

Accepted Manuscript

Optical and electrical properties of gallium doped indium tin oxide optimized for low deposition temperature applications

Andrej Čampa, Marko Berginc, Katarina Vojisavljević, Barbara Malič, Peter Panjan, Marko Topič

PII: S0040-6090(16)30743-X
DOI: doi: [10.1016/j.tsf.2016.11.028](https://doi.org/10.1016/j.tsf.2016.11.028)
Reference: TSF 35630

To appear in: *Thin Solid Films*

Received date: 2 February 2016
Revised date: 8 November 2016
Accepted date: 14 November 2016



Please cite this article as: Andrej Čampa, Marko Berginc, Katarina Vojisavljević, Barbara Malič, Peter Panjan, Marko Topič, Optical and electrical properties of gallium doped indium tin oxide optimized for low deposition temperature applications, *Thin Solid Films* (2016), doi: [10.1016/j.tsf.2016.11.028](https://doi.org/10.1016/j.tsf.2016.11.028)

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.

Optical and electrical properties of gallium doped indium tin oxide optimized for low deposition temperature applications

**Andrej Čampa^{a,*}, Marko Berginc^a, Katarina Vojisavljevič^b, Barbara Malič^b,
Peter Panjan^b, Marko Topič^a**

^aUniversity of Ljubljana, Faculty of Electrical Engineering, Laboratory of Photovoltaics and Optoelectronics, Tržaška cesta 25, 1000 Ljubljana, Slovenia

^bJožef Stefan Institute, Jamova cesta 39, 1000 Ljubljana, Slovenia

(*e-mail: andrej.campa@fe.uni-lj.si)

Abstract:

In optoelectronic and photovoltaic devices, transparent conductive oxides are important in establishing a good electrical contact while minimizing optical losses over a broad range of wavelengths (400–1200 nm). To date, research has focused on $\text{In}_2\text{O}_3 - \text{SnO}_2$ (ITO) films. In this paper, we report on a study of Ga-doped ITO (GITO) films, which in contrast to standard ITO 90/10 (*i.e.* In:Sn = 90:10) films contain less In. Initially, we describe the development of a multicomponent Ga-In-Sn oxide target with a Ga:In:Sn ratio of 4:64:32, which was used in a radio-frequency sputtering system to deposit GITO thin films on glass substrates. Furthermore, we describe the microstructural/structural (scanning electron microscopy and X-ray diffraction spectroscopy), optical (wavelength dependent complex refractive indices) and electrical (resistivity, mobility, free carrier density) measurements used to optimize sputtering conditions and post-annealing processing. As well as achieving an optimized/improved GITO thin film deposited at high substrate and annealing temperatures, we obtained promising thin

Download English Version:

<https://daneshyari.com/en/article/5466411>

Download Persian Version:

<https://daneshyari.com/article/5466411>

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