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Supporting Information

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

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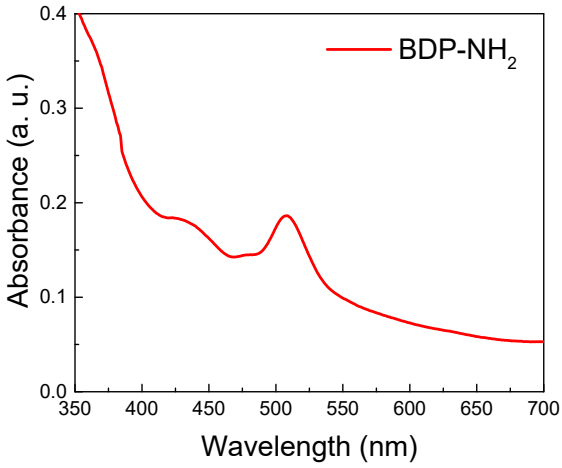

Figure S1. Absorption spectrum of BDP-NH_2 deposited on glass substrate.

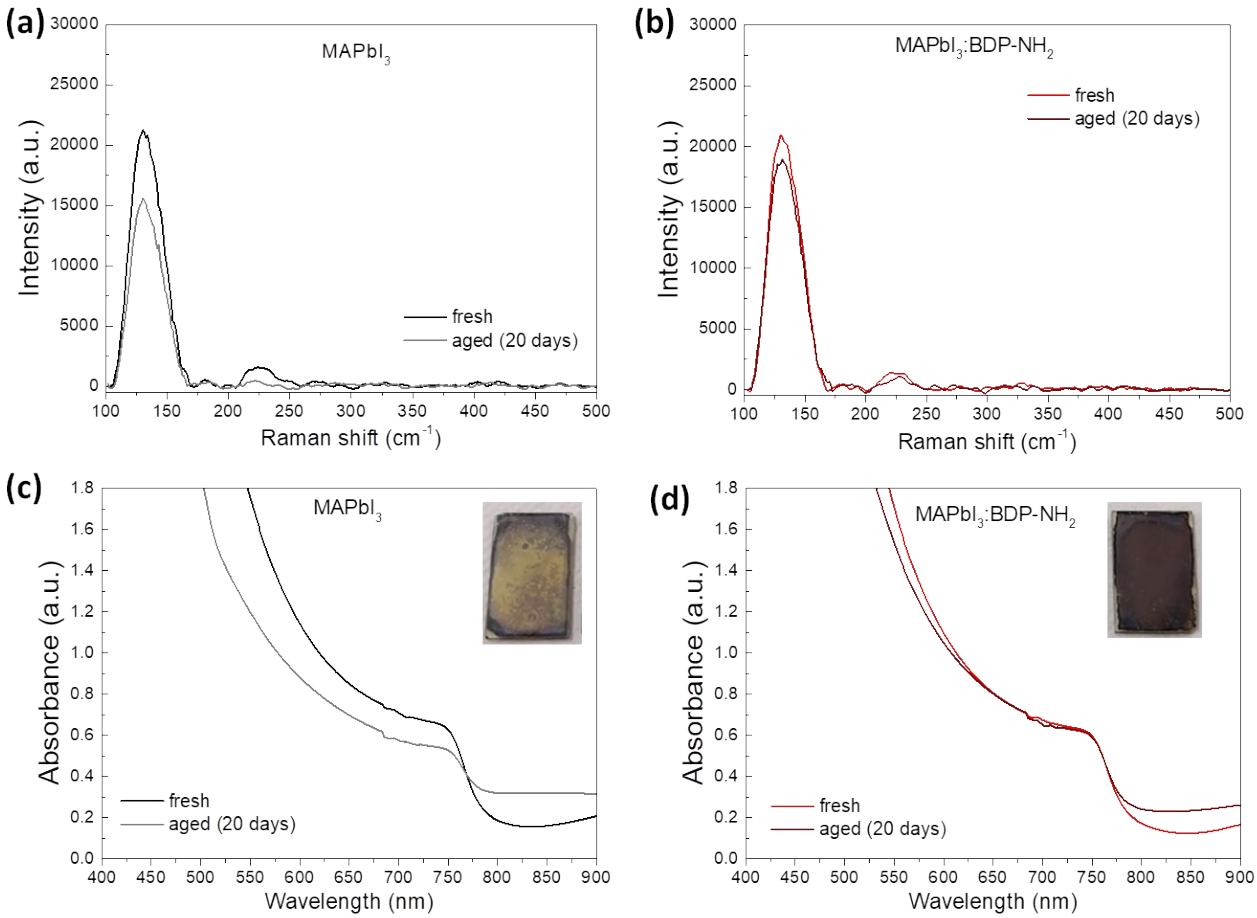

Figure S2. Raman spectra of fresh and aged a) $MAPbI_3$ and b) $MAPbI_3$:BDP-NH_2 perovskite films deposited