**Link:** [https://solar-power-tech.com/e-posters/psc\_eposter\_09/](https://solar-power-tech.com/e-posters/psc_eposter_07/)

**Abstract**

Herein, we report the deposition of methylammonium lead iodide (MAPbI3) thin films by thermal evaporation using mechanochemically synthesized MAPbI3 perovskite powders as the sole precursor. We performed the vacuum-deposition at different substrate temperatures such as room temperature (RT), 100 °C, 200 °C and the respective films were subjected to various characterization techniques in order to study the structural, morphological and optical properties of the vacuum-deposited MAPbI3 thin films. XRD patterns revealed the highly symmetrical cubic structure for MAPbI3 thin films in contrast to that of the tetragonal phase of powder precursor at RT and 100 °C, whereas the perovskite formation is affected on increasing the temperature above 100 °C. We also investigated the effect of substrate temperature on the morphological and optical properties. The films showed a steep absorption onset at around 750 nm with the optical band gap of ~1.8 eV. Overall, the vacuum-deposited MAPbI3 films at RT possess good crystalline nature with high stability, and hence attempts have been made for the fabrication of flexible perovskite solar cells using vacuum-deposited perovskite film as absorber layer at low processing temperature (RT).