

## The Effect of Phase of Alumina on Crystallinity of Perovskite Layer in Perovskite Solar Cells

N. Jahanbakhshi Zadeh<sup>1</sup>, M. Borhani Zarandi<sup>\*1</sup>, M. R. Nateghi<sup>2</sup>

1- Faculty of Physics, Yazd University, Yazd, Iran

2- Department of Chemistry, Azad Islamic University of Yazd, Yazd, Iran

(Received: 18/10/2017, in revised form: 19/2/2018)

**Abstract:** Organic-inorganic perovskite ( $\text{CH}_3\text{NH}_3\text{PbI}_3$ ), due to an appropriate energy gap to absorb sunlight, is used as an absorbent layer in third generation solar cells. Crystallinity of light absorbing layer plays an important role in the performance of perovskite solar cells and substrate plays an important role on crystallinity of light absorbing layer. In superstructure solar cells, alumina (aluminum oxide) is used as the substrate of light absorbing layer. In this paper, alpha and gamma aluminum oxide are used as the substrate of perovskite layer. The effect of this work on the crystallinity of perovskite layer and parameters that affect the performance of solar cells have been investigated. It was found that by taking into account all the parameters that affect the performance of solar cells, alpha phase aluminum oxide to the gamma phase is more suitable for use in perovskite solar cells that fabricated by two step deposition.

**Keywords:** Aluminum oxide; crystallinity; deposition; Perovskite and Solar Cell.

متن فارسی اصل مقاله از صفحه ۷۸۹ تا ۷۹۶ در این شماره به چاپ رسیده است.

---

\*Corresponding Author: Tel.: 09131520036, Fax: 03538200132, E-mail: mborhani@yazd.ac.ir