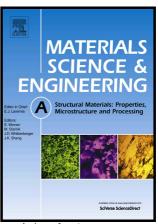
## Author's Accepted Manuscript

Strengthening mechanisms of nano-grained commercial pure titanium processed by accumulative roll bonding

Arash Fattah-alhosseini, Mohsen K. Keshavarz, Yousef Mazaheri, Ali Reza Ansari, Mohsen Karimi



www.elsevier.com/locate/msea

PII: S0921-5093(17)30377-5

DOI: http://dx.doi.org/10.1016/j.msea.2017.03.070

Reference: MSA34853

To appear in: Materials Science & Engineering A

Received date: 20 December 2016 Revised date: 17 March 2017 Accepted date: 18 March 2017

Cite this article as: Arash Fattah-alhosseini, Mohsen K. Keshavarz, Youse Mazaheri, Ali Reza Ansari and Mohsen Karimi, Strengthening mechanisms o nano-grained commercial pure titanium processed by accumulative roll bonding *Materials Science & Engineering A* http://dx.doi.org/10.1016/j.msea.2017.03.070

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

Strengthening mechanisms of nano-grained commercial pure titanium

processed by accumulative roll bonding

Arash Fattah-alhosseini<sup>1</sup>, Mohsen K. Keshavarz<sup>2</sup>, Yousef Mazaheri<sup>1</sup>, Ali Reza Ansari<sup>1\*</sup>, Mohsen

Karimi<sup>3</sup>

<sup>1</sup>Department of Materials Engineering, Bu-Ali Sina University, Hamedan 65178-38695, Iran

<sup>2</sup>Department of Mining & Materials Engineering, McGill University, Montreal, Quebec (QC),

Canada, H3A 0C5

<sup>3</sup>Department of Materials science and Engineering, Shahrood University of technology, shahrood

36199-95161, Iran

\*Corresponding author. Fax: +98 8138257400. a.r.ansari.msc@gmail.com

**Abstract** 

Grain-refining process in commercial pure titanium was performed by room-temperature

accumulative roll bonding. The study on the microstructural evaluations showed a reduction

in grain size from about 45 µm in the untreated (annealed) sample to about 90 nm after six

cycles of accumulative roll bonding, a reduction factor of about 500 times. The yield strength

of the nano-grained commercially pure titanium after the sixth cycle, 799 MPa, was about

three times higher than that of the as-received sample, 284 MPa. Different strengthening

mechanisms during the accumulative roll bonding processing of the commercially pure Ti

were assessed, and the contribution of each mechanism to the yield strength improvement

was quantitatively calculated. The results showed that the calculated yield strength (834

MPa) for a six-cycle processed sample is close to the measured value (799 MPa).

1

## دريافت فورى ب

## ISIArticles مرجع مقالات تخصصی ایران

- ✔ امكان دانلود نسخه تمام متن مقالات انگليسي
  - ✓ امكان دانلود نسخه ترجمه شده مقالات
    - ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
  - ✓ امكان دانلود رايگان ۲ صفحه اول هر مقاله
  - ✔ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
    - ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات