Supporting information

Carrier Dynamics in Two-Dimensional Perovskites: Dion-Jacobson vs. Ruddlesden-Popper thin films

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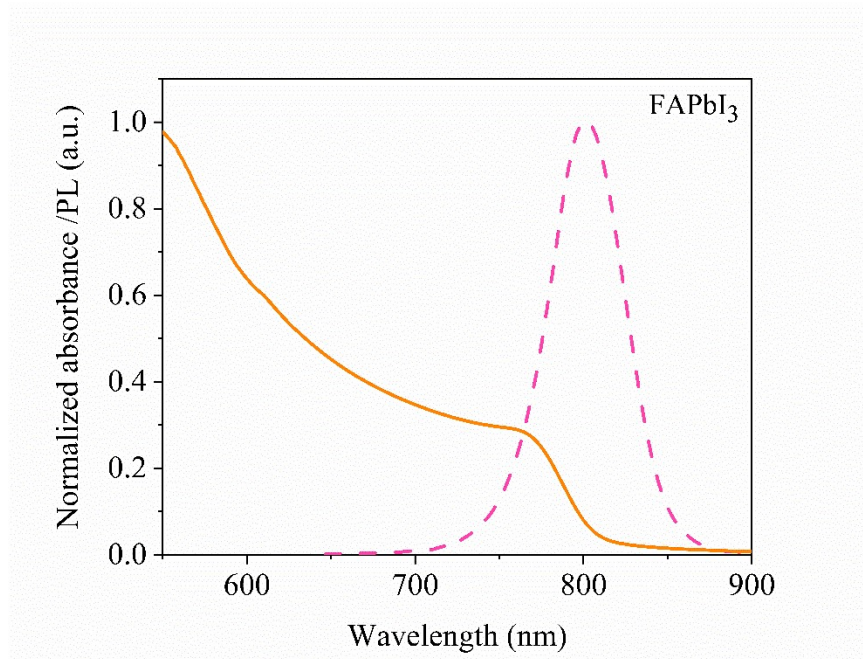
Figure S1. The steady-state absorption (solid line) and photoluminescence (dashed line) spectra for FAPbI$_3$ (n=∞ for (PDMA)FA$_{n-1}$Pb$_n$I$_{3n+1}$ and (PEA)$_2$FA$_{n-1}$Pb$_n$I$_{3n+1}$).
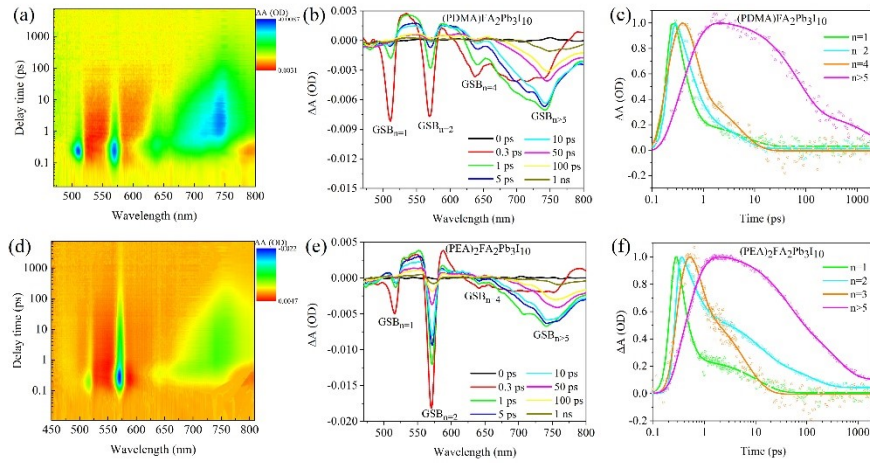
Figure S2. TA measurements for (PDMA)FA$_{n-1}$Pb$_n$I$_{3n+1}$ (<n> = 3) films and (PEA)$_2$FA$_{n-1}$Pb$_n$I$_{3n+1}$ (<n> = 3) films excited from front side (air side). (a) (d) Time- and wavelength-dependent TA images. (b) (e) TA spectra at selected probe times. (c) (f) TA spectra for different n phases as a function of delay time.
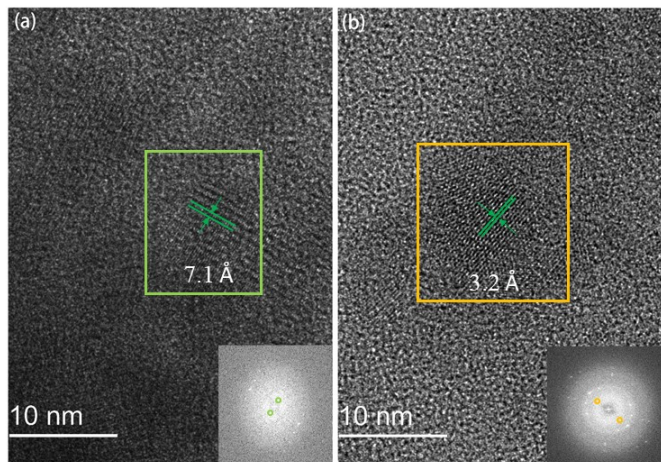
Figure S3. (a) HRTEM image of the (PDMA)PbI$_4$ film with d=7.1 Å for (111) plane. (b) HRTEM image of the (PEA)$_2$PbI$_4$ film with d=3.2 Å for (0010) plane. Insets: Fast Fourier transforms (FFT) of the selected area diffraction.