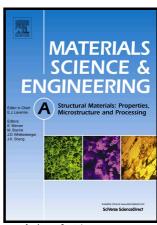
## Author's Accepted Manuscript

Delamination toughening assisted by phosphorus in medium-carbon low-alloy steels with ultrafine elongated grain structures

Xiaohua Min, Yuuji Kimura, Takashi Kimura, Kaneaki Tsuzaki



www.elsevier.com/locate/msea

PII: S0921-5093(15)30440-8

DOI: http://dx.doi.org/10.1016/j.msea.2015.09.102

Reference: MSA32828

To appear in: Materials Science & Engineering A

Received date: 2 August 2015 Revised date: 26 September 2015 Accepted date: 26 September 2015

Cite this article as: Xiaohua Min, Yuuji Kimura, Takashi Kimura and Kaneak Tsuzaki, Delamination toughening assisted by phosphorus in medium-carbol low-alloy steels with ultrafine elongated grain structures, *Materials Science & Engineering A*, http://dx.doi.org/10.1016/j.msea.2015.09.102

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

Delamination toughening assisted by phosphorus in medium-carbon

low-alloy steels with ultrafine elongated grain structures

Xiaohua Min<sup>a, b</sup>, Yuuji Kimura<sup>b</sup>\*, Takashi Kimura<sup>b</sup> and Kaneaki Tsuzaki<sup>b,c</sup>

<sup>a</sup>School of Materials Science and Engineering, Dalian University of Technology, Dalian 116024,

P.R.China

<sup>b</sup>National Institute for Materials Science, 1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, Japan

<sup>c</sup>Department of Mechanical Engineering, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka

819-0395, Japan

\*Corresponding author

TEL: +81-29-859-2123

FAX:+81-29-859-2101

E-mail addresses: Kimura. Yuuji@nims.go.jp

Abstract

The effect of phosphorus (P) on delamination toughening was examined for

0.4%C-1%Cr-0.7%Mn-0.2%Mo steels (mass%) comprised of ultrafine elongated grain (UFEG)

structures with strong <110>//RD fiber textures. The UFEG structures evolved through the

plastic deformation of tempered martensitic structures by multi-pass caliber rolling at a

temperature of 773 K (warm tempforming, WTF). The addition of P, up to 0.093% (mass%),

had little influence on the evolution of the UFEG structure and the strength of the steels.

Although the tensile ductility and upper-shelf energy showed a slight tendency to decrease as

1

## Download English Version:

## https://daneshyari.com/en/article/7976460

Download Persian Version:

https://daneshyari.com/article/7976460

<u>Daneshyari.com</u>