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**Abstract**

Solar cells are becoming an interesting alternative to non-renewable sources such as fossil fuels to generate electricity because of their special advantages, such as their inexhaustible source of energy. Several types of solar cells have been employed to date. There have always been challenges in choosing the best type of solar cell because various factors affect the overall performance of the solar cell such as stability, efficiency, and cost. Perovskite solar cells (PSCs) are low-cost and high-efficiency types of solar cells that have been developed recently because of their tremendous properties. Despite their high efficiency compared to many solar cells, they still have a chance to progress due to the presence of several effective layers in their structure and the optimization of the properties of each of these layers. The main layer of these types of cells is the perovskite (absorber) layer that absorbs the sunlight's photon and generates electrons and holes and transports them to the electrodes via charge transporting layers. These transporting layers can be in many forms and divide into several types containing organic, polymeric, inorganic, small molecules type. In this study, using new composite forms of these layers were investigated through the SCAPS-1D simulation tool. This work was done for the first time. Two organic Spiro-OMeTAD and P3HT materials as hole transporting layer (HTL) composites and inorganic TiO2 and ZnO materials as electron transporting layer (ETL) composites were chosen. Results indicated that using (Spiro-OMeTAD)0.1(P3HT)0.9 for HTL and (TiO2)0.3(ZnO)0.7 for ETL, represent the best efficiency for the cell. Furthermore, by optimizing the HTL layer's thickness, the highest efficiency was obtained. Final optimized efficiency was about 29% compared to a conventional simple structure with about 20% efficiency.