

**MATERIALS RESEARCH SOCIETY**  
**SYMPOSIUM PROCEEDINGS VOLUME 1576**

# **Nuclear Radiation Detection Materials**

April 1-5, 2013  
San Francisco, California, USA

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

**ISBN: 978-1-5108-0331-2**

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

©Materials Research Society 2013

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](http://www.cambridge.org)

Materials Research Society  
506 Keystone Drive, Warrendale, PA 15086  
[www.mrs.org](http://www.mrs.org)

CODEN: MRSPDH

ISBN: 978-1-5108-0331-2

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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

<b>Hydrothermal Synthesis and Characterization of ThO<sub>2</sub> , U<sub>x</sub> Th<sub>1-x</sub> O<sub>2</sub> , and UO<sub>x</sub>.....</b>	<b>1</b>
<i>Jacob Castilow, Timothy W Zens, J. Matthew Mann, Joseph W. Kolis, Colin D. McMillen, James Petrosky</i>	
<b>The Debye Temperature for Hydrothermally Grown ThO<sub>2</sub> Single Crystals.....</b>	<b>8</b>
<i>Tony D. Kelly, James C. Petrosky, John W. McClory, Timothy Zens, David Turner, J. Matthew Mann, Joseph W. Kolis, Juan A. Colón Santana, Peter A. Dowben</i>	
<b>Elemental Analysis and Current-Voltage Characteristics of LiZnP and LiZnAs Samples for Solid-State Neutron Detectors.....</b>	<b>14</b>
<i>Benjamin W. Montag, Michael A. Reichenberger, Kevin R. Arpin, Kyle A. Nelson, Philip B. Ugorowski, Douglas S. McGregor</i>	
<b>Valence Band Offset at Amorphous Boron Carbide / Silicon Interfaces .....</b>	<b>20</b>
<i>Sean W. King, Marc French, Milt Jaehmig, Markus Kuhn</i>	
<b>High Resolution X-Ray Imaging with Thin SrI2-Scintillator Screens.....</b>	<b>26</b>
<i>Leonard Alaribe, Alex Fauler, Angelica Cecilia, Tomy Dos Santos Rolo, Michael Fiederle, Arnold Burger</i>	
<b>Fabrication of High-Resolution Nuclear Detectors Using 4H-SiC n-type Epitaxial Layers .....</b>	<b>34</b>
<i>Kelvin J. Zavalla, Sandeep K. Chaudhuri, Krishna C. Mandal</i>	
<b>Lithium-containing Semiconductor Crystals for Radiation Detection .....</b>	<b>40</b>
<i>Ashley C. Stowe, Joe Cochran, Pijush Bhattacharya, Eugene Tupitsyn, Brenden Wiggins, Michael Groza, Arnold Burger</i>	
<b>Silicon Carbide Radiation Detectors: Progress, Limitations and Future Directions.....</b>	<b>49</b>
<i>Frank H. Ruddy</i>	
<b>Gamma Ray Detection with Cd<sub>0.9</sub>Zn<sub>0.1</sub>Te Based Detectors Grown Using a Te Solvent Method .....</b>	<b>62</b>
<i>Sandeep K. Chaudhuri, Kelvin J. Zavalla, Ramesh M. Krishna, Krishna C. Mandal</i>	
<b>New Flexible High Gamma Dose Dosimeter Based on Luminescent and Biodegradable Polymer Blend .....</b>	<b>68</b>
<i>T. Schimitberger, M. R. Franco, F. A. Lopes, P. S. Curti, R. F. Bianchi, L. O. Faria</i>	
<b>GaAs Pixel Detectors .....</b>	<b>74</b>
<i>A. Tyazhev, D. Budnitsky, D. Mokeev, V. Novikov, A. Zarubin, O. Tolbanov, G. Shelkov, E. Hamann, A Fauler, M. Fiederle, S. Procz</i>	
<b>Author Index</b>	