

Accepted Manuscript

Annealing effects on the structural and electrical properties of sputtered tungsten thin films

Andreas Kaidatzis, Vassilios Psycharis, Konstantina Mergia, Dimitrios Niarchos

PII: S0040-6090(16)30615-0  
DOI: doi: [10.1016/j.tsf.2016.10.027](https://doi.org/10.1016/j.tsf.2016.10.027)  
Reference: TSF 35551

To appear in: *Thin Solid Films*

Received date: 26 February 2016  
Revised date: 22 September 2016  
Accepted date: 11 October 2016



Please cite this article as: Andreas Kaidatzis, Vassilios Psycharis, Konstantina Mergia, Dimitrios Niarchos, Annealing effects on the structural and electrical properties of sputtered tungsten thin films, *Thin Solid Films* (2016), doi: [10.1016/j.tsf.2016.10.027](https://doi.org/10.1016/j.tsf.2016.10.027)

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.

# Annealing effects on the structural and electrical properties of sputtered tungsten thin films

October 11, 2016

Andreas Kaidatzis<sup>1</sup>, Vassilios Psycharis<sup>1</sup>, Konstantina Mergia<sup>2</sup>, and Dimitrios Niarchos<sup>1</sup>

<sup>1</sup>Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Aghia Paraskevi, Greece

<sup>2</sup>Institute of Nuclear and Radiological Science and Technology, Energy and Safety, NCSR Demokritos, Aghia Paraskevi, Greece

Corresponding author: a.kaidatzis@inn.demokritos.gr

## Abstract

We report on the structural and electrical characterization of sputter-deposited tungsten (W) films, having thicknesses between 1.5 and 100 nm, before and after annealing in the temperature range between 200 and 800°C. In the as-deposited the  $\beta$ -W phase prevails, for all the thicknesses studied. A  $\beta$ -W to  $\alpha$ -W transition occurs upon annealing at a temperature that depends on film thickness and it is accompanied by a corresponding resistivity drop. Films with thickness lower or equal to 8 nm are composed predominately of  $\beta$ -W phase after annealing at 300°C, while the  $\alpha$ -W phase prevails after annealing at 450°C. Films with thickness higher or equal to 10 nm remain at the

Download English Version:

<https://daneshyari.com/en/article/5466472>

Download Persian Version:

<https://daneshyari.com/article/5466472>

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