

Accepted Manuscript

Characterization of novel nitrogen-less derived 2D hybrid perovskite of $C_6H_8N_2PbBr_3$ as a light-harvesting material for perovskite solar cell application

Azliana Ramli, Mohd Nazari Abu Bakar, Nafisah Osman, Wan Izhan Nawawi
Wan Ismail, Suhaila Sepeai

PII: S0167-577X(18)30788-2
DOI: <https://doi.org/10.1016/j.matlet.2018.05.040>
Reference: MLBLUE 24340

To appear in: *Materials Letters*

Received Date: 23 February 2018
Revised Date: 8 May 2018
Accepted Date: 9 May 2018

Please cite this article as: A. Ramli, M.N.A. Bakar, N. Osman, W.I.N. Ismail, S. Sepeai, Characterization of novel nitrogen-less derived 2D hybrid perovskite of $C_6H_8N_2PbBr_3$ as a light-harvesting material for perovskite solar cell application, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.05.040>

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.



Characterization of novel nitrogen-less derived 2D hybrid perovskite of $C_6H_8N_2PbBr_3$ as a light-harvesting material for perovskite solar cell application

Azliana Ramli^{a,*}, Mohd Nazari Abu Bakar^a, Nafisah Osman^a, Wan Izhan Nawawi Wan Ismail^{a,b}, Suhaila Sepeai^c

^aFaculty of Applied Sciences, Universiti Teknologi MARA, 02600 Arau, Perlis, Malaysia

^bDepartment of Chemistry, University of York, Heslington, York, YO10 5DD, United Kingdom

^cSolar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

Corresponding author (*)

*Postal address: Faculty of Applied Sciences, Universiti Teknologi MARA, 02600 Arau, Perlis, Malaysia

*E-mail: azliana@perlis.uitm.edu.my

*Phone no.: +6 04 988 2784

*Fax no.: +6 04 988 2026

Abstract

In this work, a novel 2D hybrid perovskite of $C_6H_8N_2PbBr_3$ was alternatively produced by reflux method under ambient air condition. The produced material was systematically characterized as potential light-harvesting material for perovskite solar cells (PSCs). The optical energy band measured using UV-Vis was 2.57 eV. The existence of NH_3^+ , pyridinium and Ar-H ions in the produced sample was confirmed by FTIR analysis. Bulk conductivity of the hybrid perovskite sandwiched with TiO_2 layer measured by electrochemical impedance spectroscopy was $5.79 \times 10^{-8} \text{ S cm}^{-1}$. The sandwiched sample produced $V_{DC(max)}$ value of 0.65 V under sunlight irradiance. The value sustained over 720 h with $\pm 0.07 \text{ V}$. Overall, the performance of the produced novel 2D hybrid meets the requirements as a light-harvesting material.

Keywords: amino(methyl)pyridine, hybrid perovskite, nitrogen-less method, solar cell, semiconductors, solar energy materials

Download English Version:

<https://daneshyari.com/en/article/8012618>

Download Persian Version:

<https://daneshyari.com/article/8012618>

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