Electronic Supporting Information

Passivation of defects in inverted perovskite solar cells by

imidazolium-based ionic liquid

Chuanyao Luo,^{ab} Guannan Li, ^{ab} Lijia Chen, ^c Jun Dong, ^{bd} Miao Yu, ^{ab} Cunyun Xu, ^b Yanqing Yao, ^b Meng Wang, ^{ab} Qunliang Song^{* ab} and Sam Zhang^{* ab}

a Centre for Advanced Thin Films Materials and Devices, Southwest University, Chongqing 400715, P.

R. China.

b School of Materials and Energy, Southwest University, Chongqing 400715, P. R. China.

c College of Physics and Electronics Engineering, Chongqing Normal University, Chongqing 401331, P.

R. China

d School of Materials Science and Engineering, Yangtze Normal University, Chongqing 408100, P. R.

China.



Figure S1. Top view SEM images of perovskite film with (a) 1 mg/mL and (b) 2 mg/mL MPIB additive.



Figure S2. histograms of Jsc(a), Fill factor(b) and PCE(c) of 20 devices with pristine perovskite or MPIB-perovskite (0.5).



Figure S3. High-resolution XPS measured on the perovskite and MPIB- perovskite. (survey)



Figure S4. FTIR spectroscopy for bare MPIB, PbI2 and MPIB-PbI₂ powder.



Figure S5. Stability of the devices with pristine perovskite and MPIB-perovskite tested in the glove box.



Figure S6. Thermal stability of the devices with pristine perovskite and MPIB-perovskite tested under the 85 $^\circ\!C$ in the glove box for 30 minutes.