Supporting Information for

Enhancing the Photovoltaic Performance of Planar Heterojunction Perovskite Solar Cells by Doping the Perovskite Layer with Alkali Metals

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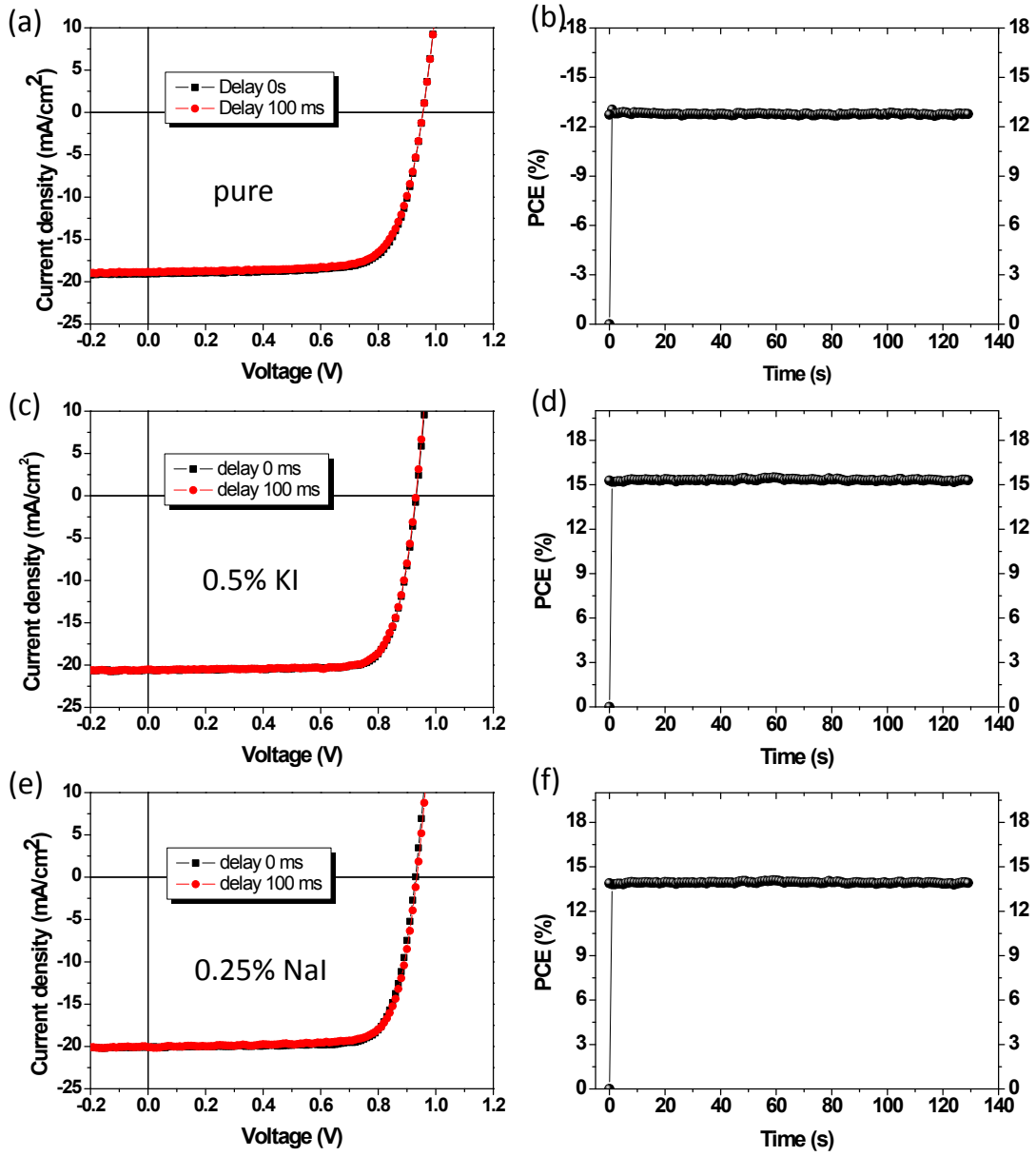

Figure S1. *J-V* characteristics with different scan rates and steady-state PCE at maximum power point as a function of time of the PSCs with the perovskite layers of no doping (a, b) and doping of 0.5 mol% K^+ (c, d), 0.25 mol% Na^+ (e, f).

