Electronic supplementary information for the manuscript:

Hydrazinium-assisted stabilisation of methylammonium tin iodide for lead-free perovskite solar cells

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Contents:

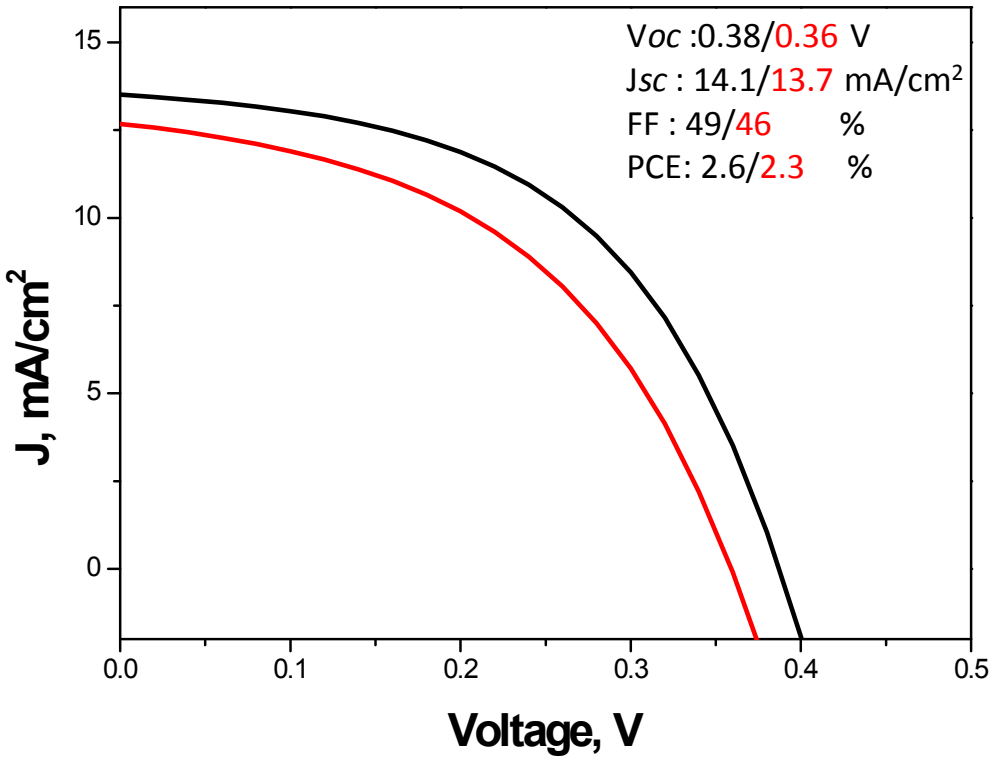

Figure S1.J-V curves and corresponding photovoltaic parameters of the top $MA_{0.8}HA_{0.2}SnI_3$solar cell scanned in forward (black colour) and reverse (red colour) directions at 10mV/sec scanning rate

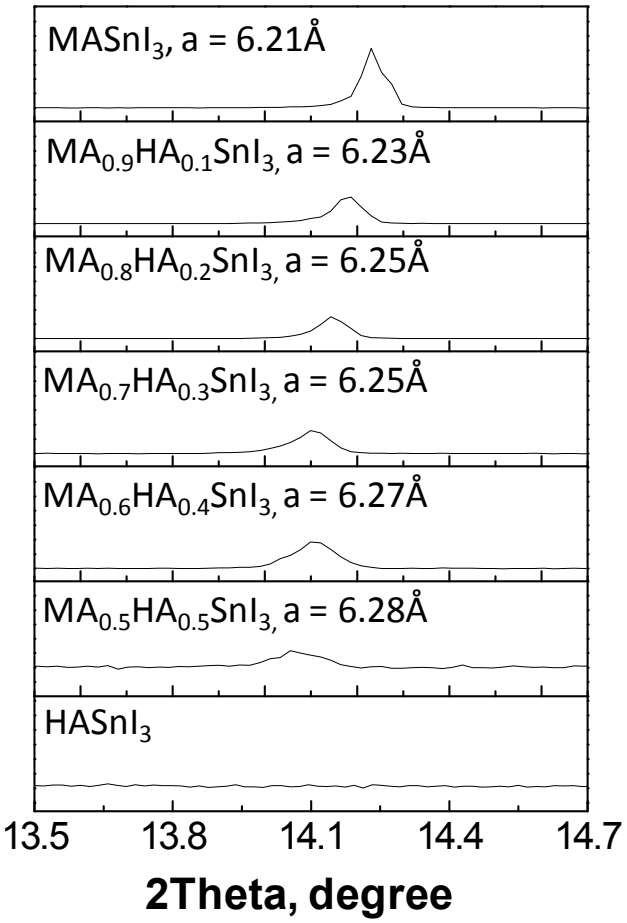

Figure S2. Illustration of *d*001 peak shift of the $MA_{(1-x)}HA_xSnI_3$ diffraction patterns in13.5 -14.7°2Theta region. The values of lattice constants ***a*** were estimated from the positions of *d*001 peaks.

