

Abstract Submitted
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Nanoimprinted Perovskite Solar Cells With Enhanced Photocurrent ROSS HAROLDSON, BALASUBRAMANIAM? BALACHANDRAN, YIXIN REN, ANVAR ZAKHIDOV, WENCHUANG HU, Univ of Texas - Dallas, UTD NANOIMPRINT TEAM — We have developed a new method of Nanoimprint Lithography (NIL) to shape the morphology of organolead trihalide perovskite. With this hot stamping process we created ordered gratings or other micro or nanostructures of perovskite resembling 2D photonic crystals on the scale of 200 to 600 nm from a starting small grain spin-coated film of the same scale. With this new method of nanoimprinting, we demonstrate that perovskite PV device performance can be improved and controlled. Initial results comparing flat vs. NIL-PV structure devices show dramatic increase in photocurrent as well as better crystallinity. The origin of I_{sc} enhancement is explained in terms of better morphology and larger grains, resulting in longer diffusion length of carriers, while better light absorption by photonic crystal nanopatterns cannot be excluded.

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