

MATERIALS RESEARCH SOCIETY
SYMPOSIUM PROCEEDINGS VOLUME 1519

Materials Under Extreme Environments

November 25 - 30, 2012
Boston, Massachusetts, USA

Printed from e-media with permission by:

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

ISBN: 978-1-63266-109-8

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

©Materials Research Society 2014

This reprint is produced with the permission of the Materials Research Society and Cambridge University Press.

This publication is in copyright, subject to statutory exception and to the provisions of relevant collective licensing agreements. No reproduction of any part may take place without the written permission of Cambridge University Press.

Cambridge University Press
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press
32 Avenue of the Americas, New York, NY 10013-2473, USA
www.cambridge.org

Materials Research Society
506 Keystone Drive, Warrendale, PA 15086
www.mrs.org

CODEN: MRSPDH

ISBN: 978-1-63266-109-8

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-part Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Effect of Nanoscale Species on the Behavior of Polymer Nanocomposites Subjected to Laser Pulse Heating	1
<i>Stephen F. Bartolucci, Jeffrey Warrender, Karen Supan, Jeffery Wiggins, Lawrence Labeaud</i>	
Effective Refractory Metal Alloy Barrier Layer for High Temperature Microelectronic Device Application	7
<i>A. V. Adedeji, M. R. Ross, N. Hamden, A. K. Pradhan, A. C. Ahyi, T. Isaacs-Smith</i>	
Detailed Mapping of Reaction Diagrams for Metastable Phases	15
<i>Bertil Sundqvist</i>	
Stability Study of EBC/TBC Hybrid System on Si-based Ceramics in Gas Turbines	21
<i>Jiapeng Xu, Vinod Sarin, Soumendhra Basu</i>	
Surface Acoustic Wave Devices: Materials Stability in Harsh Environments	28
<i>Denny Richter, Michal Schulz, Sergey Sakharov, Zachary J. Davis, Holger Fritze</i>	
Nanosized Thermosensors for Use in Explosions	34
<i>Hergen Eilers, Thandar Myint, Ray Gunawidjaja, Jillian Horn, James Lightstone, Christopher Milby, Demitrios Stamatis</i>	
A Breakup Model of Jetting Formation of Explosively Loaded Granular Shells	41
<i>Kun Xue</i>	
Electronic and Ionic Transport Mechanisms of Stoichiometric Lithium Niobate at High-Temperatures	47
<i>Anke Weidenfelder, Michal Schulz, Peter Fielitz, Jianmin Shi, Günter Borchardt, Klaus-Dieter Becker, Holger Fritze</i>	
Corrosion Resistance of Surface Treated Alloy 617 in High Temperature HI and H₂SO₄ Environments	54
<i>Donghoon Kim, Injin Sah, Jin Young Choi, Young Soo Kim, Hee Cheon No, Changheui Jang</i>	
High Harmonic Surface Acoustic Wave Devices for Harsh Environment Sensor Applications	60
<i>J. Justice, M. Elbaz, L. E. Rodak, D. Korakakis</i>	
Multi Scale Characterization of Stress Corrosion Cracking of Alloy X750	66
<i>Kevin Fisher, Sébastien Teyssyre, Emmanuelle A. Marquis</i>	
Micromechanical Testing of Oxidized Grain Boundaries in Nickel Alloys from Nuclear Reactors	72
<i>Sergio Lozano-Perez, Helen Dugdale, David E. J. Armstrong, Takumi Terachi, Takuyo Yamada, Edmund Tarleton, Steve G. Roberts</i>	

Effects of Erbium Alloying on the Structural and Piezoelectric Properties of Aluminum Nitride Thin Films Annealed Under Extreme Thermal Conditions.....	82
<i>V. Narang, D. Korakakis</i>	
Synthesis and Characterization of Boron-Doped Single Crystal Diamond.....	87
<i>Sunil K. Karna, D. V. Martyshkin, Yogesh K. Vohra, Samuel T. Weir</i>	
Author Index	