on FTO/SnO_2 substrates. c) and d) Absorption spectra of the same samples. Photographs of $MAPbI_3$ and $MAPbI_3$:BDP-NH_2 perovskite films exposed in ambient environment (average temperature 20 ^{o}C, 40% humidity and diffused sun light) for 20 days are shown as inset in c) and d), respectively.

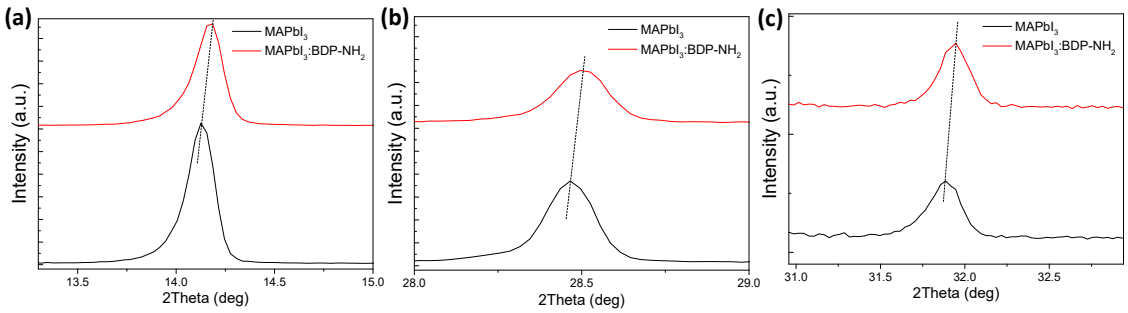

Figure S3. (a) – (c) Enlarged XRD patterns of $MAPbI_3$ and $MAPbI_3$:BDP-NH_2 deposited on SnO_2 substrates.

