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**Fabrication of Perovskite Solar Cells using Cuprous iodide powder as the P-type semiconductor**

**Buddhika Karanarathne<sup>1,2</sup>, Naveen Abeysekara<sup>1,2</sup>, Pubudu Dissanayake<sup>1</sup>, Pubudu Kumarasinghe<sup>1,2</sup>, G.R.A. Kumara<sup>1\*</sup> and R.M.G. Rajapakse<sup>2,3</sup>**

<sup>1</sup>National Institute of Fundamental Studies, Hartana Road, Kandy 20000, Sri Lanka

<sup>2</sup>Postgraduate Institute of Science, University of Peradeniya, Peradeniya 20400, Sri Lanka

<sup>3</sup>Department of Chemistry, Faculty of Science, University of Peradeniya, Peradeniya 20400, Sri Lanka

\*[grakumara2000@yahoo.com](mailto:grakumara2000@yahoo.com)

Perovskite Solar Cells (PSCs) have attracted a great deal of attention in recent years due 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. Efficiencies obtained are high over 22% when spiro-OMeTAD is used as the P-type semiconductor. But the cost of spiro-OMeTAD is unbearable. Compared to spiro-OMeTAD, Cuprous iodide is inexpensive and has 500 to 2000-fold higher hole mobility. The method used to deposit the hole conducting layer such as Cuprous iodide depend on the use of acetonitrile solution containing dissolved CuI and doctor blading or spin coating on to the perovskite layer. Disadvantage of using acetonitrile as the solvent is the solubility of perovskite in it so that the perovskite layer is susceptible for damage. In this work we propose a novel method of using CuI powder without dissolving it in any solvent to form a thin film of a hole conductor simply by pressing the powder onto the perovskite layer. The working electrode of the PSC was fabricated using methylammoniumlead iodide and as the Counter electrode a platinum coated glass plate was used. And CuI 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 4.91% under AM 1.5 simulated sunlight. With further improvements, we believe this low cost and simple method of fabrication of PSCs will be a viable solution for the energy crisis.

**Keywords:** *cuprous iodide, powder press, perovskite solar cells, spiro-OMeTAD*