Supplementary Information

Expanding the photoresponse of multidimensional hybrid lead bromide perovskites into the visible region by incorporation of subphthalocyanine

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Figure S1. Left: Chemical structure of SubPc, X=Cl, OPh. Right: Absorption (blue) and emission (red, λ_{ex} 550 nm) of an acetonitrile solution of SubPc.



Figure S2. FESEM image of crystalline 3D perovskite (MAPbBr₃) with SubPc indicating with a red shadow the formation of SubPc aggregates on the crystal surface.



Figure S3. XRD spectra of 3D perovskite (MAPbBr₃) with (a) and without SubPc (b), the inset shows a magnification of the peak at 2θ = 15°, where no shift has been observed.



Figure S4. 20 Shift of the (100) of thin films of SubPc@HP10 prepared using three different concentrations.



Figure S5. Pictorial representation of the HP10 interlayer space accommodating the large PEABr cation and the SubPc macrocycle.



Figure S6. Normalized solar cell efficiency as function of illumination time of (a) SubPc@HP10 and HP10 (b) obtained by continuous illumination of 1000 Wm² AM1.5 light in air ambient conditions.