عنوان مقاله:

Improved Perovskite Solar Cell Performance Using Semitransparent CNT Layer

محل انتشار:

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خلاصه مقاله:

In this paper, the effect of using semi-transparent Carbonnanotube layer (CNT) on the efficiency of perovskitesolar cell (PSC) is investigated. One of the mostimportant process in PCS is charge collecting. In thisregard, Carbon nanotubes have the ability to act as chargecollector layer in solar cell. Carbon nanotubes, due tosuitable optical and electrical properties such astransparency, high mobility and stability have beenwidely used in solar cell structures. In the proposedstructure, we use semi-transparent CNT layer as chargecollector on top of PSC. This layer with low resistancepath for transport charge carriers has increased shortcircuit current and other performance parameters of solarcell. The proposed device structureITO/CNT/TiO۲/CH۳NH۳PbI۳/Spiro-OMeTAD issimulated with Silvaco TCAD. The simulation resultsshow that the efficiency of the perovskite solar cell withsemi-transparent CNT layer is reached ۲۳.۵۹% which is۳.۱۵% higher than simple perovskite solar cell structureunder AM۱.۵G.

کلمات کلیدی:

Charge Collector, Efficiency, Numerical Simulation