Supporting Information

Defect passivation in perovskite solar cells using an amino-functionalized BODIPY fluorophore

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Figure S1. Absorption spectrum of BDP-NH$_2$ deposited on glass substrate.

Figure S2. Raman spectra of fresh and aged a) MAPbI$_3$ and b) MAPbI$_3$:BDP-NH$_2$ perovskite films deposited on FTO/SnO$_2$ substrates. c) and d) Absorption spectra of the same samples. Photographs of MAPbI$_3$ and MAPbI$_3$:BDP-NH$_2$ perovskite films exposed in ambient environment (average temperature 20 °C, 40% humidity and diffused sun light) for 20 days are shown as inset in c) and d), respectively.
**Figure S3.** (a) – (c) Enlarged XRD patterns of MAPbI₃ and MAPbI₃:BDP-NH₂ deposited on SnO₂ substrates.

**Figure S4.** XRD diffractograms of MAPbI₃ and MAPbI₃:BDP-NH₂ films, fresh and aged (exposed to ambient conditions for a period of 3 weeks).
Figure S5. Top view SEM images (scale 1μm) of fresh (a) MAPbI$_3$ and (b) MAPbI$_3$:BDP-NH$_2$, and aged (c) MAPbI$_3$ and (d) MAPbI$_3$:BDP-NH$_2$ perovskite films deposited on FTO/SnO$_2$ substrates.

Figure S6. UV-Vis absorbance spectra of MAPbI$_3$ and MAPbI$_3$:BDP-NH$_2$ films (unencapsulated) exposed to real world conditions in the terrace of the Institute of Nanoscience and Nanotechnology of the National Centre for Scientific Research Demokritos, Athens, Greece.
**Figure S7.** UV-Vis absorbance spectra of BDP-NH$_2$ solution in CB with a concentration of 0.1 mg/ml.

**Figure S8.** Absorbance spectra of RbCsMAFA films using antisolvent treatment without and with BDP-NH$_2$ (with concentration of 0.1 mg/ml in CB).
Figure S9. Energy level diagram corresponding to the reference inverted PSC of Figure 5a.