

Enhance planar perovskite solar cells efficiency via two-step deposition by using DMF as additive to optimize crystal growth behavior

Jiajie Mo¹, Chunfu Zhang^{1,*}, Jingjing Chang^{1,*}, Haifeng Yang¹, He Xi¹, Dazheng Chen¹,

Zhenhua Lin¹, Gang Lu², Jincheng Zhang¹, and Yue Hao¹

¹Wide Bandgap Semiconductor Technology Disciplines State Key Laboratory, School of Microelectronics, Xidian University, Xi'an, 710071, China

²Huanghe Hydropower Solar Industry Technology Co., Ltd, 369 South Yanta Road, China 710061

*Corresponding authors: Chunfu Zhang email: cfzhang@xidian.edu.cn

Jingjing Chang, email: jjingchang@xidian.edu.cn

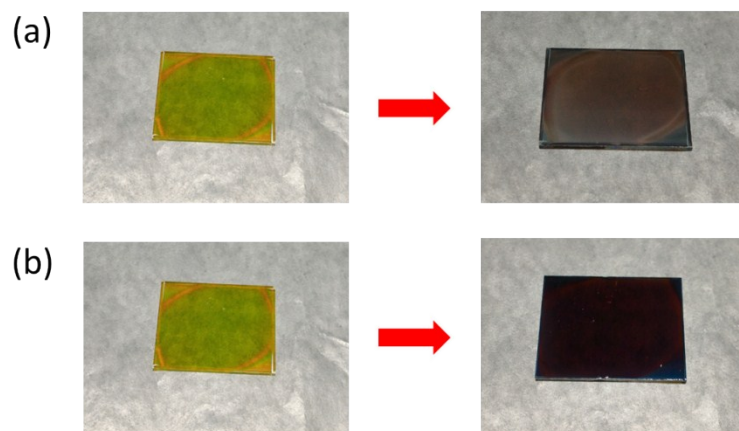


Figure S1 Photographs of films on ITO glass (a) Transparent PbI₂ (left) film and perovskite (right) film fabricated by spin-coating MAI/IPA solution. (b) Transparent PbI₂ (left) film and perovskite (right) film was fabricated by spin coating 40mg/ml MAI/(IPA-0.9%DMF) solution.

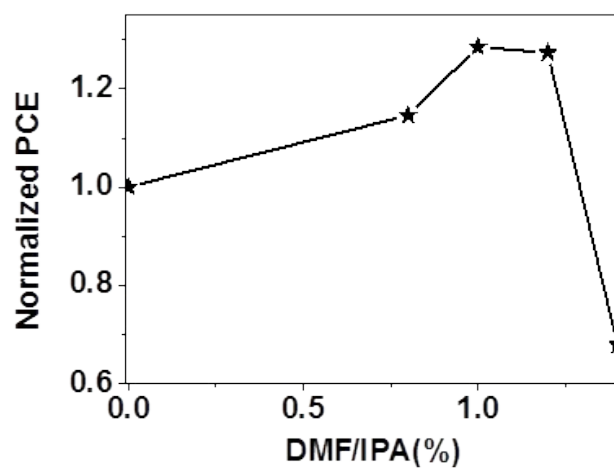


Figure S2 the influence of DMF concentration in MAI solution on the device performance

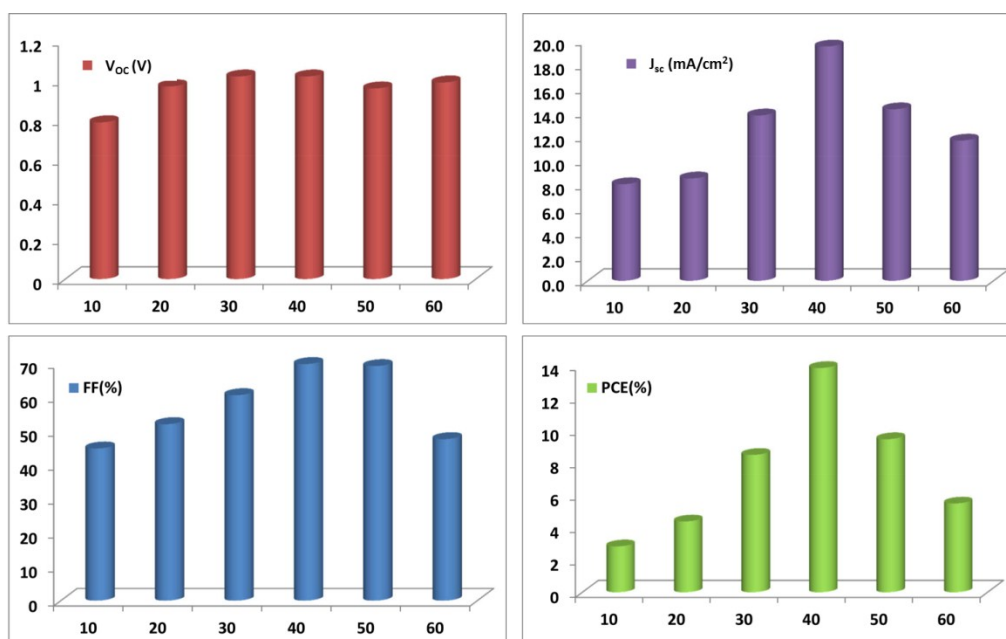


Figure S3 Comparison of histograms of photovoltaic parameters for the perovskite solar Cells based on different MAI/(IPA-0.9%DMF) concentrations from 10mg/ml to 60mg/ml.

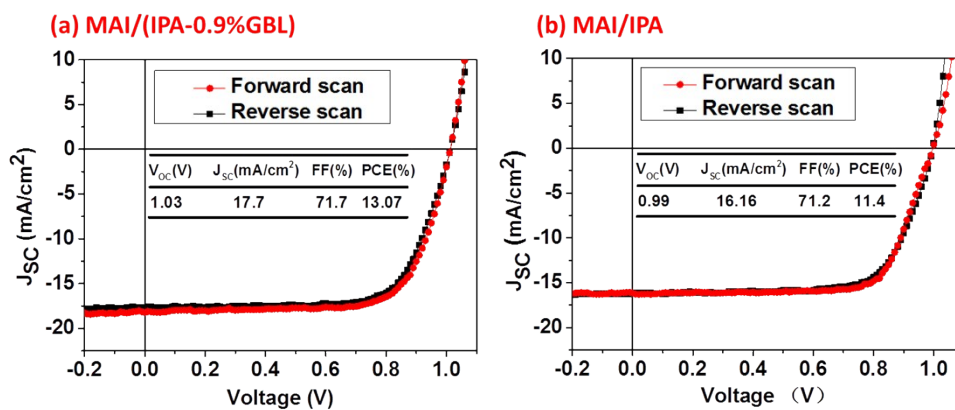


Figure S4 J-V curves with different scanning directions at the condition of MA/(IPA-0.9%GBL) and MAI/IPA Reverse (1.1 V→-0.2 V) and forward scan (-0.2 V→1.1 V) measurement: the voltage step is 0.01V.