Effects of NH_4SCN additive in the $FAPbI_3$ perovskite films in a sequential deposition method

Table S1. Elemental analysis by energy-dispersive X-ray on bar-shaped morphology in 20% film.

Element	Weight %	Atomic %	Error %
Pb M	43.20	22.16	2.55
I L	26.31	22.04	1.87
Si K	6.12	23.18	0.61
S K	0.04	0.14	0.06
C K	0.03	0.27	0.17
N K	0.00	0.00	0.00

Table S2. Elemental Analysis by energy-dispersive X-ray of p-40% film after first annealing.

Element	Weight %	Atomic %	Error %
Pb M	40.16	22.16	2.55
I L	38.04	22.04	1.87
Si K	8.78	23.18	0.61
S K	1.19	0.14	0.06
C K	1.18	0.27	0.17
N K	0.69	0.00	0.00

Table S3. Elemental Analysis by energy-dispersive X-ray of 40% film after second annealing.

Element	Weight %	Atomic %	Error %
Pb M	28.29	7.25	1.47
I L	37.02	15.50	1.53
Si K	18.38	34.76	1.01
S K	0.01	0.01	0.03
C K	0.04	0.17	0.13
N K	2.68	10.18	1.33

4729Date:8/5/2022 1:45:09 PMImage size:800 x 600Mag:5001xHV:15.0kV

Table S4. Elemental Analysis by energy-dispersive X-ray of p-50% film over a precipitate.

Element	Weight %	Atomic %	Error %
Pb M	41.52	13.27	2.01
I L	34.54	18.02	1.63
Si K	9.44	22.26	0.64
S K	3.65	7.54	0.34
C K	1.72	9.46	1.03
N K	1.62	7.66	1.21

4724Date:8/5/2022 1:33:02 PMImage size:800 x 600Mag:4997xHV:15.0kV

Table S5. Elemental Analysis by energy-dispersive X-ray of p-50% films over a waffle morphology.

Element	Weight %	Atomic %	Error %
Pb M	37.60	16.86	1.21
I L	50.12	36.70	1.44
Si K	6.67	22.07	0.33
S K	0.00	0.00	0.00
C K	0.18	1.42	0.18
N K	0.00	0.00	0.00

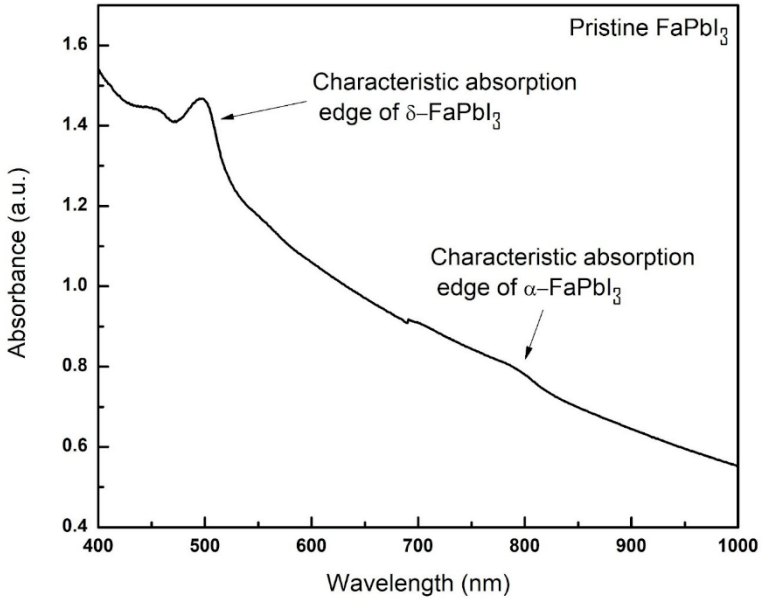

Figure S1. Absorbance spectrum of pristine $FAPbI_3$ (0% of NH_4SCN).

