Supporting Information

Hydrochloric Acid Accelerated Formation of Planar CH$_3$NH$_3$PbI$_3$ Perovskite with High Humidity Tolerance

Ge Li*, Taiyang Zhang* and Yixin Zhao*

School of Environmental Science and Engineering, Shanghai Jiao Tong University, 800 Dongchuan Rd., Shanghai 200240, China; E-mail: yixin.zhao@sjtu.edu.cn

Figure S1. The XRD pattern evolution of planar HCl•PbI$_2$ film after 100 °C annealing for different durations.

Figure S2. The cross sectional SEM images of HCl.PbI$_2$ precursor film (A) and the corresponding perovskite film (B).
Figure S3. The typical $J-V$ curve of a planar MAPbI$_3$ solar cell with the highest efficiency of 15.50% ($J_{sc}=21.50$ mA/cm$^2$, $V_{oc}=1.03$ V, FF=0.72) and 12.62% ($J_{sc}=21.40$ mA/cm$^2$, $V_{oc}=1.00$ V, FF=0.59) under reverse/backward voltage scan at simulated one-sun illumination.

Figure S4. Stability of power conversion efficiency as a function of time for a planar perovskite solar cells with a 0.81V bias potential under simulated one-sun illumination.