

## Supporting Information

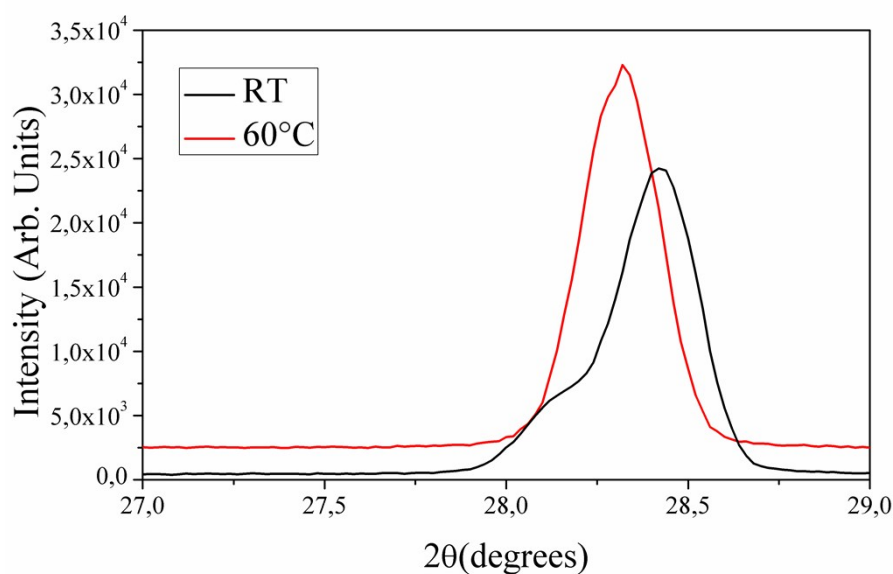
### STABILITY OF SOLUTION-PROCESSED MAPbI<sub>3</sub> AND FAPbI<sub>3</sub> LAYERS