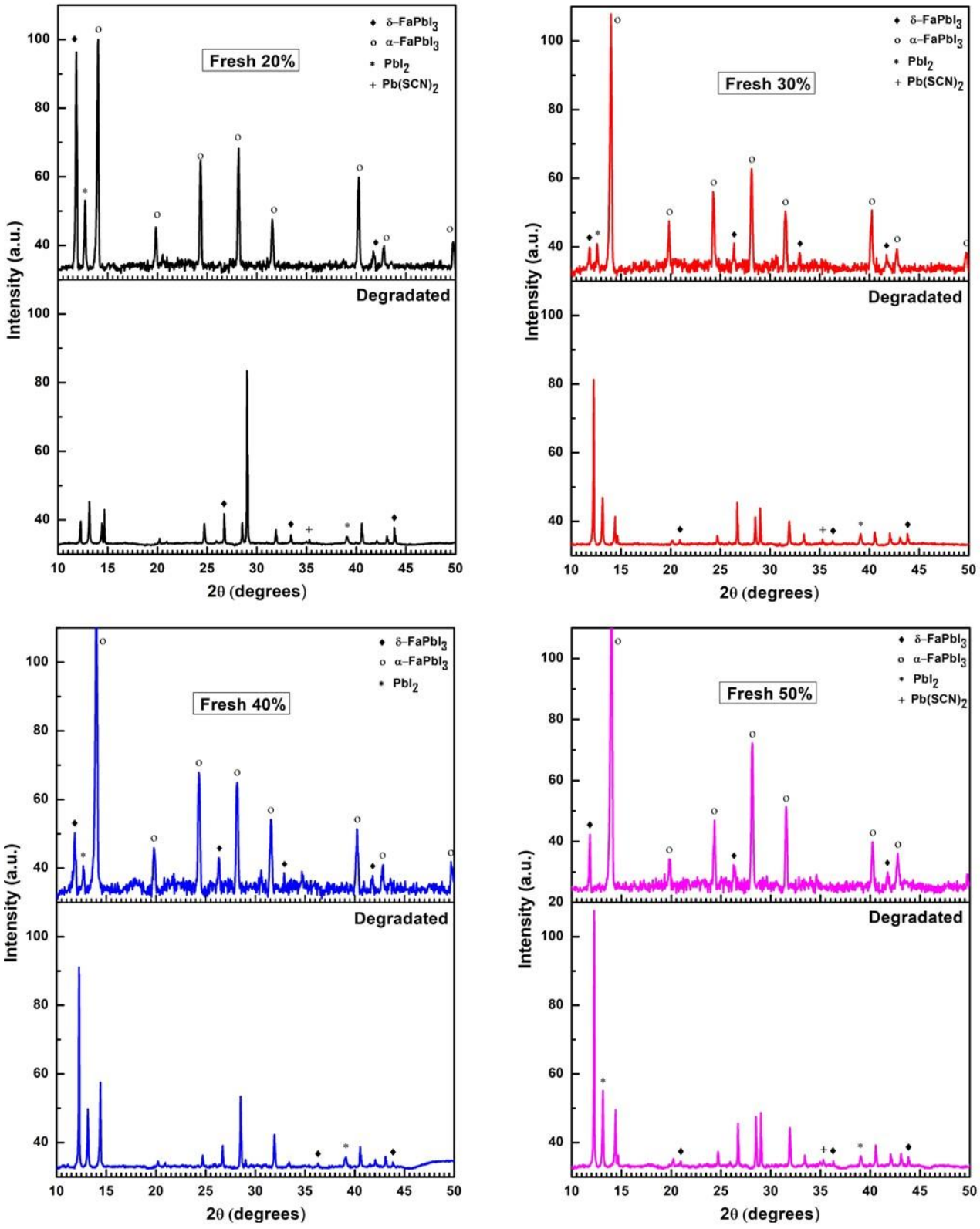

Figure S2. Comparative XRD patterns between fresh $FAPbI_3$ and degradated $FAPbI_3$ with different concentration of NH_4SCN.

Additional information of p-80% and 80% film

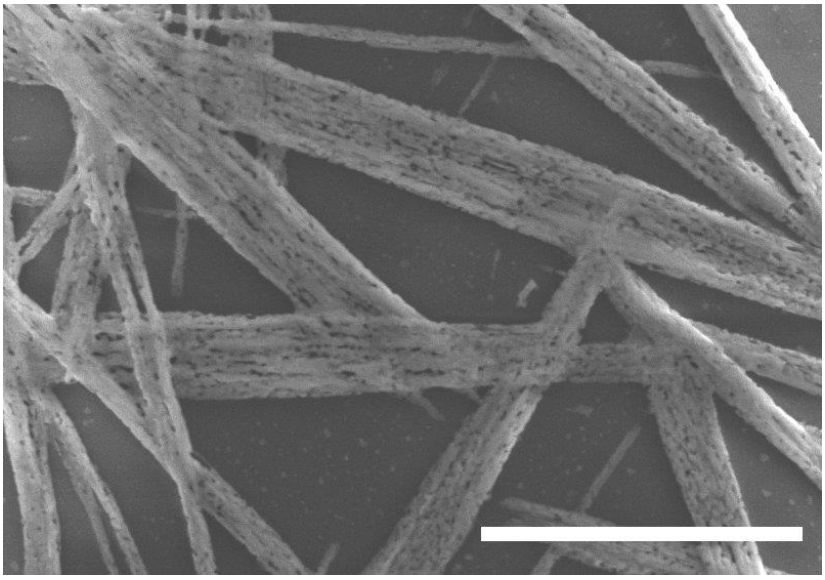

Figure S3. Top-view SEM micrograph of p-80% film. The white scale bar indicates 10 μm.

