

Supplementary Information

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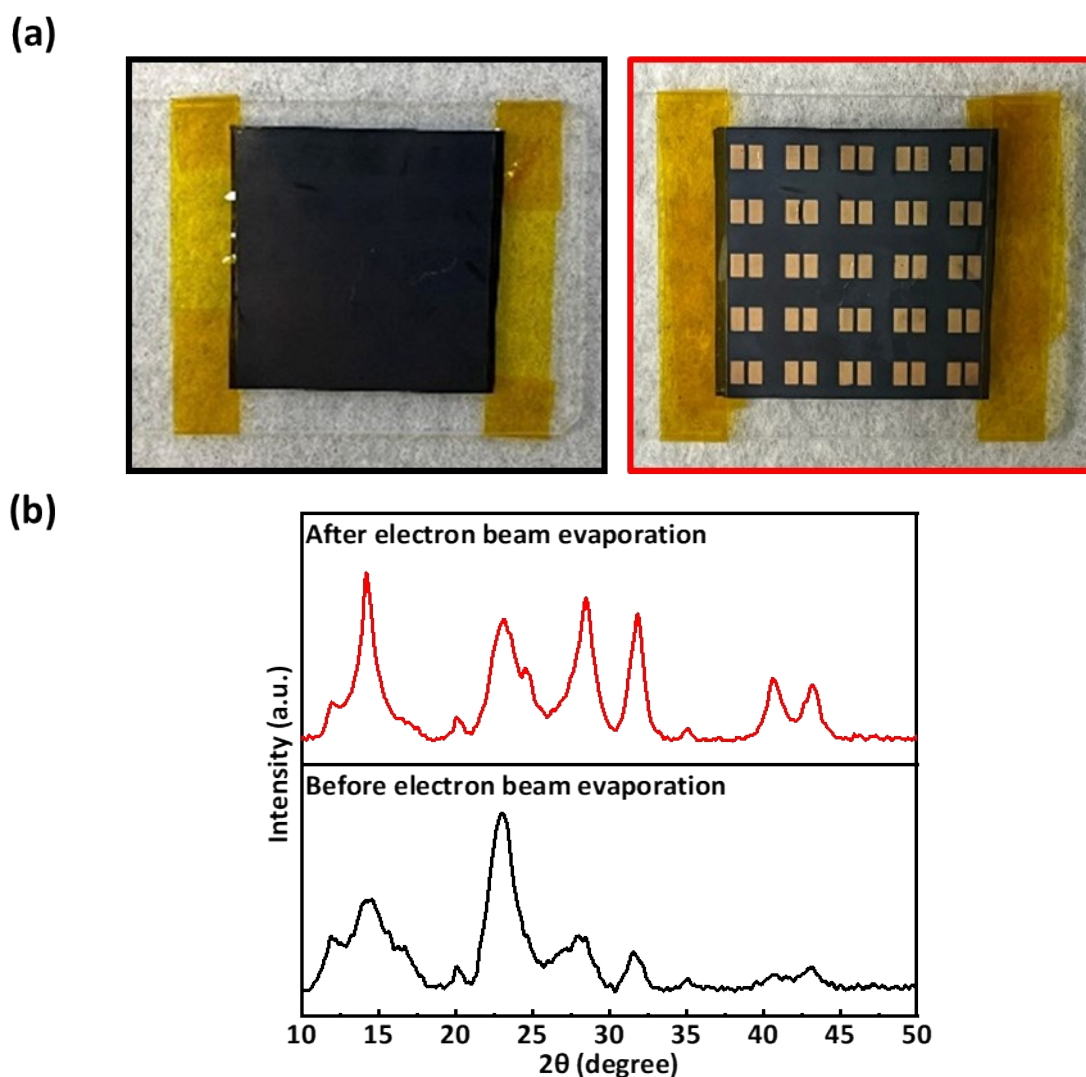


Fig. S1 (a) Photographs of Zn-doped MA_{0.6}FA_{0.4}PbI₃/CNC paper before and after electron-beam evaporation. (b) XRD patterns of Zn-doped MA_{0.6}FA_{0.4}PbI₃/CNC paper before and after electron-beam evaporation.

