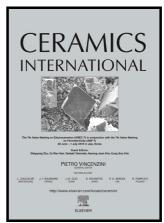
## Author's Accepted Manuscript

Change of the properties of nanostructured MoO<sub>3</sub> thin films using gamma-ray irradiation

F. Chandoul, A. Boukhachem, F. Hosni, H. Moussa, M.S. Fayache, M. Amlouk, R. Schneider



www.elsevier.com/locate/ceri

PII: S0272-8842(18)30898-8

DOI: https://doi.org/10.1016/j.ceramint.2018.04.040

Reference: CERI17957

To appear in: Ceramics International

Received date: 5 February 2018 Revised date: 4 April 2018 Accepted date: 5 April 2018

Cite this article as: F. Chandoul, A. Boukhachem, F. Hosni, H. Moussa, M.S. Fayache, M. Amlouk and R. Schneider, Change of the properties of nanostructured MoO<sub>3</sub> thin films using gamma-ray irradiation, *Ceramics International*, https://doi.org/10.1016/j.ceramint.2018.04.040

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 galley proof before it is published in its final citable 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**

# Change of the properties of nanostructured MoO<sub>3</sub> thin films using gamma-ray irradiation

F. Chandoul<sup>a,c</sup>, A. Boukhachem<sup>b</sup>, F. Hosni<sup>c</sup>, H. Moussa<sup>d</sup>, M.S. Fayache<sup>a,c</sup>, M. Amlouk<sup>b</sup>, R. Schneider<sup>d</sup>

<sup>a</sup>Faculty of Mathematical, Physical and Natural Sciences of Tunis, University of Tunis El Manar, 2092 Tunis, Tunisia.

<sup>b</sup>Research Unit on Physics of Semiconductor Devices (UPDS), Faculty of Sciences of Tunis, 2092 Tunisia.

<sup>c</sup>Laboratory of Energy and Matter for Nuclear Sciences Development, CNSTN, 2020 Sidi-Thabet, Tunisia.

<sup>d</sup>Université de Lorraine, Laboratoire Réactions et Génie des Procédés, LRGP, UMR 7274, CNRS, 1 rue Grandville, BP 20451, 54001 Nancy Cedex, France.

#### **Abstract**

Thin films of Molybdenum trioxide (MoO<sub>3</sub>) were deposited on glass substrates by the spray pyrolysis at 500 °C and the samples were then exposed to gamma  $\gamma$  radiation doses by  $^{60}$ Co radioisotope at different doses (0.1, 10 and 50 kGy). The effects of gamma irradiation on the properties of MoO<sub>3</sub> thin films were investigated. The XRD pattern and Raman spectroscopy of as-deposited MoO<sub>3</sub> samples show an orthorhombic structure related to  $\alpha$ -MoO<sub>3</sub> with (0k0) preferred orientations. Uv-vis spectra were studied to investigate the transmission measurements of MoO<sub>3</sub> films. The optical energy band gap and Urbach energy were found to be gamma-dose dependent. Photoluminescence measurements at room temperature using 300 nm wavelength excitation were investigated. SEM images indicate the formation of  $\alpha$ -MoO<sub>3</sub> nanorods.

**Keywords:** MoO<sub>3</sub> Oxide; Thin film deposition; Spray Pyrolysis; Gamma Irradiation

#### 1. Introduction

#### Download English Version:

# https://daneshyari.com/en/article/7887056

Download Persian Version:

https://daneshyari.com/article/7887056

<u>Daneshyari.com</u>