

Accepted Manuscript

Title: Influence of Nb-doped TiO₂ blocking layers as a cascading band structure for enhanced photovoltaic properties

Authors: Bon-Ryul Koo, Dong-Hyeun Oh, Hyo-Jin Ahn

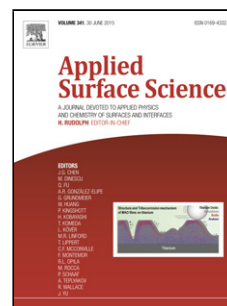
PII: S0169-4332(17)33011-8
 DOI: <https://doi.org/10.1016/j.apsusc.2017.10.078>
 Reference: APSUSC 37421

To appear in: *APSUSC*

Received date: 7-7-2017
Revised date: 7-9-2017
Accepted date: 11-10-2017

Please cite this article as: Bon-Ryul Koo, Dong-Hyeun Oh, Hyo-Jin Ahn, Influence of Nb-doped TiO₂ blocking layers as a cascading band structure for enhanced photovoltaic properties, Applied Surface Science <https://doi.org/10.1016/j.apsusc.2017.10.078>

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.



Influence of Nb-doped TiO₂ blocking layers as a cascading band structure for enhanced photovoltaic properties

Bon-Ryul Koo¹, Dong-Hyeun Oh², and Hyo-Jin Ahn^{1,2*}

¹*Program of Materials Science & Engineering, Convergence Institute of Biomedical Engineering and Biomaterials, Seoul National University of Science and Technology, Seoul 01811, Korea*

²*Department of Materials Science and Engineering, Seoul National University of Science and Technology, Seoul 01811, Korea*

*Corresponding authors. Tel.: +82538103093; fax: +82029736657

Email addresses: hjahn@seoultech.ac.kr

Highlights

- Nb-doped TiO₂ (Nb-TiO₂) layers prepared by using horizontal ultrasonic spray pyrolysis deposition.
- Nb-TiO₂ layers formed a cascading band structure to efficiently suppress the electron recombination.
- Nb-TiO₂ layers resulted in the increase of the electrical conductivity by the Nb doping into TiO₂.
- A novel blocking layer for improving the photovoltaic performances of dye-sensitized solar cells.

Abstract

Nb-doped TiO₂ (Nb-TiO₂) blocking layers (BLs) were developed using horizontal ultrasonic spray pyrolysis deposition (HUSPD). In order to improve the photovoltaic properties of the dye-sensitized solar cells (DSSCs), we optimized the Nb doping level of the Nb-TiO₂ BLs by controlling the Nb/Ti molar ratio (0, 5, 6, and 7) of the precursor solution for

Download English Version:

<https://daneshyari.com/en/article/7836158>

Download Persian Version:

<https://daneshyari.com/article/7836158>

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