Supporting Information

Magnetic field-assisted perovskite film preparation for enhanced performance of solar cells

Haoxu Wang[1], Jie Lei[1], Fei Gao[1]*, Zhou Yang[1], Dong Yang[1], Jiexuan Jiang[1], Juan Li[1], Xihong Hu[1], Xiaodong Ren[1], Bin Liu[1], Jing Liu[2], Hairui Lei[2], Zhike Liu[1*], Shengzhong (Frank) Liu[1,3]*

[1]Shaanxi Key Laboratory for Advanced Energy Devices, Shaanxi Engineering Laboratory for Advanced Energy Technology, School of Materials Science and Engineering, Shaanxi Normal University, Xi'an 710119, China

[2]School of Chemistry and chemical Engineering, Shaanxi Normal University, Xi'an 710119, China.

[3]Dalian Institute of Chemical Physics, Dalian National Laboratory for Clean Energy, Chinese Academy of Sciences, Dalian 116023, China.

*Corresponding author:

E-mail: feigao@snnu.edu.cn, zhike2015@snnu.edu.cn, liusz@snnu.edu.cn

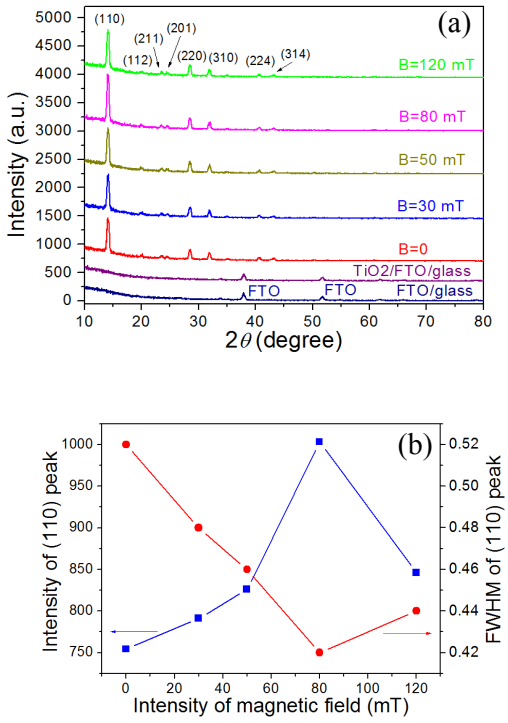

Figure S1. XRD patterns of $MAPbI_3$ films prepared at different magnetic field intensity (a). The intensity and FWHM of XRD (110) peak as a function of the magnetic intensity (b).

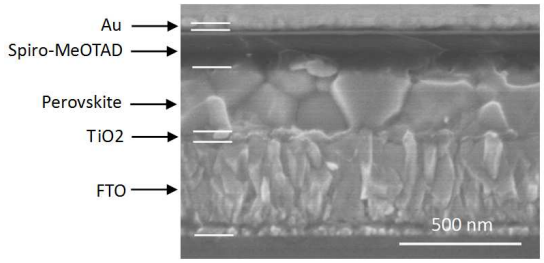

Figure S2. High-resolution cross-sectional SEM image of a complete planer $MAPbI_3$ perovskite solar cell fabricated using magnetic field.

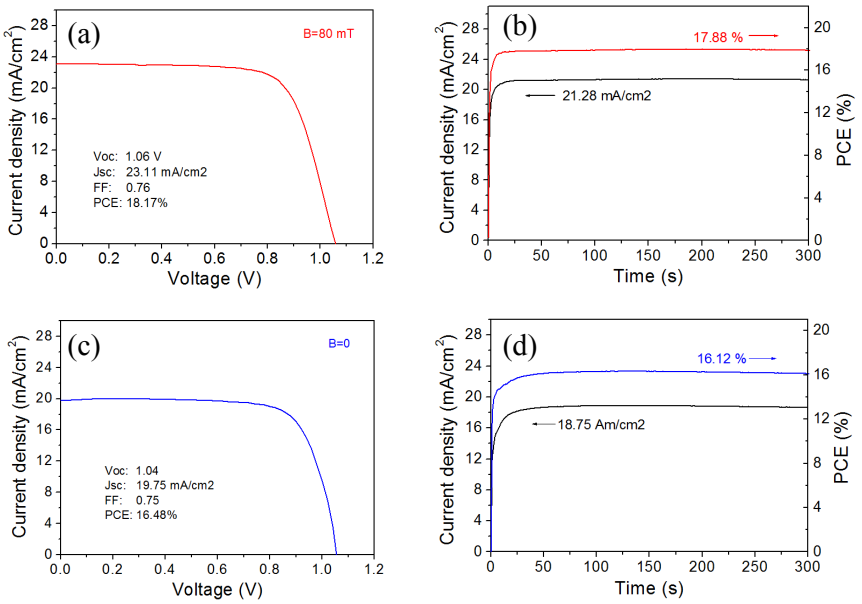

Figure S3. *J-V* curves (a) and (c), and stabilized output of PCE and photocurrent density *J* (b) and (d) at maximum power point as a function of time under 100 $mWcm^{-2}$ AM1.5G illumination for the optimized perovskite solar cells fabricated with and without magnetic field, respectively.

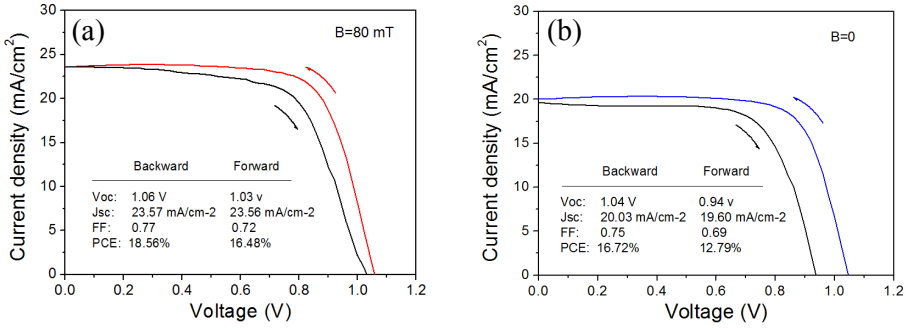

Figure S4. *J-V* curves for the best cells fabricated with (a) and without (b) magnetic field action measured by forward and backward scans.

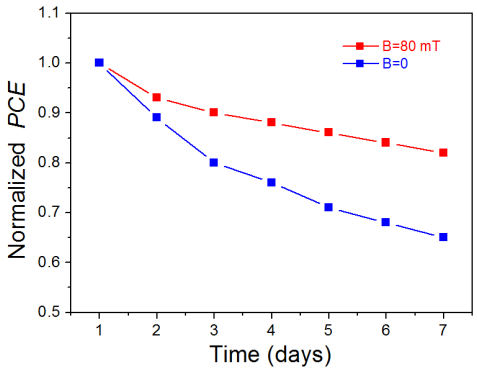

Figure S5. Stability of the $MAPbI_3$ solar cells fabricated with and without the magnetic field action in air. The stability of the perovskite solar cells was measured in ambient air with the humidity of 30% in the dark.