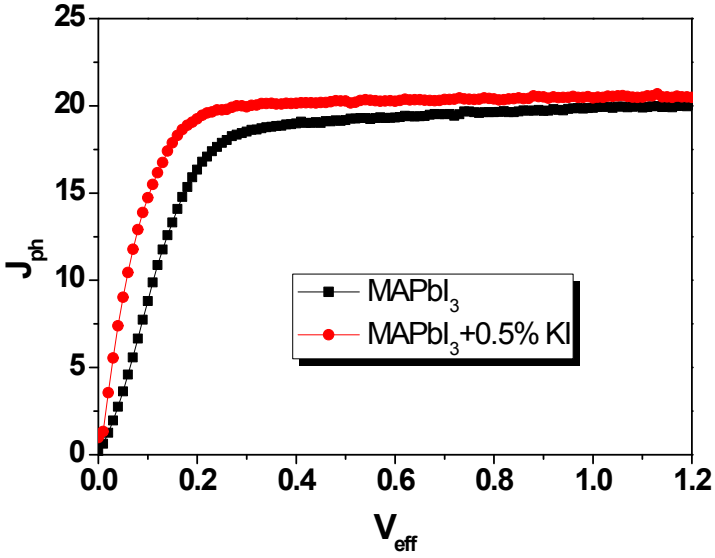

Figure S2. J_{ph}- V_{eff} curves for PSCs with $MAPbI_3$ films undoped and doped with 0.5 mol% K^+.

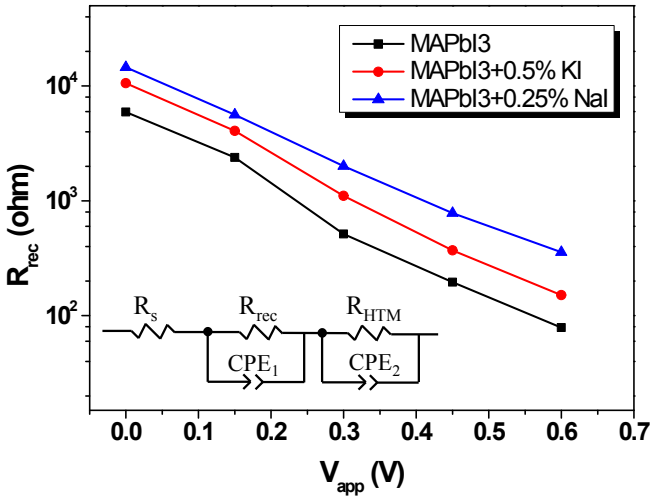

Figure S3. Electrochemical impedance spectroscopy (EIS) analysis. Recombination resistance (R_{rec}) was plotted against applied voltage, and determined by EIS measurements in the dark (inset: the simplified circuit model).

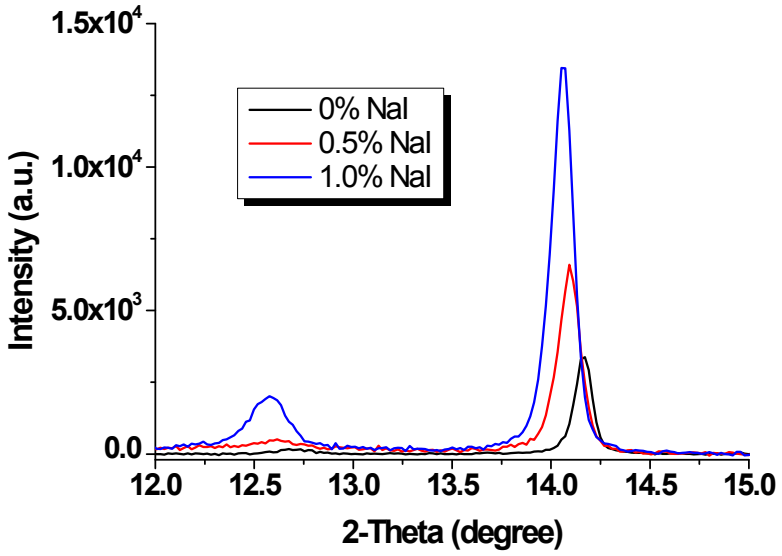

Figure S4. XRD patterns of the $MAPbI_3$ films with different Na^+ doping degrees.

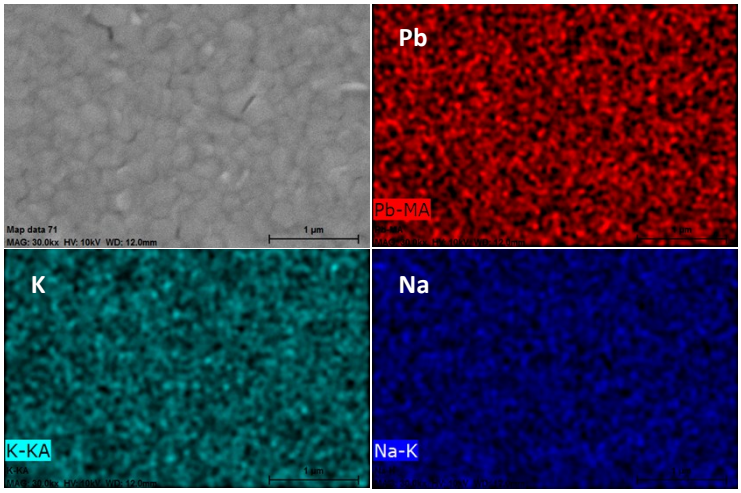

Figure S5. The SEM element mapping of pure perovskite thin film.

