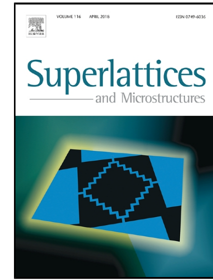
Accepted Manuscript



Bending-strain-induced localized density of states in amorphous indium-gallium-zinc-oxide thin-film transistors

Sola Woo, Minsuk Kim, Hyungon Oh, Kyoungah Cho, Sangsig Kim

PII: S0749-6036(18)30768-7

DOI: 10.1016/j.spmi.2018.05.009

Reference: YSPMI 5676

To appear in: *Superlattices and Microstructures*

Received Date: 13 April 2018

Revised Date: 07 May 2018

Accepted Date: 08 May 2018

Please cite this article as: Sola Woo, Minsuk Kim, Hyungon Oh, Kyoungah Cho, Sangsig Kim, Bending-strain-induced localized density of states in amorphous indium-gallium-zinc-oxide thin-film transistors, *Superlattices and Microstructures* (2018), doi: 10.1016/j.spmi.2018.05.009

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.

ACCEPTED MANUSCRIPT

Bending-strain-induced localized density of states in amorphous indium-gallium-zinc-oxide thin-film transistors

Sola Woo, Minsuk Kim, Hyungon Oh, Kyoungah Cho and Sangsig Kim*

Department of Electrical Engineering, Korea University, 145 Anam-ro, Seongbuk-gu, Seoul 02841, Republic of Korea

+ Corresponding author. Tel: +82-2-3290-3245; Fax: +82-2-3290-3894

E-mail address: sangsig@korea.ac.kr

Abstract

In this study, we examine the electrical characteristics of amorphous indium-gallium-zinc-oxide (a-IGZO) thin-film transistors (TFTs) under bending strains by TCAD and SPICE simulations. Bending strains induce modifications of the localized density of states (DOS) in a-IGZO channel materials, which, in turn, cause changes in the electrical characteristics of the TFTs. The bending-strain-induced localized DOS, the above-threshold current, subthreshold current, and field-effect mobility are analyzed with the calibration of the current-versus-voltage curves of a reference device by TCAD simulation. Moreover, the device parameters that affect the device performance in SPICE simulation are calibrated to aid in SPICE modeling of the strained oxide TFTs.

Keywords- a-IGZO TFT, Bending strain, Flexible display, TCAD simulation

Download English Version:

https://daneshyari.com/en/article/7938494

Download Persian Version:

https://daneshyari.com/article/7938494

Daneshyari.com