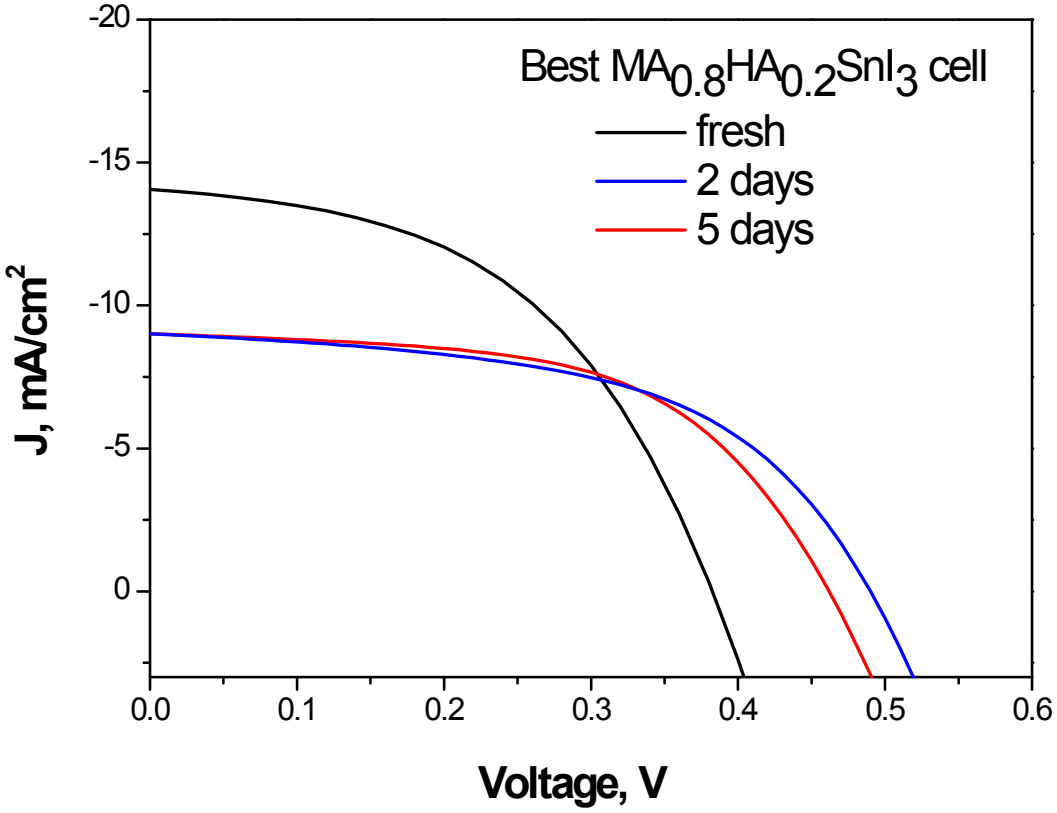

Figure S3. IV curves of the top $MA_{0.8}HA_{0.2}SnI_3$solar cell after storing in an inert atmosphere for 2 and 5 days

Table S1. Photovoltaic parameters of the top $MA_{0.8}HA_{0.2}SnI_3$solar cell after storing in a glovebox for 2 and 5 days

Storage time	Voc, V	J_{SC} mA/cm^2	FF ,%	PCE , %
fresh	0.38	14.1	49	2.6
2days	0.49	9.0	53	2.35
5 days	0.46	9.0	56	2.34

