Supporting Information

Facile and Scalable Bilayer Polymer Encapsulation to Achieve Long-term Stability of Perovskite Solar Cells Under Harsh Humid Conditions

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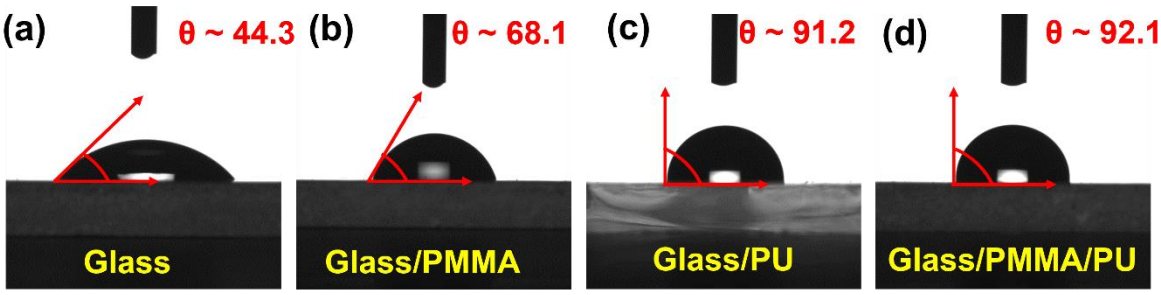

Fig. S1 (a) – (d) Water contact angle images of polymers coated on glass.

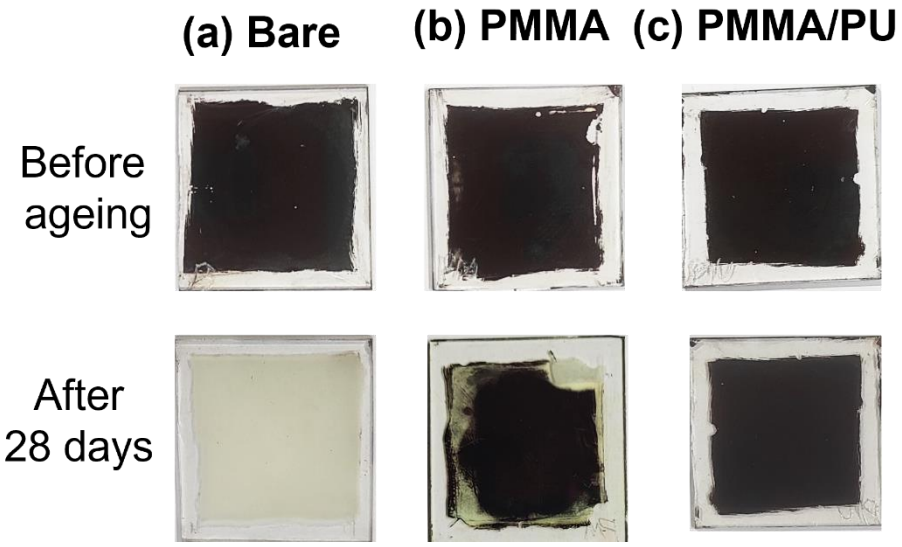

Fig. S2 (a) – (c) Photographs of bare and encapsulated absorbers kept at humid conditions (80±5 % RH, 25 ± 3 ºC).

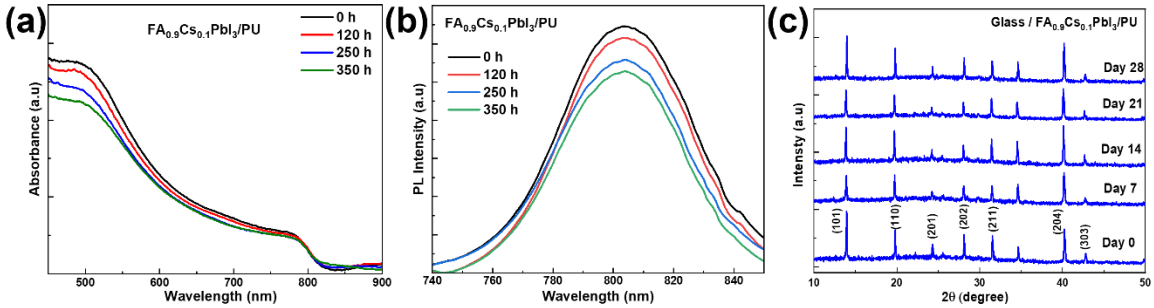

Fig. S3 (a) Absorbance plot of PU encapsulated $FA_{0.9}Cs_{0.1}PbI_3$ absorber films, (b) PL emission spectra of PU encapsulated $FA_{0.9}Cs_{0.1}PbI_3$ absorber films, (c) Diffraction patterns of PU encapsulated $FA_{0.9}Cs_{0.1}PbI_3$ absorber films kept at 25 ± 3 ºC and 80 ± 5% RH.

