

Optimisation and Analysis of the Perovskite Solar Cell

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Talk Abstract

The search for better conversion efficiency and the low production cost of solar cells has sparked the interest of several researchers with the aim to find new materials to meet the global challenges of the energy matrix [1, 2, 3]. This has made the inorganic halide, Cesium Lead Iodide ($CsPbI_3$), one of the most promising due to its stability and, on the other hand, better efficiency compared to other perovskites [4, 5]. In this study, a perovskite solar cell was optimised with a configuration featuring $CsPbI_3$ as the active layer, TiO_2 responsible for electron transport (ETL), Spiro-OMeTAD responsible for the gaps (HTL). The SCAPS-1D software was used for the simulations where the physical parameters were introduced, these parameters were deduced from cross-referencing various studies of experimental and published literature. As a result of this investigation, a significant increase in the cell's performance was obtained. The configuration of the perovskite cell structure can be well optimised to increase conversion efficiency and make them more preferred in the market.

Keywords: Optimization, $CsPbI_3$ perovskite, SCAPS, PCE, Solar cells

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