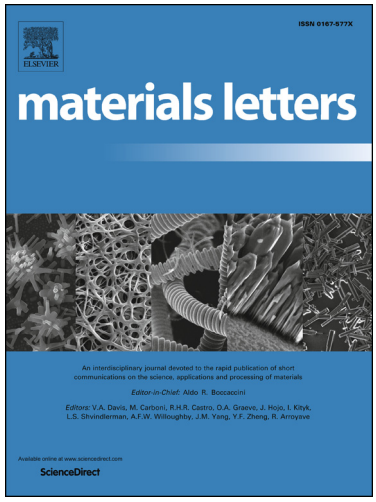

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PII: S0167-577X(18)30299-4
DOI: https://doi.org/10.1016/j.matlet.2018.02.089
Reference: MLBLUE 23915

To appear in: *Materials Letters*

Received Date: 12 January 2018
Revised Date: 16 February 2018
Accepted Date: 19 February 2018

Please cite this article as: C.R. Kalaiselvi, N. Muthukumarasamy, D. Velauthapillai, M. Kang, T.S. Senthil, Importance of Halide Perovskites for next generation solar cells- A Review, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.02.089

Importance of Halide Perovskites for next generation solar cells- A Review

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Abstract

Halide perovskites have recently emerged as a promising material for low cost and high efficiency solar cells. Dye Sensitized Solar Cells (DSSCs) are the forerunners of perovskite solar cells. In liquid based dye sensitized solar cell the power conversion efficiency is low and also it had some stability issues. In 2012, a long term stable and high efficiency perovskite solar cell emerged by replacing liquid electrolyte with the solid hole conductor. The attractiveness of organometal halide perovskites are having suitable direct bandgap with large absorption coefficients, low cost and solution based fabrication process. This review summarizes the basic concepts of perovskite, their fabrication and its eminent properties.

Keywords: Perovskite, solar cell, organic lead halide, stability.

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1. Introduction

Energy is the fundamental factor for the quality of our lives. The requirement of energy and the need for innovation of clean and eco-friendly technologies is of prime importance in the recent scenario. Solar energy is the most abundant and clean form of energies offering an answer to the increasing concern of global warming and greenhouse gases by fossil fuels.

Solar cell is one of the best approach to convert solar energy in to electrical energy based on the photovoltaic effect. The working mechanism of solar cells is based on the absorption of light, separation and the collection of charge careers at the respective electrodes establishing the potential difference across the p-n junction. The voltage difference created results in the generation of electric power [1]**.** Solar cells based on crystalline silicon and thin film technologies are often referred as first and second generation solar cells. The demerits are the limited availability and the cost of silicon. An emerging third generation photovoltaics have been developed as an alternate to it. These include DSSCs, organic photo voltaic, quantum dots and perovskite solar cell. Among these, perovskite