The Minerals, Metals & Materials Society

Properties and Performance of High Temperature Alloys and Coatings 2007

February 25 – March 1, 2007 Orlando, Florida, USA

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 www.proceedings.com

ISBN: 978-0-87339-690-5

Some format issues inherent in the e-media version may also appear in this print version.

A Publication of The Minerals, Metals & Materials Society (TMS)

184 Thorn Hill Road Warrendale, Pennsylvania 15086-7528 (724) 776-9000

Visit the TMS Web site at

http://www.tms.org

Statements of fact and opinion are the responsibility of the authors alone and do not imply an opinion on the part of the officers, staff, or members of TMS. TMS assumes no responsibility for the statements and opinions advanced by the contributors to its publications or by the speakers at its programs. Registered names and trademarks, etc., used in this publication, even without specific indication thereof, are not to be considered unprotected by the law.

No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, microfilming, recording, or otherwise, without written permission from the publisher.

Printed in the United States of America

ISBN Number 978-0-87339-690-5

ISSN Number 109-9586

Authorization to photocopy for internal or personal use beyond the limits of Sections 107 and 108 of the U.S. Copyright Law is granted by TMS, provided that the base fee of \$7.00 per copy is paid directly to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923 USA, www.copyright.com. Prior to photocopying items for educational classroom use, please contact the Copyright Clearance Center, Inc.

For those organizations that have been granted a photocopy license by the Copyright Clearance Center, a separate system of payment has been arranged.

This consent does not extend to copying items for general distribution or for advertising or promotional purposes or to republishing items whole or in part in any work in any format.

Please direct republication or special copying permission requests to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923 USA; (978) 750-8400; www.copyright.com.



Copyright 2007, The Minerals, Metals & Materials Society. All rights reserved.

If you are interested in purchasing a copy of this book, or if you would like to receive the latest TMS publications catalog, please telephone (724) 776-9000, ext. 270, or (800) 759-4TMS.

COLLECTED PROCEEDINGS: STRUCTURE, EXTRACTION, PROESSING, AND PROPERTIES TABLE OF CONTENTS

Properties and Performance of High Temperature Alloys and Coatings

Single Crystal Alloys I

Simulation of the Influence of Carbides on the Permeability of Ni-Base Superalloys D. Ness, L. Thuinet, D. Bernard, and P. D. Lee	1
Diffusion Braze A Ni-Based Single Crystal Alloy: Mechanical Properties and Microstructure	11
Zengmei Koenigsmann, Ravi Shankar, and Richard Fenton Phase Relationship in the Ni-Base and Rh-Base Superalloys Mixtures Tomonori Kitashima, Hiroshi Harada, Kyoko Kawagishi, Takao Murakumo, and Akihiro Sato	21
Polycrystalline Alloys Microstructures and Tensile Properties of New Ni-Co-Base Disk Superalloys Chuanyong Cui, Yuefeng Gu, Hiroshi Harada, and T. Fukuda	27
Intermetallics and Multidiscipline	
Recent Progress on Large Ingots of High Nb Containing TiAl Alloys	37
Properties of Refractory NiAl-(Cr, Mo, Re) Alloys in Relation to Atomic Defects and Microstructures	47

Stability of an Fe-Ni-Cr-Nb-N Alloy: A Function of Short- and Long-Term Thermal	
Exposures	59
L. M. Pike, and S. K. Srivastava	
An Improved Rayleigh Number Criterion for Freckle Prediction Incorporating the Effect of Carbides	69
Yehia Youssef, Dylan Ness, Elyssa Cutler, Gerhard Fuchs, and Peter Lee	
Intragranular Precipitation Variations in Laser Deposited Waspaloy Due to	
Compositional Inhomogeneities	77
Richard Moat, Mallikarjun Karradge, Andrew Pinkerton,	
Alexis Deschamps, Francoise Bley, Lin Li, Philip Withers,	
and Michael Preuss	

Author Index

Subject Index