

## Accepted Manuscript

High pressure torsion-induced amorphous phase in a multilayer V-10Ti-5Cr / Zr-2.5Nb / V-10Ti-5Cr hybrid material

S.O. Rogachev, R.V. Sundeev, N.Yu. Tabachkova

PII: S0167-577X(18)31494-0  
DOI: <https://doi.org/10.1016/j.matlet.2018.09.112>  
Reference: MLBLUE 24980

To appear in: *Materials Letters*

Received Date: 21 August 2018  
Revised Date: 10 September 2018  
Accepted Date: 19 September 2018

Please cite this article as: S.O. Rogachev, R.V. Sundeev, N.Yu. Tabachkova, High pressure torsion-induced amorphous phase in a multilayer V-10Ti-5Cr / Zr-2.5Nb / V-10Ti-5Cr hybrid material, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.09.112>



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.

**High pressure torsion-induced amorphous phase in a multilayer****V-10Ti-5Cr / Zr-2.5Nb / V-10Ti-5Cr hybrid material**

S.O. Rogachev<sup>1,\*</sup>, R.V. Sundeev<sup>2</sup>, N.Yu. Tabachkova<sup>1</sup>

<sup>1</sup>*The National University of Science and Technology "MISIS", 4 Leninsky pr., Moscow,  
119049, Russia*

<sup>2</sup>*Moscow Technological University "MIREA", 78 Vernadskogo av., Moscow, 119454,  
Russia*

\*Corresponding author. Tel.: +7 495 9550089; fax: +7 495 2304622; e-mail:  
csaap@mail.ru

**Abstract.** A layered metallic hybrid material based on vanadium and zirconium alloys was obtained by high pressure torsion (HPT) at room temperature. HPT of the initial three-layer V-10Ti-5Cr alloy / Zr-2.5Nb alloy / V-10Ti-5Cr alloy billet resulted in a "mixing" of the zirconium alloy layer with vanadium alloy layers. A mixed nanostructure consisting of elongated grains (fragments) with a width of 40-50 nm was formed in the zirconium / vanadium alloy layers of the hybrid. Partial amorphization in the zirconium alloy layer of the hybrid material was found.

**Keywords:** Hybrid materials; Multilayer structure; Metals and alloys; High pressure torsion; Interfaces; Amorphous materials

## **1 Introduction**

The high pressure torsion (HPT) method makes it possible to achieve very high degrees of shear strain in metallic materials under high pressure conditions (1-20 GPa

Download English Version:

<https://daneshyari.com/en/article/11026579>

Download Persian Version:

<https://daneshyari.com/article/11026579>

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