

# Accepted Manuscript

Synthesis of active absorber layer by dip-coating method for Perovskite solar cell

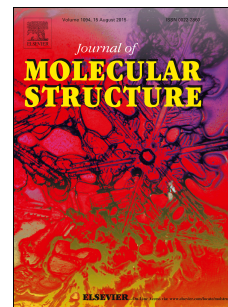
R. Singh, I.S. Noor, Pramod K. Singh, B. Bhattacharya, A.K. Arof

PII: S0022-2860(18)30056-5

DOI: [10.1016/j.molstruc.2018.01.037](https://doi.org/10.1016/j.molstruc.2018.01.037)

Reference: MOLSTR 24759

To appear in: *Journal of Molecular Structure*



Please cite this article as: R. Singh, I.S. Noor, Pramod K. Singh, B. Bhattacharya, A.K. Arof, Synthesis of active absorber layer by dip-coating method for Perovskite solar cell, *Journal of Molecular Structure* (2018), doi: 10.1016/j.molstruc.2018.01.037.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Synthesis of active absorber layer by dip-coating method for Perovskite solar cell

R. SINGH<sup>1,2,\*</sup>, I.S. NOOR<sup>1</sup>, PRAMOD K. SINGH<sup>2</sup>, B.BHATTACHARYA<sup>2</sup>, A.K. AROF<sup>1</sup>

<sup>1</sup>*Centre for Ionics University of Malaya, Department of Physics, Faculty of Science,  
University of Malaya, 50603 Kuala Lumpur, Malaysia.*

<sup>2</sup>*Material Research Laboratory, School of Basic Sciences & Research, Sharda University,  
Greater Noida- 201 310, India.*

\*Corresponding Author: [singhrs1195@gmail.com](mailto:singhrs1195@gmail.com)

## ABSTRACT

In this paper, we develop the hybrid perovskite-based n-i-p solar cell using a simple, fast and low-cost dip-coating method. Hot solution and the pre-annealed substrate are used for coating the perovskite thin film by this method this is further used for studying its structural and electrical properties. UV-vis spectroscopy is carried out for calculating the band gap of the hybrid perovskite layer which is  $\sim 1.6$  eV. X-ray spectroscopy confirms that the formation of hybrid perovskite layer. The profilometer is used to study the surface roughness and also for measuring the thickness of the perovskite layer with varying substrate temperature. The optimized sample was further used for cross-sectional SEM image to verify the thickness measured from the profiler. The electrical parameter of JV characteristic with varying temperature is tabulated in the table. Whereas, the perovskite sensitized solar cell exhibits highest short circuit current density,  $J_{sc}$  of  $11 \text{ mA cm}^{-2}$ , open circuit voltage,  $V_{oc}$  of  $0.87 \text{ V}$ , fill factor of  $0.55$  and efficiency,  $\eta$  of  $> 5 \%$ .

Download English Version:

<https://daneshyari.com/en/article/7808097>

Download Persian Version:

<https://daneshyari.com/article/7808097>

[Daneshyari.com](https://daneshyari.com)