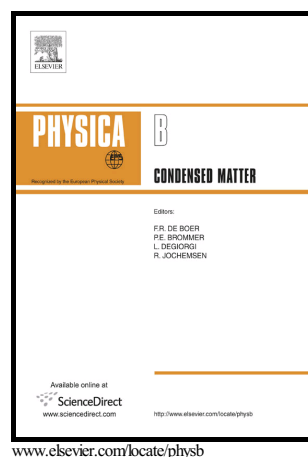


Air-stable layered bismuth-based perovskite-like materials: Structures and semiconductor properties

Zhijie Ma, Sun Peng, Yihui Wu, Xiang Fang, Xin Chen, Xuguang Jia, Kezhi Zhang, Ningyi Yuan, Jianning Ding, Ning Dai



PII: S0921-4526(17)30572-0
DOI: <http://dx.doi.org/10.1016/j.physb.2017.08.079>
Reference: PHYSB310219

To appear in: *Physica B: Physics of Condensed Matter*

Received date: 2 June 2017
Revised date: 24 August 2017
Accepted date: 29 August 2017

Cite this article as: Zhijie Ma, Sun Peng, Yihui Wu, Xiang Fang, Xin Chen, Xuguang Jia, Kezhi Zhang, Ningyi Yuan, Jianning Ding and Ning Dai, Air-stable layered bismuth-based perovskite-like materials: Structures and semiconductor properties, *Physica B: Physics of Condensed Matter*, <http://dx.doi.org/10.1016/j.physb.2017.08.079>

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 galley proof before it is published in its final citable 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.

Air-stable layered bismuth-based perovskite-like materials: structures and semiconductor properties

Zhijie Ma^{*1}, Sun Peng^{*1,2}, Yihui Wu^{*3}, Xiang Fang¹, Xin Chen², Xuguang Jia¹, Kezhi Zhang¹,
Ningyi Yuan^{*1} and Jianning Ding^{*1}, Ning Dai²

¹School of Materials Science and Engineering, Jiangsu Collaborative Innovation Center of Photovoltaic Science and Engineering, Jiangsu Province Cultivation base for State Key

¹Laboratory of Photovoltaic Science and Technology, Changzhou University, Changzhou, 213164, Jiangsu, China

²National Laboratory for Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, Shanghai 200083, China.

³Sichuan Research Center of New Materials, Institute of Chemical Materials, China Academy of Engineering Physics, 596 Yinhe Road, Shuangliu, Chengdu 610200, Sichuan, China.

[†]These authors contributed equally to this work.

^{*} Corresponding authors: dingjn@cczu.edu.cn; nyuan@cczu.edu.cn.

Abstract

Metal halide perovskites are newcomer optoelectronic materials that have attracted enormous attention and single crystal offers better stability and optical electronic performance. In this background, a lead-free, air-stable, effective material of bismuth halide perovskite is highly sought-after. Herein, millimeter-scale single-crystal $A_3Bi_2I_9$ ($A = Cs^+$ or methylammonium (MA^+)) perovskites were synthesized via a facile hydrothermal approach and characterized by various means. Raman spectroscopy results in a layered cleavage distribution. Spin-coating of these compounds produced thin films with uniform surface morphologies, high carrier mobility and superior stabilities. Trivalent-bismuth-based materials were used as the photoactive layer in

Download English Version:

<https://daneshyari.com/en/article/5491714>

Download Persian Version:

<https://daneshyari.com/article/5491714>

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