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# POWDER PRESSED CARBON NANOTUBES AS HOLE CONDUCTING MATERIAL FOR PEROVSKITE SOLAR CELLS

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***ABSTRACT***

Perovskite Solar Cells (PSCs) have attracted a great deal of attention in recent years due to their very high conversion efficiencies. A perovskite solar cell is a type of solar cell which includes a perovskite structured compound, most commonly a hybrid organic-inorganic lead or tin halide-based material, as the light-harvesting active layer in place of dyes used in dye-sensitized solar cells. In PSCs Hole Transfer Material (HTM) and its deposition method are crucial factors for getting a good conversion efficiency. Most commonly used HTM for PSCs is spiro-OMeTAD which is very expensive. In this study we propose a novel and simple method to deposit a low cost HTM on top of perovskite layer. Carbon nanotubes (CNT) which is relatively low cost material was used as the HTM in powder form without using any binder or solvent. The working electrode of the PSC was fabricated using solution processed methylammoniumlead halide and as the Counter electrode a platinum coated glass plate was used. CNT powder was pressed on to the perovskite layer and sandwiched between two electrodes. Using this method, we were able to get a conversion efficiency of 2.29% under AM 1.5 simulated sunlight under ambient conditions.

Keywords: Perovskite, Carbon nanotubes, Powder press