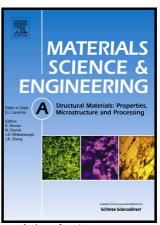
# Author's Accepted Manuscript

Reversible, high temperature softening of plasmanitrided hot-working steel studied using in situ micro-pillar compression

James P. Best, Juri Wehrs, Xavier Maeder, Johannes Zechner, Jeffrey M. Wheeler, Tobias Schär, Marcus Morstein, Johann Michler



www.elsevier.com/locate/msea

PII: S0921-5093(16)31360-0

http://dx.doi.org/10.1016/j.msea.2016.11.003 DOI:

MSA34324 Reference:

To appear in: Materials Science & Engineering A

Received date: 13 September 2016 1 November 2016 Revised date: Accepted date: 2 November 2016

Cite this article as: James P. Best, Juri Wehrs, Xavier Maeder, Johannes Zechner. Jeffrey M. Wheeler, Tobias Schär, Marcus Morstein and Johann Michler. Reversible, high temperature softening of plasma-nitrided hot-working stee studied using in situ micro-pillar compression, Materials Science & Engineering A, http://dx.doi.org/10.1016/j.msea,2016.11.003

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o 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**

# Reversible, high temperature softening of plasma-nitrided hot-working steel studied using *in situ* micro-pillar compression

James P. Best<sup>a\*</sup>, Juri Wehrs<sup>a</sup>, Xavier Maeder<sup>a</sup>, Johannes Zechner<sup>a†</sup>, Jeffrey M. Wheeler<sup>a‡</sup>, Tobias Schär<sup>b</sup>, Marcus Morstein<sup>b</sup> and Johann Michler<sup>a</sup>

<sup>a</sup> Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Mechanics of Materials and Nanostructures, Feuerwerkerstrasse 39, CH-3602 Thun, Switzerland

<sup>b</sup> PLATIT AG – Advanced Coating Systems, Eichholzstrasse 9, CH-2545 Selzach, Switzerland

<sup>†</sup> Present address: KAI – Kompetenzzentrum Automobil- und Industrieelektronik GmbH,

Europastrasse 8, 9524 Villach, Austria

<sup>‡</sup>Present address: Laboratory for Nanometallurgy, Department of Materials Science, ETH

Zürich, Vladimir-Prelog-Weg 5, CH-8093 Zürich, Switzerland

\* Corresponding author, tel: +41 58 765 6305, email: james.best@empa.ch

#### Abstract

The high temperature mechanical behaviour of plasma-nitrided steel is investigated at high temperatures using *in situ* high temperature micro-pillar compression. It is observed that the strengthening brought about by nitriding is steadily reduced when increasing the testing temperature, until it is completely negated at 500 °C.

Keywords: Hot-working steel; Plasma-nitriding; Micromechanics; High temperature; FIB

### Download English Version:

# https://daneshyari.com/en/article/5456792

Download Persian Version:

https://daneshyari.com/article/5456792

<u>Daneshyari.com</u>