

## Accepted Manuscript

Nanoindentation of CVD Al<sub>2</sub>O<sub>3</sub> hard coatings at elevated temperatures

Marisa Rebelo de Figueiredo, Manuel D. Abad, Adrian J. Harris, Christoph Czettl, Christian Mitterer, Peter Hosemann

PII: S0040-6090(15)00114-5  
DOI: doi: [10.1016/j.tsf.2015.01.069](https://doi.org/10.1016/j.tsf.2015.01.069)  
Reference: TSF 34076

To appear in: *Thin Solid Films*

Received date: 17 November 2014  
Revised date: 16 December 2014  
Accepted date: 6 January 2015



Please cite this article as: Marisa Rebelo de Figueiredo, Manuel D. Abad, Adrian J. Harris, Christoph Czettl, Christian Mitterer, Peter Hosemann, Nanoindentation of CVD Al<sub>2</sub>O<sub>3</sub> hard coatings at elevated temperatures, *Thin Solid Films* (2015), doi: [10.1016/j.tsf.2015.01.069](https://doi.org/10.1016/j.tsf.2015.01.069)

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.

## Nanoindentation of CVD Al<sub>2</sub>O<sub>3</sub> hard coatings at elevated temperatures

Marisa Rebelo de Figueiredo <sup>1,\*a</sup>, Manuel D. Abad <sup>1</sup>,

Adrian J. Harris <sup>2</sup>, Christoph Czettel <sup>3</sup>, Christian Mitterer <sup>4,5</sup>, Peter Hosemann <sup>1</sup>

<sup>1</sup> Department of Nuclear Engineering, University of California Berkeley, 4105 Etcheverry Hall MC 1730, Berkeley, CA 94720-1730, USA

<sup>2</sup> Micro Materials Ltd., Wrexham, LL137YL, UK

<sup>3</sup> CERATIZIT Austria GmbH, A-6600 Reutte, Austria

<sup>4</sup> Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben, Franz-Josef Strasse 18, 8700 Leoben, Austria

<sup>5</sup> Materials Center Leoben Forschung GmbH, Roseggerstrasse 12, 8700 Leoben Austria

### Abstract:

Nanoindentation measurements at elevated temperatures were performed on  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> and  $\kappa$ -Al<sub>2</sub>O<sub>3</sub> hard coatings at temperatures up to 600 and 700°C, respectively. A reduction of the hardness and reduced modulus was observed for both coating systems although more accentuated for the  $\kappa$ -Al<sub>2</sub>O<sub>3</sub> coating. In addition, a comprehensive overview of guidelines on how to perform nanoindentation measurements on hard coatings at elevated temperatures is provided.

Keywords: high-temperature nanoindentation; alumina;  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>;  $\kappa$ -Al<sub>2</sub>O<sub>3</sub>; hard coating;

Download English Version:

<https://daneshyari.com/en/article/8034639>

Download Persian Version:

<https://daneshyari.com/article/8034639>

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