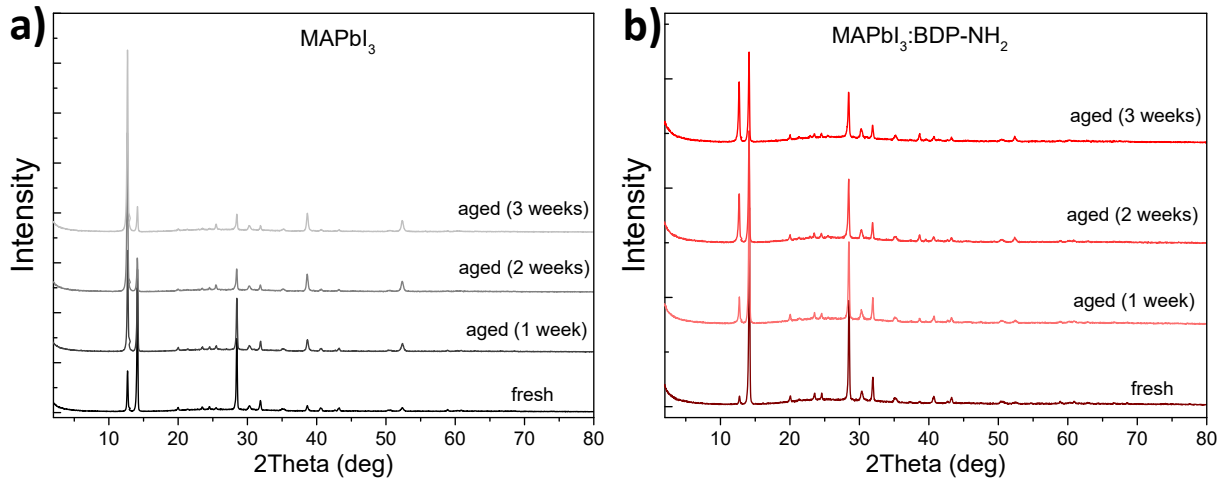

Figure S4. XRD diffractograms of $MAPbI_3$ and $MAPbI_3$:BDP-NH_2 films, fresh and aged (exposed to ambient conditions for a period of 3 weeks).

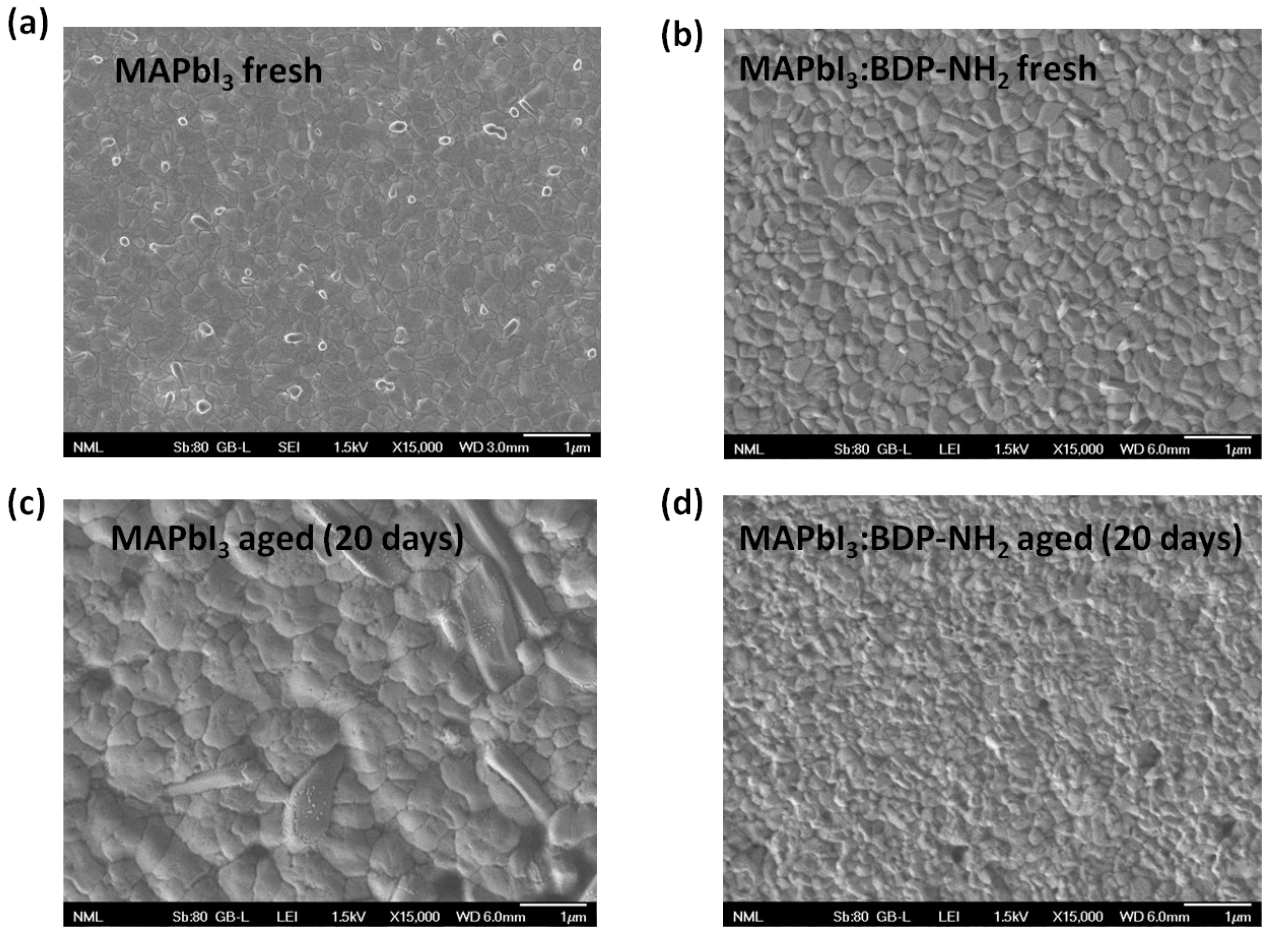

Figure S5. Top view SEM images (scale 1μm) of fresh (a) $MAPbI_3$ and (b) $MAPbI_3$:BDP-NH_2, and aged (c) $MAPbI_3$ and (d) $MAPbI_3$:BDP-NH_2 perovskite films deposited on FTO/SnO_2 substrates.

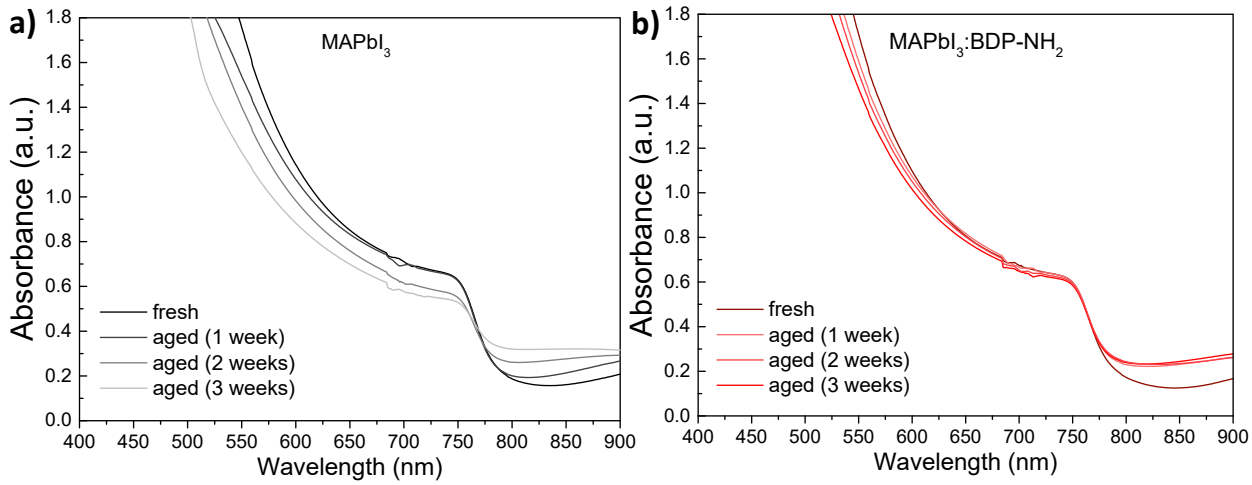

Figure S6. UV-Vis absorbance spectra of $MAPbI_3$ and $MAPbI_3$:BDP-NH_2 films (unencapsulated) exposed to real world conditions in the terrace of the Institute of Nanoscience and Nanotechnology of the National Centre for Scientific Research Demokritos, Athens, Greece.

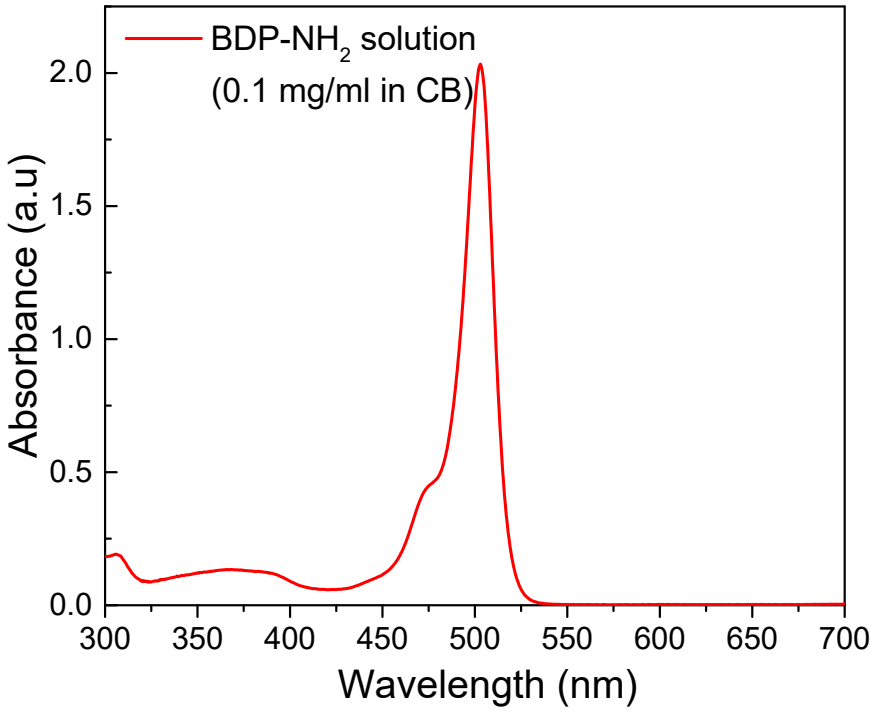

Figure S7. UV-Vis absorbance spectra of BDP-NH_2 solution in CB with a concentration of 0.1 mg/ml.

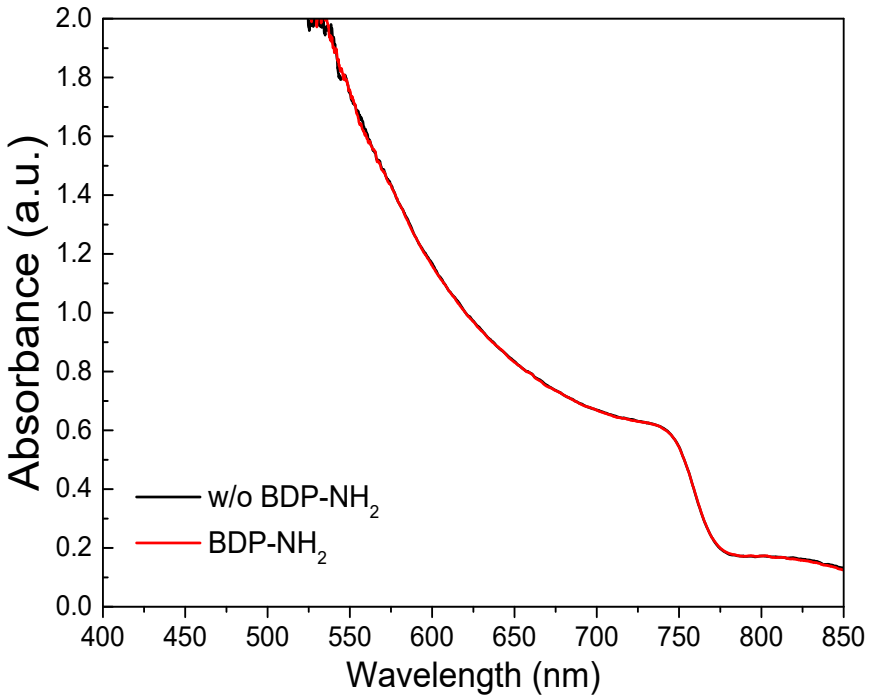

Figure S8. Absorbance spectra of RbCsMAFA films using antisolvent treatment without and with BDP-NH_2 (with concentration of 0.1 mg/ml in CB).

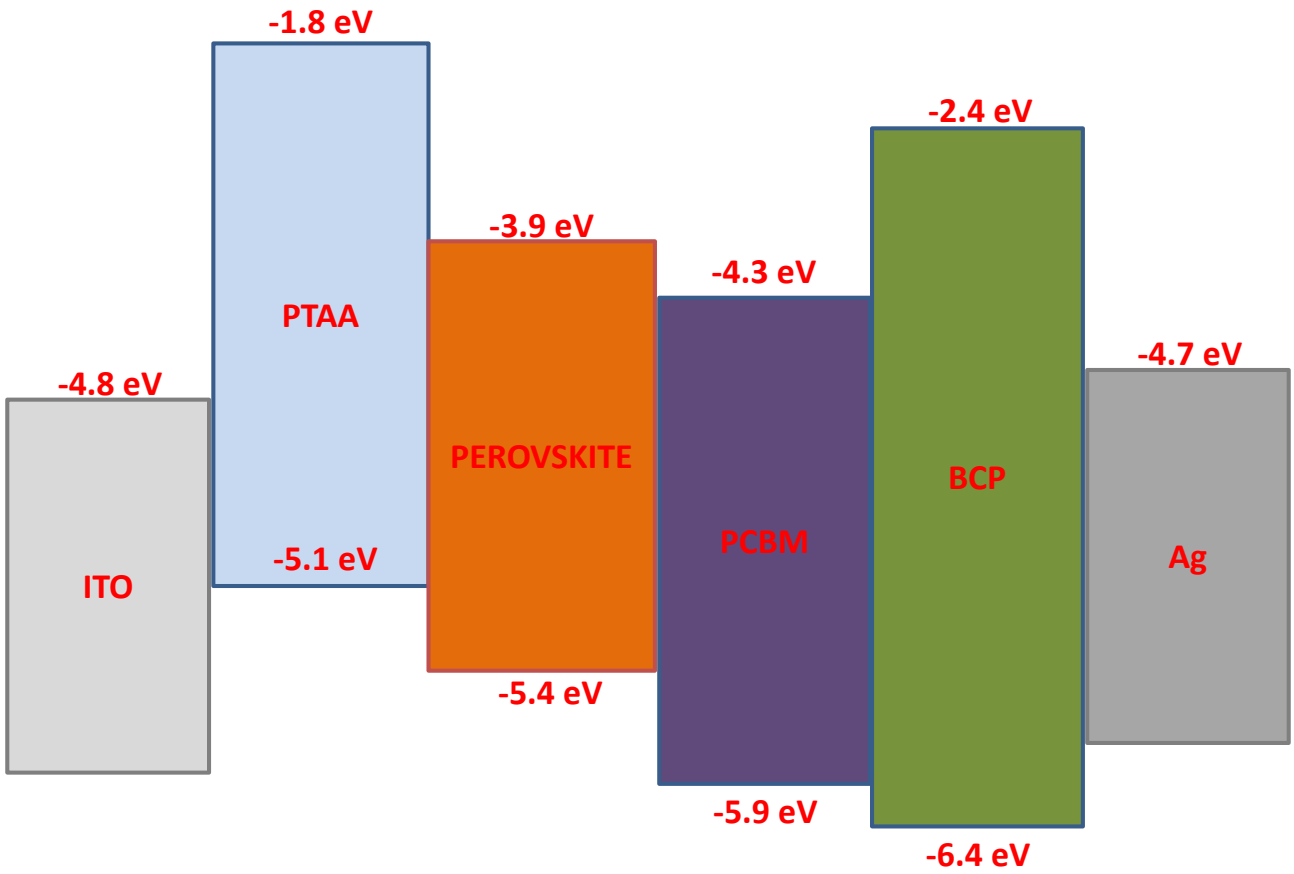

Figure S9. Energy level diagram corresponding to the reference inverted PSC of Figure 5a.