ELECTRONIC SUPPLEMENTARY INFORMATION

New insights on exciton binding and relaxation from high time resolution ultrafast spectroscopy of CH$_3$NH$_3$PbI$_3$ and CH$_3$NH$_3$PbBr$_3$ films

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Figure S1. Absorption and photoluminescence of the two samples studied. (PL) was measured on an Edinburgh Instruments FLS920 fluorimeter equipped with a film holder. Samples were excited using Fianium SC400 laser output monochromatized at 405 nm (MAPbBr₃) or at 500 nm (MAPbI₃). The emission from the sample was collected at a right angle, through a long pass filter and a monochromator to suppress the scattering from excitation source, and collected using a Hamamatsu H10720 high speed PMT.

Figure S2. SEM images of the samples.