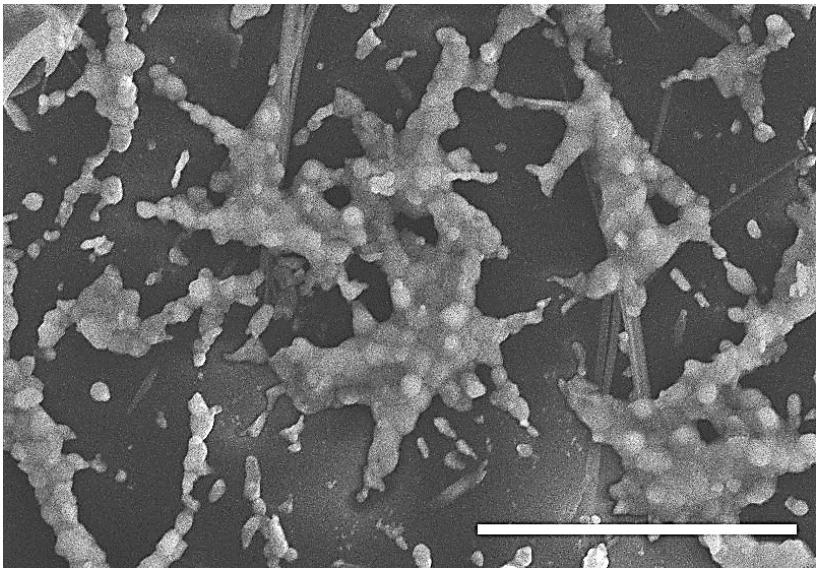

Figure S4. Top-view SEM micrograph of $FAPbI_3$ perovskite film with 80% concentration of NH_4SCN. White scale bar indicates 10 μm.

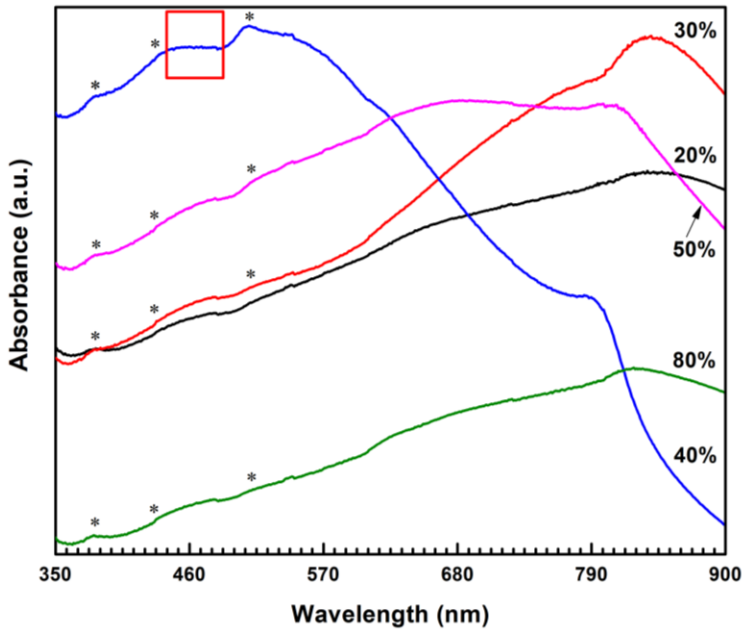

Figure S5. Absorbance UV-Vis light spectra of $FAPbI_3$ perovskite films with different concentration of NH_4SCN including 80%.

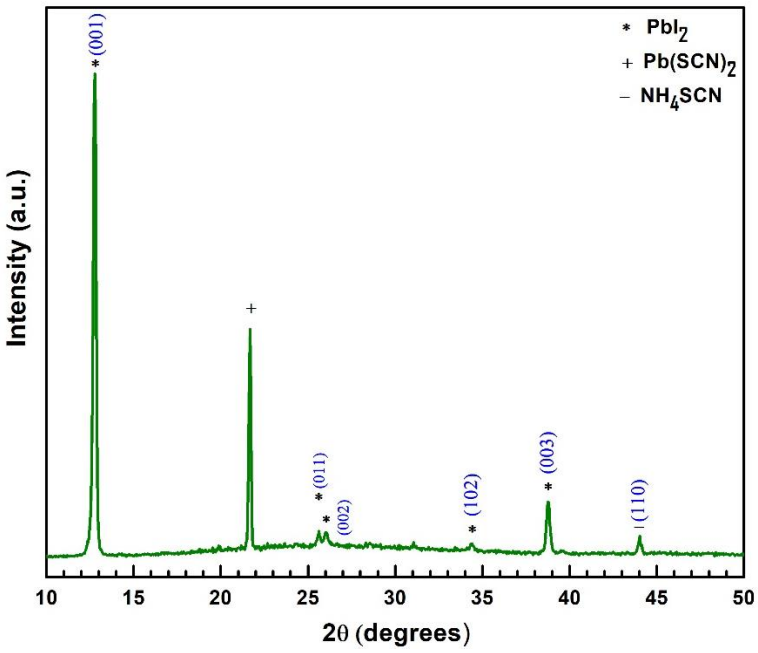

Figure S6. XRD patterns of the $FAPbI_3$ perovskite film with 80% concentration of NH_4SCN