

Accepted Manuscript

X-ray photoelectron spectroscopy studies of electronic structure of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$ and $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ epitaxial film surfaces and resistive switchings in high temperature superconductor-based heterostructures

N.A. Tulina, A.A. Ivanov, A.N. Rossolenko, I.M. Shmytko, A.M. Ionov, R.N. Mozhchil, S.I. Bozhko, I.Yu. Borisenko, V.A. Tulin

PII: S0167-577X(17)30827-3
DOI: <http://dx.doi.org/10.1016/j.matlet.2017.05.091>
Reference: MLBLUE 22666

To appear in: *Materials Letters*

Received Date: 11 April 2017
Revised Date: 22 May 2017
Accepted Date: 23 May 2017

Please cite this article as: N.A. Tulina, A.A. Ivanov, A.N. Rossolenko, I.M. Shmytko, A.M. Ionov, R.N. Mozhchil, S.I. Bozhko, I.Yu. Borisenko, V.A. Tulin, X-ray photoelectron spectroscopy studies of electronic structure of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$ and $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ epitaxial film surfaces and resistive switchings in high temperature superconductor-based heterostructures, *Materials Letters* (2017), doi: <http://dx.doi.org/10.1016/j.matlet.2017.05.091>

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.



**X-ray photoelectron spectroscopy studies of electronic structure of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$
and $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ epitaxial film surfaces and resistive switchings in high
temperature superconductor-based heterostructures**

N.A. Tulina¹, A.A. Ivanov³, A.N. Rossolenko¹, I.M. Shmytko¹, A.M. Ionov¹, R.N.
Mozhchil^{3,1}, S.I. Bozhko¹, I.Yu. Borisenko², V.A. Tulin²

¹ Institute of Solid State Physics, Russian Academy of Sciences, Chernogolovka,
tulina@issp.ac.ru

²Institute of Microelectronics Technology and High Purity Materials, Russian Academy
of Sciences, Chernogolovka

³National Research Nuclear University MEPhI, Moscow

Abstract

Bipolar effect of resistive switchings (BERS) in epitaxial film-based heterostructures $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$ and $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ is investigated in the paper using the fundamental properties of the HTSC parent compounds - antiferromagnetic Mott insulators, which exhibiting a transition between a metal and an insulator owing to oxygen doping. The studies of electronic structure of the NCCO and YBCO epitaxial films surfaces by XPS and AFM have shown that the surface layer (~30 nm) doped with oxygen is changing from metal (in a film bulk) to insulate state on the surface. The current-voltage characteristics of BERS devices obey a diode-like model upon the approach based on the double-diode equation.

Keywords: Interface structures; X-ray techniques; XPS; Bipolar resistive switchings; Superconductors; Oxygen vacancies

Download English Version:

<https://daneshyari.com/en/article/5463008>

Download Persian Version:

<https://daneshyari.com/article/5463008>

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