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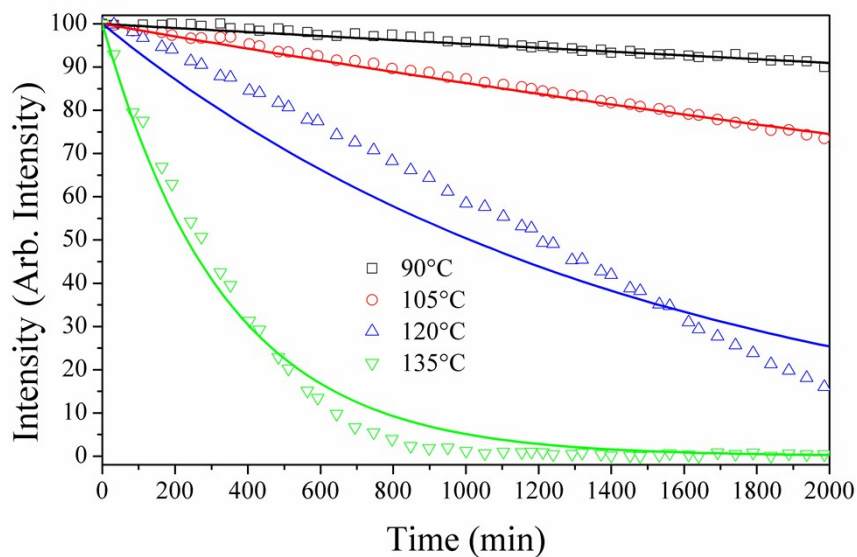
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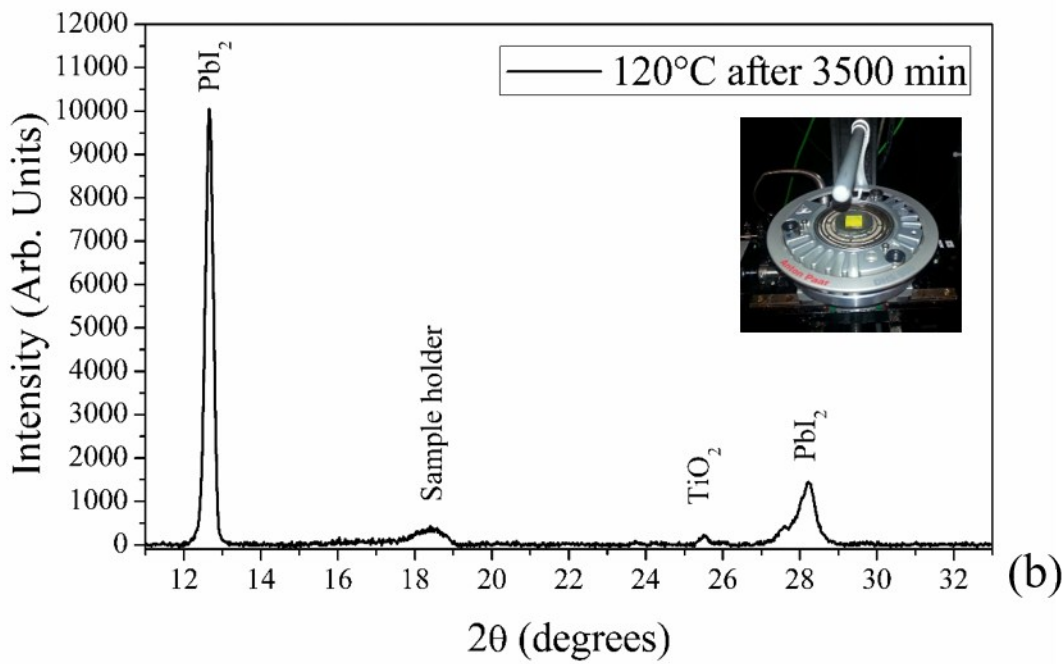
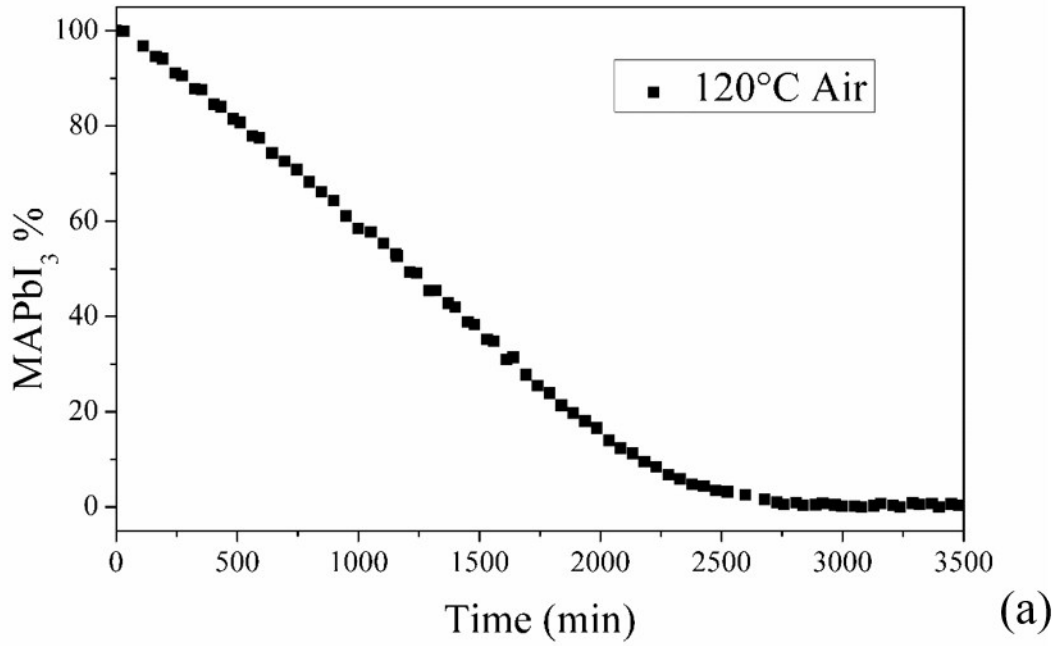
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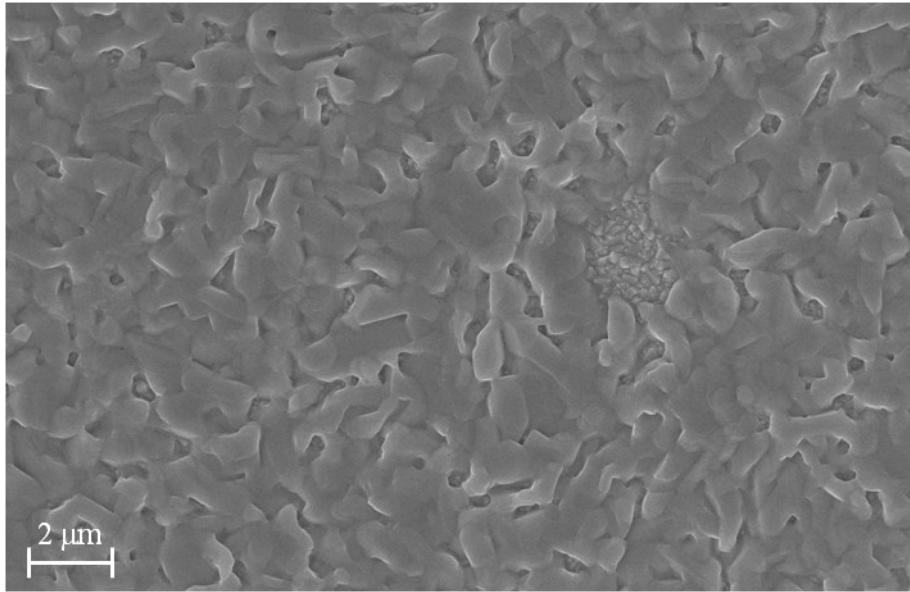
SI1 MAPbI<sub>3</sub> XRD pattern collected at RT and 60°C. Note the peak at RT is composed by two different contributions, namely the diffraction peak of (002) and (220) planes of the tetragonal structure. The single contribution of the peak at 60°C is due to the diffraction by (002) planes of the cubic structure.



SI2. Exponential fitting for the MAPbI<sub>3</sub> kinetic collected in air. Note that the data collected at 120°C and 135°C can't be explained by first order reactions.



S13 a) degradation curve of the MAPbI<sub>3</sub> at 120°C in air: at the final plateau the perovskite layer is fully converted to PbI<sub>2</sub> (t>3000min): b) diffraction pattern after 3500min: the peaks are those of the hexagonal PbI<sub>2</sub> phase, which gives to the sample the typical yellow habitus. Note in a) that, although most of the degradation path proceeds with constant rate, it suffers from a deceleration as soon as the residual perovskite is under ~10-20%, since the limiting reaction step becomes the chance given to the residual material to interact with the catalyst (water molecules).



SI4 Top plan view of FAPbI3 prepared by Cl-assisted one step deposition