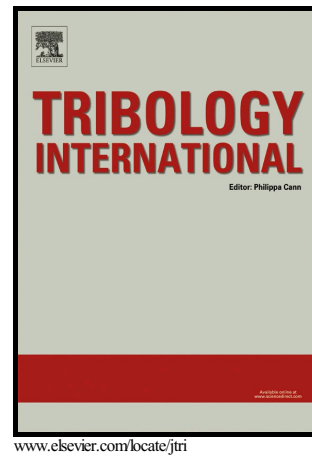


Author's Accepted Manuscript

Enhanced strength and wear resistance of a titanium-oxygen alloy with core-shell network structure

Y.S. Zhang, Z. Han, X. Wang, W. Zhang, W.T. Huo



PII: S0301-679X(17)30130-5
DOI: <http://dx.doi.org/10.1016/j.triboint.2017.03.013>
Reference: JTRI4641

To appear in: *Tribology International*

Received date: 13 December 2016
Revised date: 7 March 2017
Accepted date: 9 March 2017

Cite this article as: Y.S. Zhang, Z. Han, X. Wang, W. Zhang and W.T. Huo, Enhanced strength and wear resistance of a titanium-oxygen alloy with core-shell network structure, *Tribology International* <http://dx.doi.org/10.1016/j.triboint.2017.03.013>

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 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

Enhanced strength and wear resistance of a titanium-oxygen alloy with core-shell network structure

Y.S. Zhang^{a,*}, Z. Han^b, X. Wang^a, W. Zhang^a, W.T. Huo^a

^a Northwest Institute for Nonferrous Metal Research, Xi'an Shaanxi 710016, China

^b Shenyang National Laboratory for Materials Science, Institute of Metal Research, CAS, Shenyang 110016, China

* Corresponding author. Tel.: +86 29 86221498; fax: +86 29 86231103. *E-mail address*: y.sh.zhang@163.com (Y.S. Zhang)

Abstract:

An enhanced sliding wear resistance of a novel core-shell Ti-O (CS-TiO) structured alloy combined with superior compressive properties relative to a commercial pure Ti (CP-Ti) compact is reported. The wear volume, area fraction of transfer layer in the contact zone and O content on the worn scars ($O_{at.}\%$) were determined under various conditions. For CS-TiO, the prominent enhancement in wear resistance by more than 2 times is related to the increased $O_{at.}\%$ and improved yield strength, from 420 MPa in CP-Ti to 1210 MPa, which can effectively prevent it from experiencing serious adhesion and plastic deformation respectively. The study opens a new sight for microstructural design of anti-wear Ti alloys and composites: promoting tribo-oxidation reaction as well as improving strength.

Keywords: Transfer; Abrasive; Adhesive; Wear

1. Introduction

Download English Version:

<https://daneshyari.com/en/article/4986048>

Download Persian Version:

<https://daneshyari.com/article/4986048>

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