

Electronic Supplementary Information

Influence of Mixed Organic Cations on the Structural and Optical Properties of Lead Tri-iodide Perovskites

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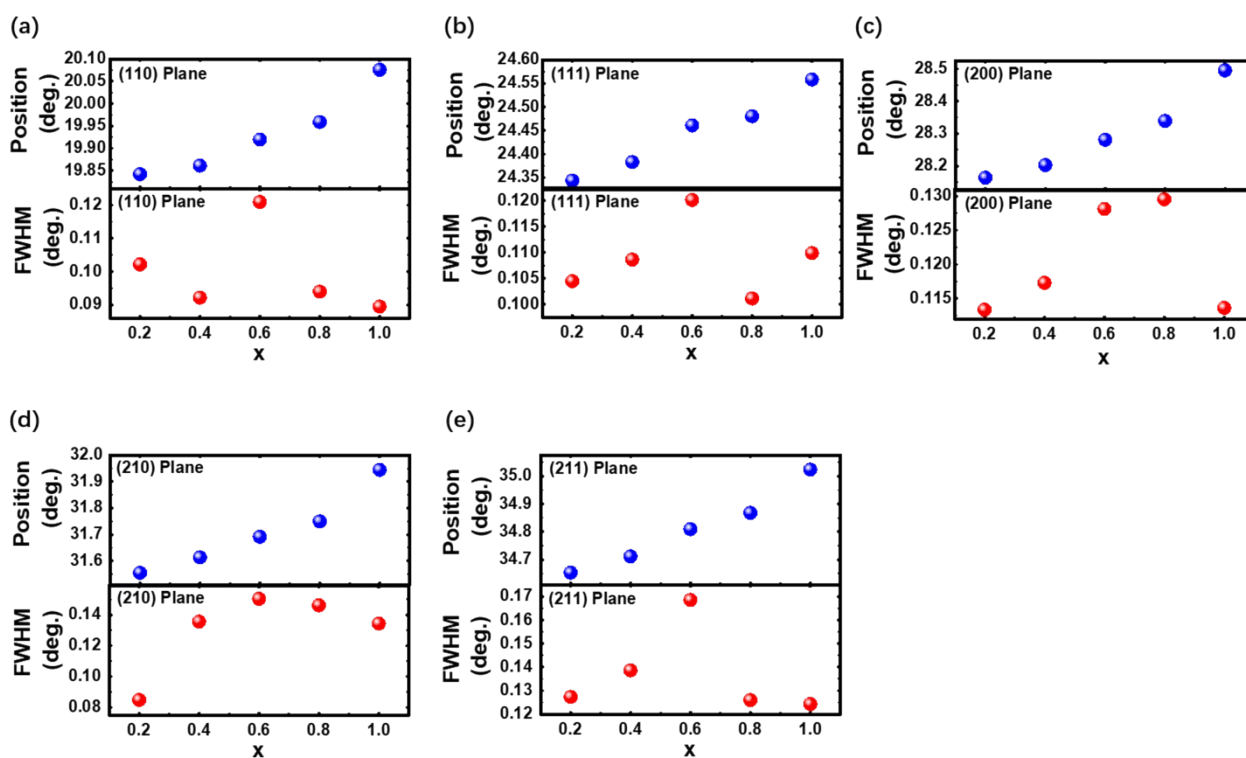


Fig. S1 (a) ~ (e) Peak position and FWHM of (110), (111), (200), (210) and (211) planes.