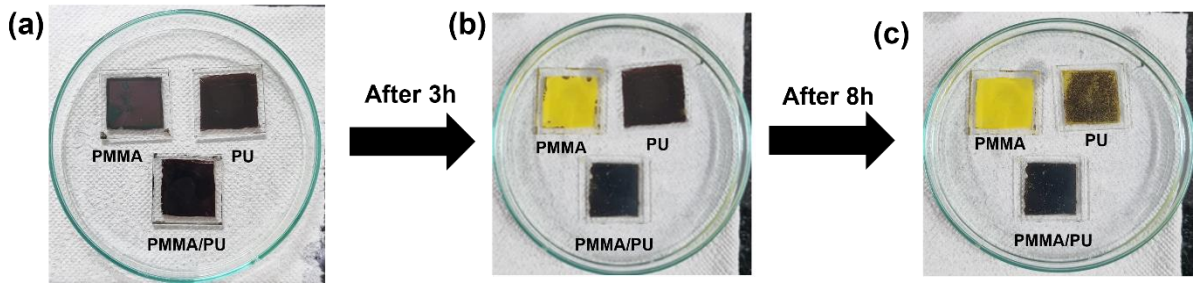

Fig. S4 Digital photographs of encapsulated absorbers dipped in water (a) photographs at 0 h, b) photographs at 3h and (c) photographs at 8h (PU encapsulated absorber started to degrade to PbI_2 after dipping in water).

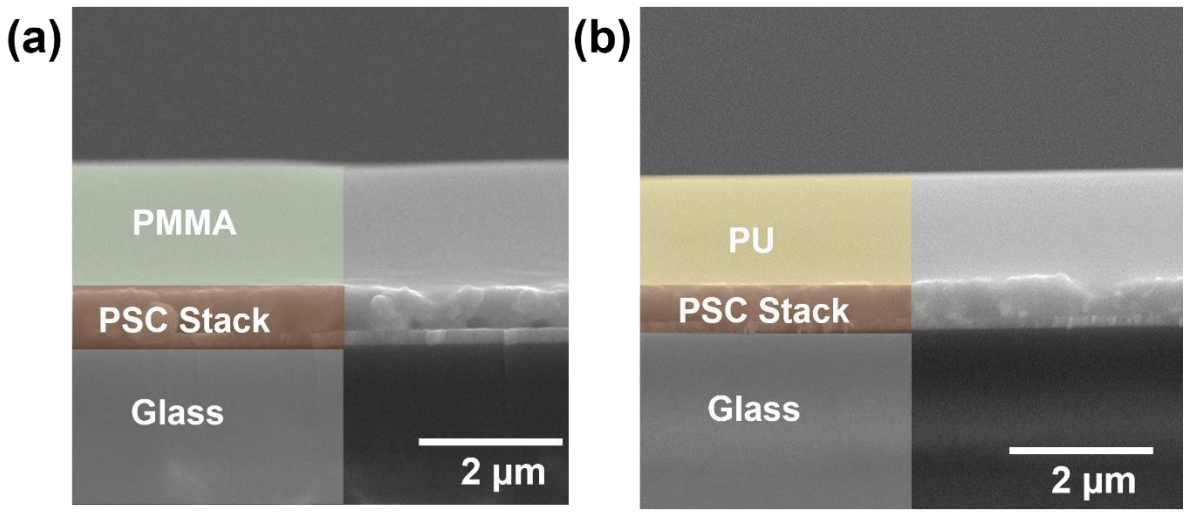

Fig. S5 a) Cross-sectional SEM image of PMMA encapsulated PSC and (b) Cross-sectional SEM image of PU encapsulated PSC.

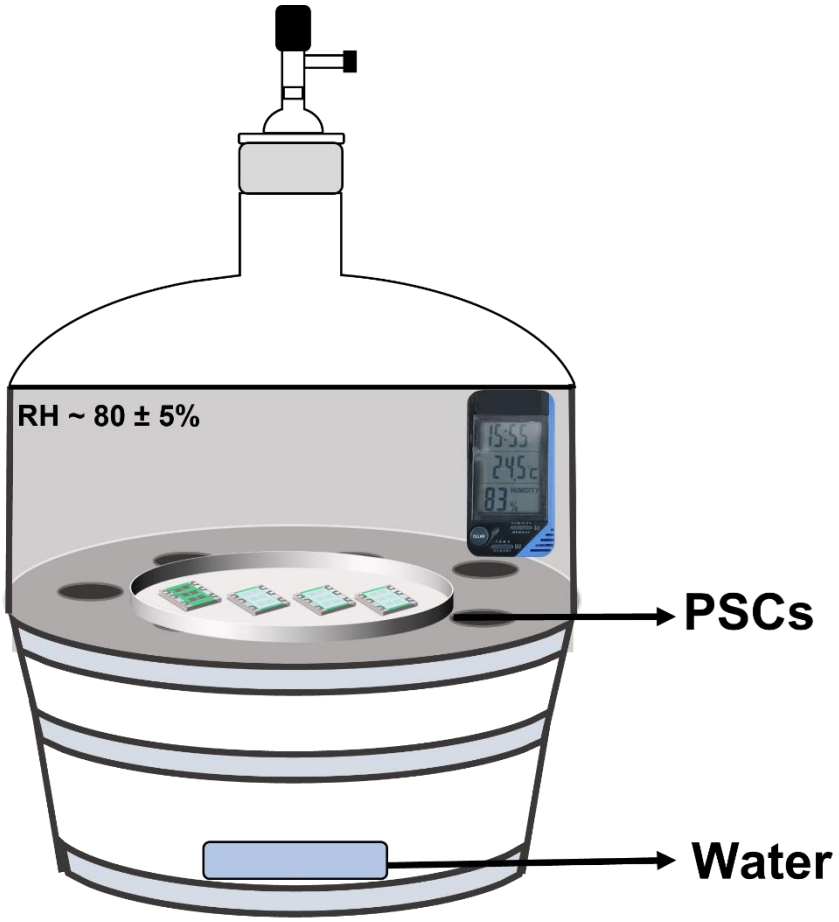

Fig. S6 Schematic representation of PSCs kept in a desiccator with water to achieve humid condition (80±5% RH).