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Increased Grain Size and Longer Photogenerated Carrier Life Time Achieved with Cd Incorporation in $MAPbI_3$ Perovskite. NIRAJ SHRESTHA, SUNETH WATTHAGE, ZHAONING SONG, GEETHIKA LIYANAGE, PAUL ROLAND, ADAM PHILLIPS, MICHAEL HEBEN, RANDY ELLINGSON, University of Toledo — We report that cadmium (Cd) incorporation in methylammonium lead iodide ($MAPbI_3$) perovskite leads to increased average grain size and improved photogenerated carrier life time. Enhanced PL intensity and significantly higher carrier life time reflect the impact of a reduced density of grain boundaries and a concomitant reduction in recombination sites, in agreement with the observed increase in average grain size for those films incorporating Cd. Longer photogenerated carrier lifetimes concur with improved photoconversion efficiencies measured for perovskite solar cells utilizing Cd-doped perovskite absorbers.

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