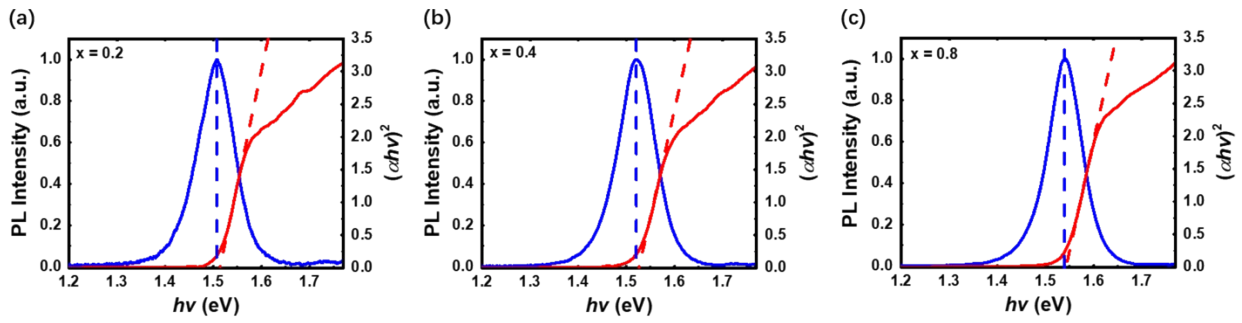


Fig. S2 (a) ~ (c) Steady-state absorption and photoluminescence of $\text{MA}_x\text{FA}_{1-x}\text{PbI}_3$ ($x = 0.2, 0.4$ and 0.8), respectively.

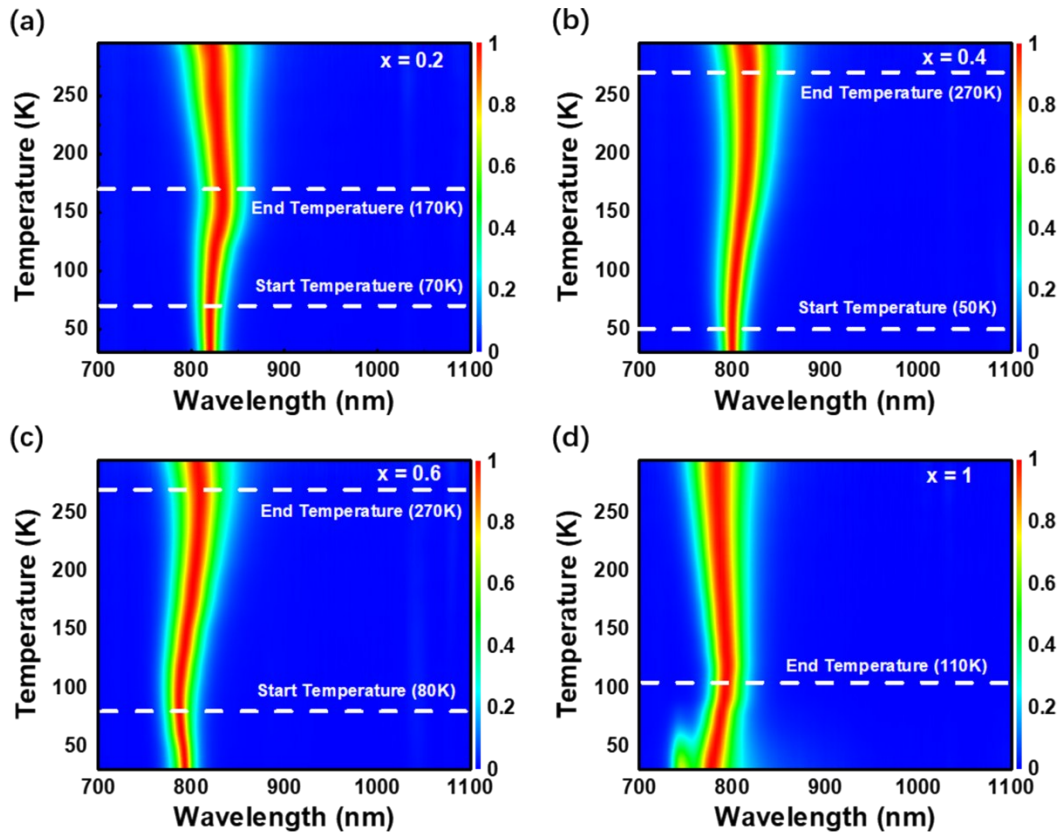


Fig. S3 (a) ~ (d) Temperature dependent PL spectra of $\text{MA}_x\text{FA}_{1-x}\text{PbI}_3$ ($x = 0.2, 0.4, 0.6$ and 1). Phase transition ranges are marked by white dashed horizontal lines. For $x = 1$, only the end temperature is found. This is because the phase transition process starts at the temperature lower than 30 K, actually.