

Vapor Phase deposited Perovskite Single Junction and Tandem Solar Cells.

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Perovskite based solar cells, mostly employ solution processed perovskite layers. Evaporated methylammonium lead iodide perovskite layers have also been reported and been employed in solar cells. Our group has developed several perovskite based solar cells, using vacuum based perovskite preparation methods. These metal oxide free p-i-n type perovskite cells exhibit high power-conversion efficiencies. We have extended this work to fully evaporated perovskite devices reaching power conversion efficiencies as high as 20 % in a planar single junction device and similar performance in tandem devices. Avenues to further increase the device performance by using multiple cation perovskite prepared via sublimation will also be presented.