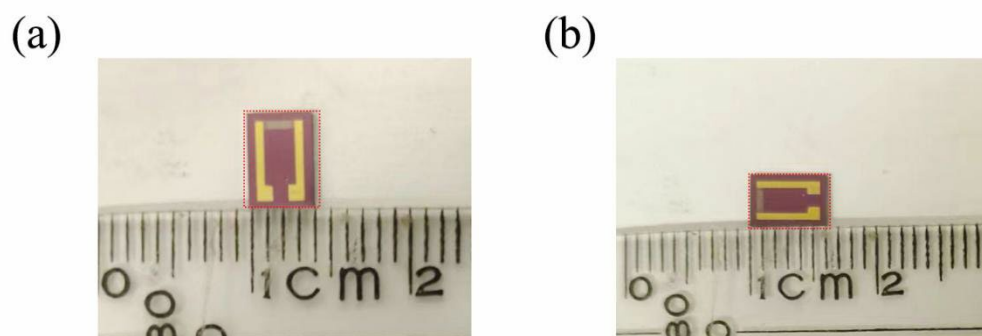
E-mail addresses: nysxq@bjut.edu.cn (X. Su), Lwang.1@bjut.edu.cn (L. Wang)

Keywords: Perovskite, MAPbI<sub>3</sub> crystals, Ionic liquid treated, X-ray photoelectric conversion, X-Ray Detector

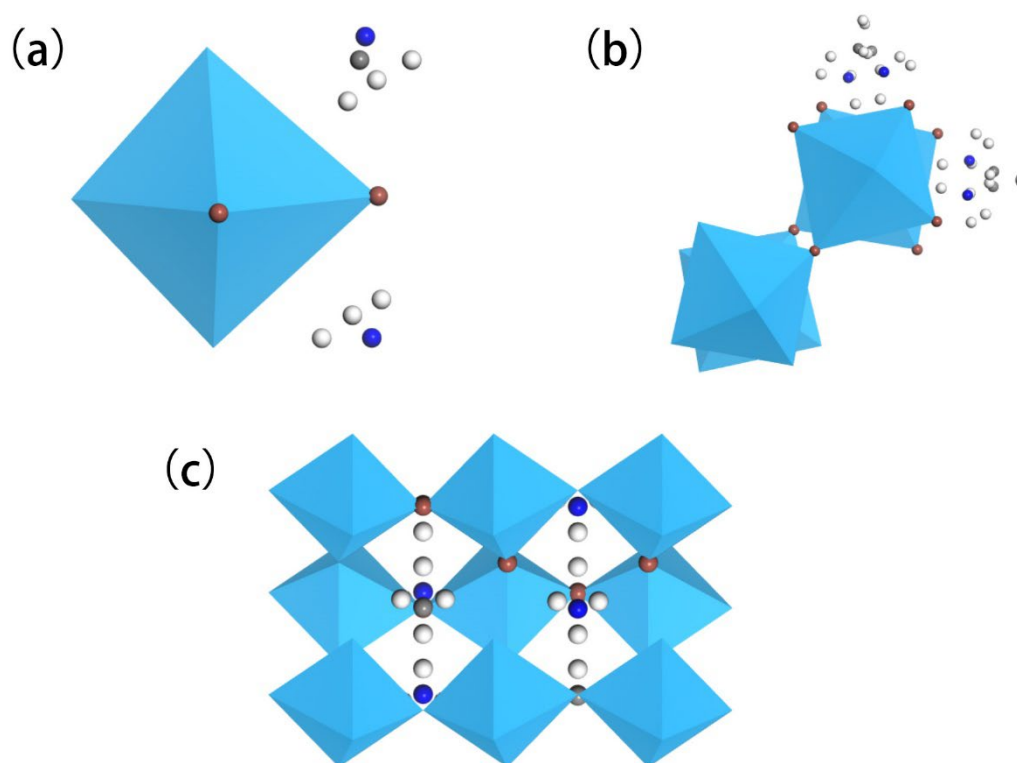
## Supplementary Figures



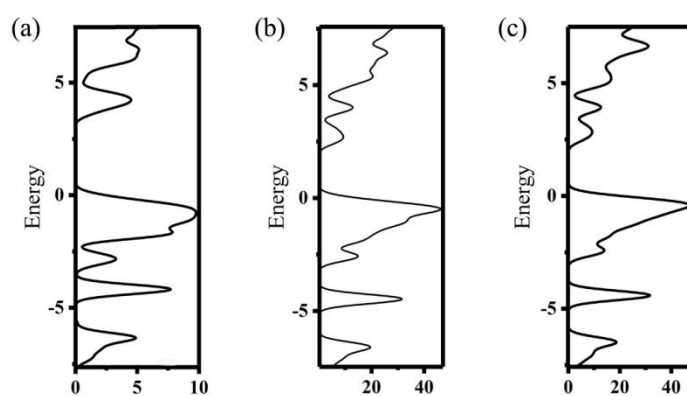
**Figure S1.** (a,c)Preparation of MAPbI<sub>3</sub> SCs ; (b,d)Completed MAPbI<sub>3</sub> SCs.