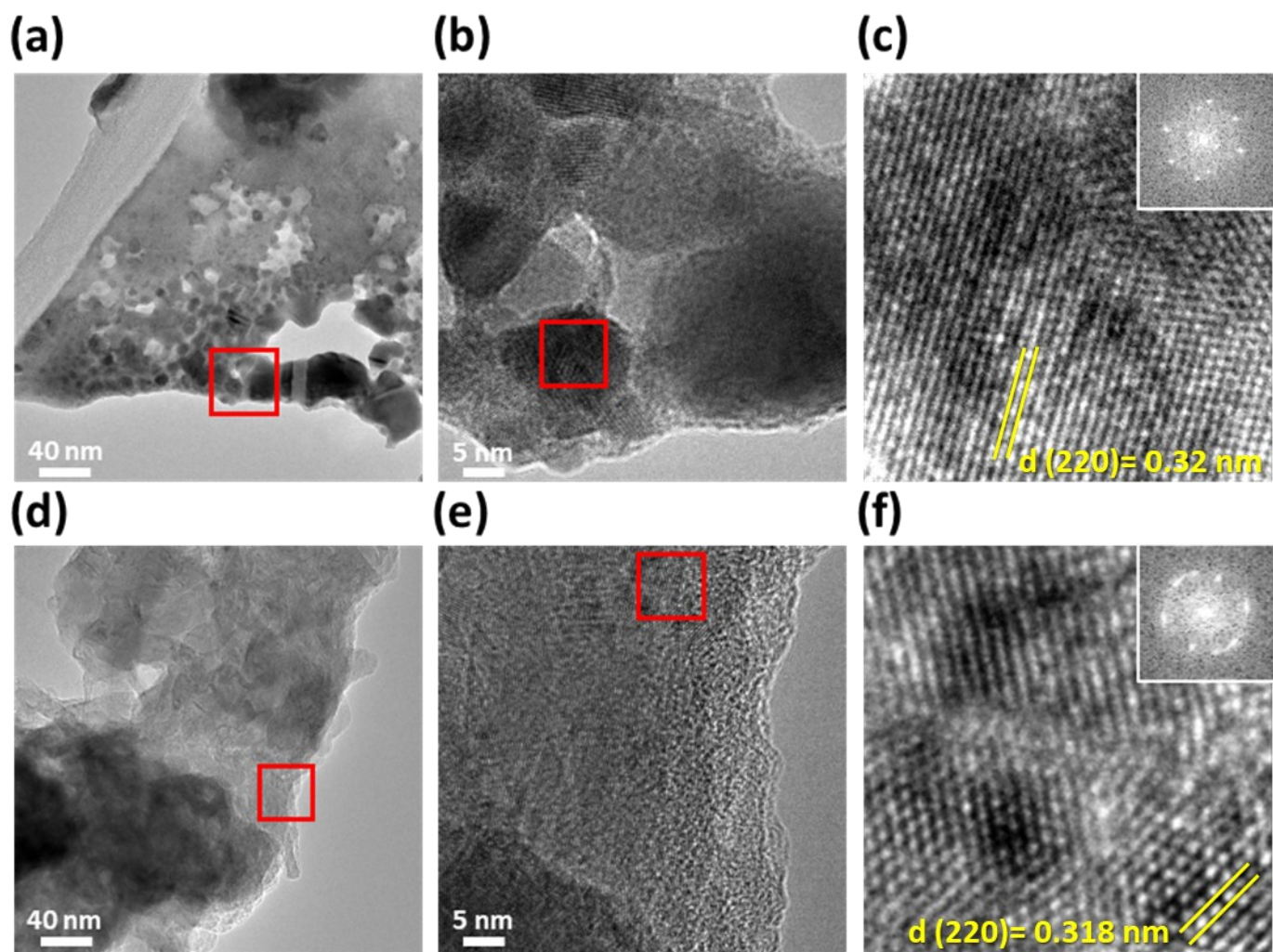


Fig. S2 (a) TEM image of Zn-doped $\text{MA}_{0.6}\text{FA}_{0.4}\text{PbI}_3$. (b) The enlarge TEM image of red area in (a). (c) The HRTEM and FFT (inset) of Zn-doped $\text{MA}_{0.6}\text{FA}_{0.4}\text{PbI}_3$. (d) TEM image of the Zn-doped $\text{MA}_{0.6}\text{FA}_{0.4}\text{PbI}_3/\text{CNC}$ paper. (e) The enlarge TEM image of red area in (d). (f) The HRTEM and FFT (inset) of the Zn-doped $\text{MA}_{0.6}\text{FA}_{0.4}\text{PbI}_3/\text{CNC}$ paper.

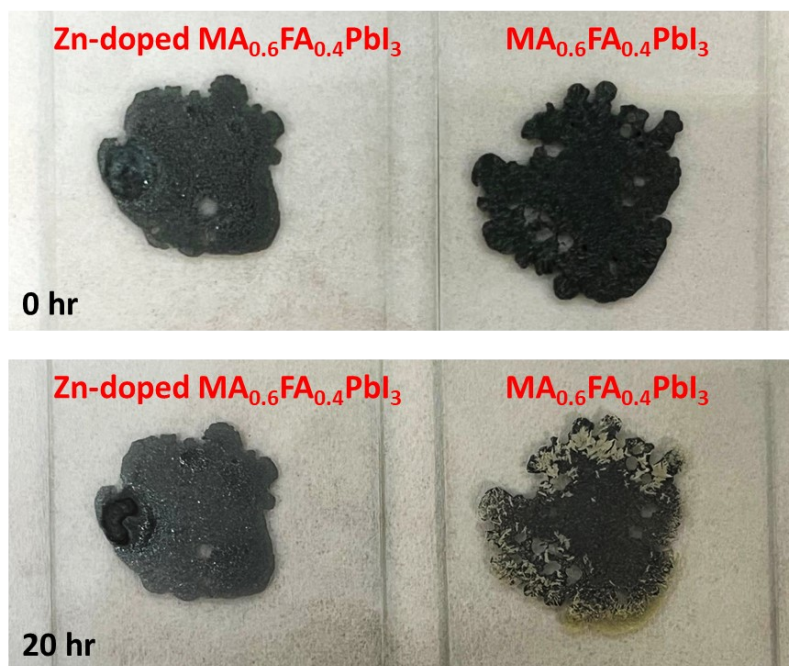


Fig. S3 Photographs of Zn-doped MA_{0.6}FA_{0.4}PbI₃ and undoped MA_{0.6}FA_{0.4}PbI₃ film immediately after coating (0 hr) and under ambient condition after 20 hr.