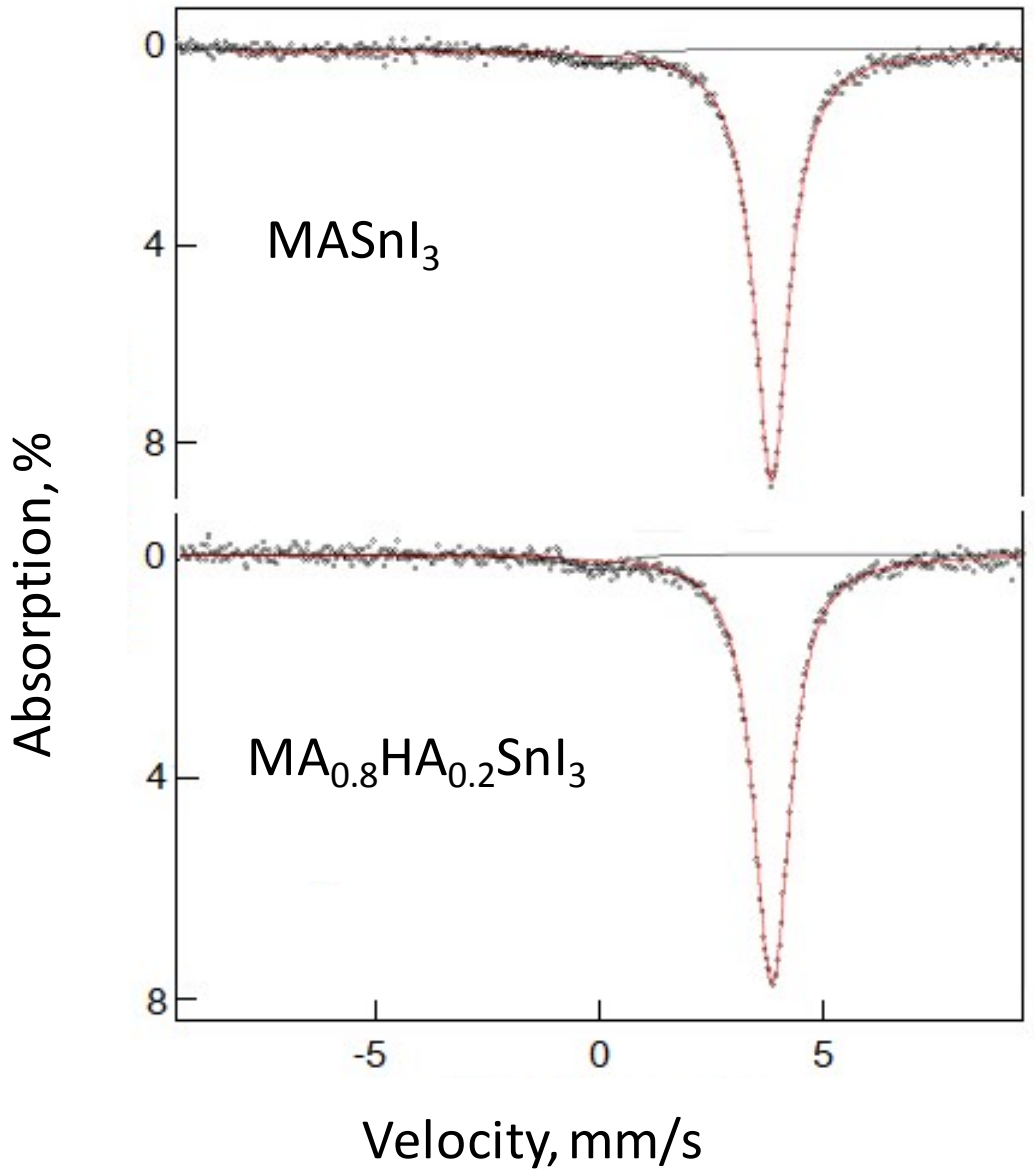

Figure S4. Mössbauer spectra of $MASnI_3$ (top) and $MA_{0.8}HA_{0.2}SnI_3$ (bottom) powders

Table S2. Photovoltaic parameters of published solar cells configurations based on $MASnI_3$ absorber layer

Solar cell configuration	Voc (top), V	J_{SC}(top) mA/cm^2	FF (top),%	PCE (Top), %	Stability
FTO/TiO_2c/TiO_2mp/$MASnI_3$/Spiro-OMETAD/Au (top device only)[1]	0.88	16.8	42	6.4	No data
FTO/TiO_2c/TiO_2mp/$MASnI_3$/Spiro-OMETAD/Au[2]	0.68±0.03	16.3±0.71	48±3	5.23±0.18	80% PCE retained within 12 hour of storage under nitrogen
FTO/TiO_2c/TiO_2mp/{en}$MASnI_3$/PTAA/Au[3]	0.373 ± 0.019	23.03 ± 1.67	61.20 ± 3.52	5.26 ± 0.47	15 minutes under air exposure
FTO/TiO_2c/TiO_2mp/{en}$MASnI_3$ (hydrazine vapour)/PTAA/Au (top device only)[3]	0.428	24.28	63.72	6.63	No data
FTO/TiO_2c/TiO_2mp/$MASnI_3$ (hydrazine vapour)/PTAA(TPFB)/Au (top device only)[4]	0.377	19.92	51.73	3.89	No data
FTO/TiO_2c/TiO_2mp/$MASnI_3$/PTAA/Au [5]	0.217 ±0.043 (0.273)	15.1 ± 3.08 (17.36)	34.8 ± 2.81 (39.1)	1.16 ± 0.42 (1.86)	No data
FTO/TiO_2c/TiO_2mp/$MASnI_3$/Au (top device only)[6]	(0.320)	(21.4)	(46)	(3.15)	Stable over 300 sec of measurement
ITO/PEDOT:PSS/Poly-TPD/$MASnI_3$ (CVD)/C60/BCP/Ag[7]	(0.377)	(12.1)	(36.6)	(1.7)	No data
ITO/PEDOT:PSS/$MASnI_3$(LT_VASP)/C_{60}/BCP/Ag[8]	0.450± 0.01	11.8±1.2	40±3	2.14±0.35	60% PCE after 200h of light exposure
ITO/PEDOT:PSS/$HA_{0.2}MA_{0.8}SnI_3$/PCBM/Ag (this work)	0.35 ±0.05 (0.38)	11.8±2.8 (14.1)	50±2 (49)	2.1±0.5 (2.6)	90% PCE after 5 days storage in a glovebox

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