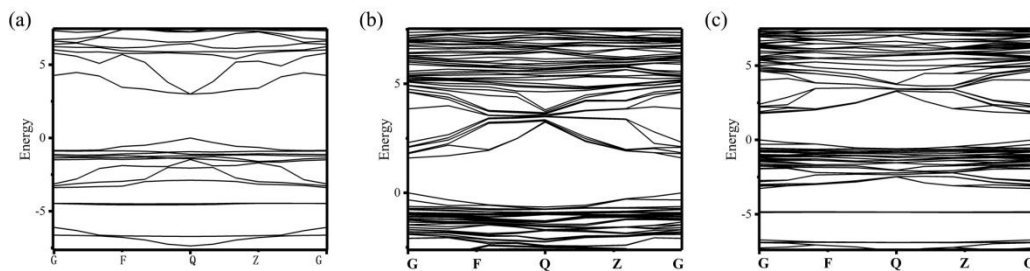
**Figure S2.** The metal interdigital electrode with a size of 4mm \*6mm.



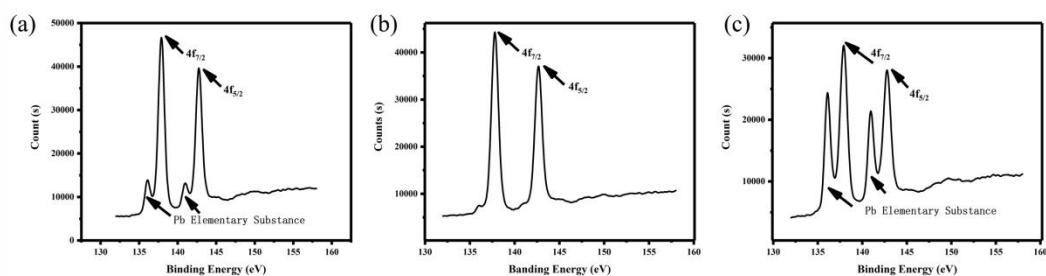
**Figure S3.** The structure of different phases MAPbI<sub>3</sub> crystals simulated by Material Studio  
(a)Cube (b)Tetragonal (c)Orthorhombic.



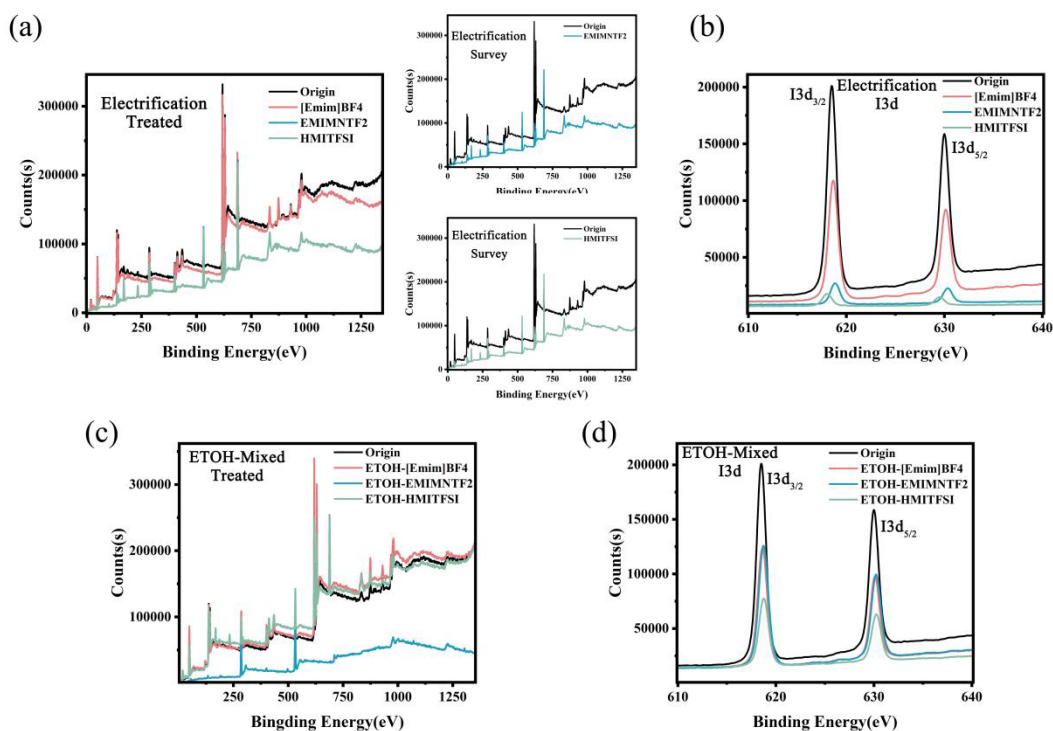
**Figure S4.** The density of states of different phases MAPbI<sub>3</sub> SCs simulated by Material Studio  
(a)Cube (b)Tetragonal (c)Orthorhombic.



**Figure S5.** The band structure of different phases MAPbI<sub>3</sub> SCs simulated by Material Studio (a)Cube (b)Tetragonal (c)Orthorhombic.



**Figure S6.** XPS of ETOH-inoic liquid MAPbI<sub>3</sub> SCs (a)EMIMNTF2 (b)[Emim]BF4 (c)HMITFSI.



**Figure S7.** (a)XPS survey of electric immersion MAPbI<sub>3</sub> (b) I 3d scan of electric immersion MAPbI<sub>3</sub> (c)XPS survey of ETOH mixed immersion MAPbI<sub>3</sub> (d)I 3d scan of ETOH mixed immersion MAPbI<sub>3</sub>