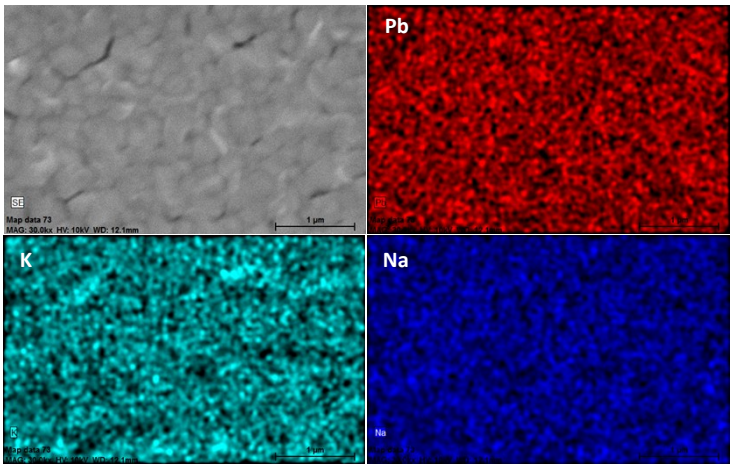

Figure S6. The SEM element mapping of 0.5% KI doped perovskite thin film.

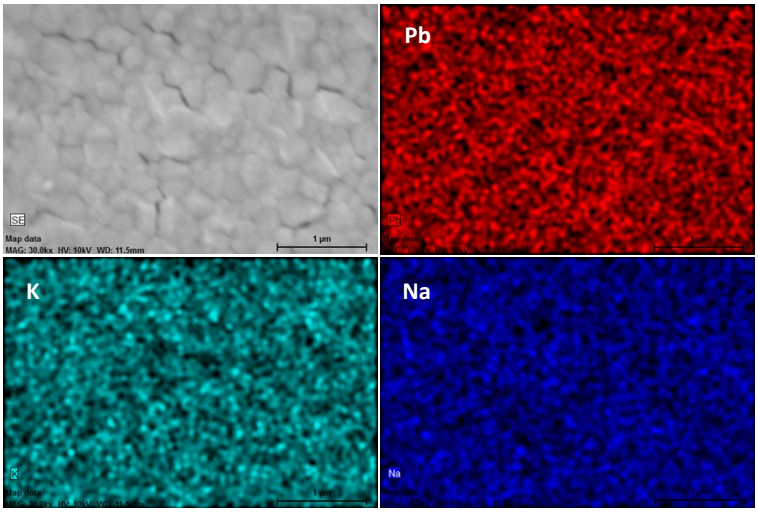

Figure S7. The SEM element mapping of 0.25% NaI doped perovskite thin film.

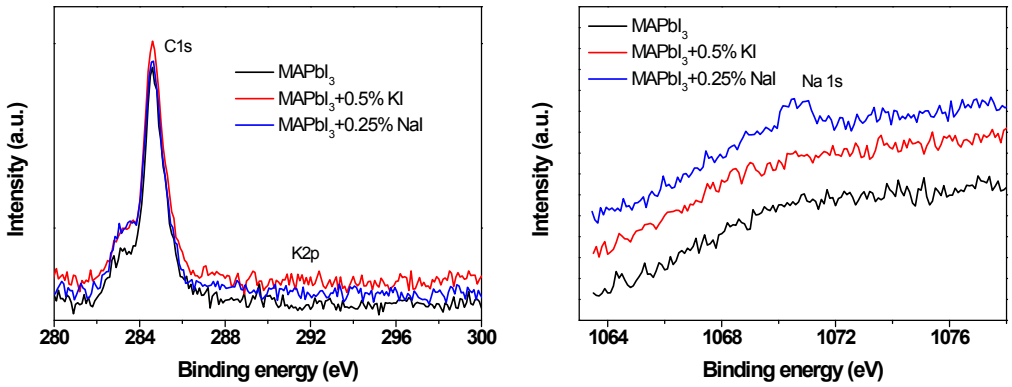

Figure S8. XPS spectra of K2p and Na1s peak for pure and KI (or NaI) doped thin films.