

UC Berkeley

UC Berkeley Previously Published Works

Title

Multilayer ReS₂ lateral p-n homojunction for photoemission and photodetection

Permalink

<https://escholarship.org/uc/item/8qk8r2jb>

Journal

Applied Physics Express, 9

ISSN

1882-0778 1882-0786

Authors

Najmzadeh, Mohammad
Ko, Changyun
Wu, Kedi
[et al.](#)

Publication Date

2016-03-30

DOI

10.7567/APEX.9.055201

Peer reviewed

LETTER

Multilayer ReS₂ lateral p–n homojunction for photoemission and photodetection

Mohammad Najmzadeh¹, Changhyun Ko², Kedi Wu³, Sefaattin Tongay³ and Junqiao Wu²

Published 30 March 2016 • © 2016 The Japan Society of Applied Physics

Applied Physics Express, Volume 9, Number 5

najmzadeh@ieee.org

¹ Electrical Engineering and Computer Sciences, University of California, Berkeley, CA 94720, U.S.A.

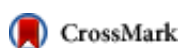
² Department of Materials Science and Engineering, University of California, Berkeley, CA 94720, U.S.A.

³ Department of Materials Science, Arizona State University, Tempe, AZ 85287, U.S.A.

Received 22 February 2016

Accepted 10 March 2016

Published 30 March 2016



Mohammad Najmzadeh *et al* 2016 *Appl. Phys. Express* **9** 055201

<http://dx.doi.org/10.7567/APEX.9.055201>

Buy this article in print

Abstract

In this paper, a multilayer ReS₂ p–n homojunction is fabricated on an oxidized Si substrate, and its photoemission under a forward bias and its photodetection under a reverse bias are reported for the first time. Au nanoparticles were used to make lateral p–n homojunctions. The device shows room temperature photoemission in the IR range, and in the photodetector mode, it shows a 0.41 A/W responsivity under illumination by a 660 nm red laser.