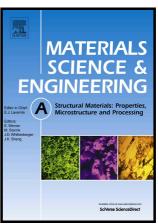
## Author's Accepted Manuscript

Characterization of different forms of Zr-2.5Nb samples before and after neutron irradiation

Chinthaka Silva, Keith Leonard, Michael Trammel, Chris Bryan



www.elsevier.com/locate/msea

PII: S0921-5093(18)30078-9

DOI: https://doi.org/10.1016/j.msea.2018.01.059

Reference: MSA36013

To appear in: Materials Science & Engineering A

Received date: 9 August 2017 Revised date: 11 January 2018 Accepted date: 15 January 2018

Cite this article as: Chinthaka Silva, Keith Leonard, Michael Trammel and Chris Bryan, Characterization of different forms of Zr-2.5Nb samples before and after neutron irradiation, *Materials Science & Engineering A*, https://doi.org/10.1016/j.msea.2018.01.059

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.

CEPTED MANUSC

Characterization of different forms of Zr-2.5Nb samples before and after neutron irradiation

Chinthaka Silva\*, Keith Leonard, Michael Trammel, Chris Bryan

Oak Ridge National Laboratory, One Bethel Road, Oak Ridge, TN 3781.

Abstract

Deleterious effects of hydride precipitation on the mechanical properties of Zr-based alloy systems have

been studied for many years. Most of these studies have been conducted at high-temperature irradiation

conditions that are compatible with those in commercial reactor systems, such as light water and

pressurized water reactors. Evaluations of hydride effects on the mechanical properties of welded Zr-

2.5Nb are sparse among these reported studies. Research on the mechanical properties of Zr-based alloys

neutron irradiated at low temperatures (<100 °C) is also very rare in the literature. Since some companies

are interested in using Zr-based alloys as structural materials and in other parts such as pressure tubes in

small reactor systems, low-temperature irradiation studies of these materials are important. The current

work presents an evaluation of the tensile properties of Zr-2.5Nb welded using tungsten inert gas and

electron beam welding as a function of hydrogen charging and neutron irradiation at low temperatures

(60–100 °C).

\*\* Notice: This manuscript has been authored by UT-Battelle, LLC, under contract DE-AC05-

00OR22725 with the US Department of Energy (DOE). The US government retains and the publisher, by

accepting the article for publication, acknowledges that the US government retains a nonexclusive, paid-

up, irrevocable, worldwide license to publish or reproduce the published form of this manuscript, or allow

others to do so, for US government purposes. DOE will provide public access to these results of federally

sponsored research in accordance with the DOE Public Access Plan (http://energy.gov/downloads/doe-

public-access-plan).

\*Corresponding author: C. M. Silva, silvagw@ornl.gov, telephone +1-865 574 6264; fax: +1-8652413650

Key words: Zir-2.5Nb; Neutron irradiation; E-beam welding; TIG welding; Zirconium hydride

1

## Download English Version:

## https://daneshyari.com/en/article/7973517

Download Persian Version:

https://daneshyari.com/article/7973517

<u>Daneshyari.com</u>