

Accepted Manuscript

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PII: S0257-8972(17)31125-8
DOI: doi:[10.1016/j.surfcoat.2017.11.001](https://doi.org/10.1016/j.surfcoat.2017.11.001)
Reference: SCT 22849

To appear in: *Surface & Coatings Technology*

Received date: 6 June 2017
Revised date: 8 September 2017
Accepted date: 1 November 2017

Please cite this article as: C.F. Almeida Alves, Catalina Mansilla, L. Pereira, F. Paumier, T. Girardeau, S. Carvalho, Influence of magnetron sputtering conditions on the chemical bonding, structural, morphological and optical behavior of Ta_{1-x}O_x coatings. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Sct(2017), doi:[10.1016/j.surfcoat.2017.11.001](https://doi.org/10.1016/j.surfcoat.2017.11.001)

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INFLUENCE OF MAGNETRON SPUTTERING CONDITIONS ON THE CHEMICAL BONDING, STRUCTURAL, MORPHOLOGICAL AND OPTICAL BEHAVIOR OF Ta_{1-x}O_x COATINGS

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ABSTRACT

In this work Ta_{1-x}O_x coatings were deposited by DC magnetron sputtering in an Ar+O₂ atmosphere. The influence of the oxygen partial pressure on the morphology (SEM), structure (XRD), chemical bonding (XPS), thermal oxidation and optical response (FTIR and spectroscopic ellipsometry) of Ta-based films was study.

Cross-section morphology revealed that the increase of oxygen content in the coatings change the columnar morphology to featureless. Likewise, structural results showed that the small increase of oxygen amount leads to a change from Ta stable phase (α -Ta: bcc) to a mixture of phases achieving oxide phases with large amounts of oxygen. Whereas at room temperature the oxide coatings mainly revealed an amorphous character, at 700°C

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