

**MATERIALS RESEARCH SOCIETY**  
**SYMPOSIUM PROCEEDINGS VOLUME 1259**

# **Graphene Materials and Devices**

April 5 – 9, 2010  
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: 978-1-61782-221-6**

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

Copyright© (2010) by the Materials Research Society  
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact the Materials Research Society  
at the address below.

Materials Research Society  
Proceedings  
506 Keystone Dr.  
Warrendale, PA 15086

Phone: 724-779-3004 x 531  
Fax: 724-779-4396

[eproceedings@mrs.org](mailto:eproceedings@mrs.org)

**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>Graphene Production with Stirred Media Mills</b> .....  | 1  |
| <i>C. Knieke, A. Berger, W. Peukert</i>  |    |
| <b>Halogen Based Surface Chemistries for Graphene Synthesis</b> .....  | 5  |
| <i>Srikanth Raghavan, Timothy C. Nelson, Tobias Denig, C. D. Stinespring</i>   |    |
| <b>Nanomachining Graphene with Ion Irradiation</b> .....   | 11 |
| <i>Jani Kotakosk, Ossi Lehtinen</i>  |    |
| <b>Dry Techniques for Epitaxial Graphene Transfer</b> .....  | 17 |
| <i>Joshua D. Caldwell, Travis J. Anderson, Karl D. Hobart, Glenn G. Jernigan,<br/>James C. Culbertson, Fritz J. Kub, Joseph L. Tedesco, Jennifer K. Hite, Michael A.<br/>Mastro, Rachael L. Myers-Ward, Charles R. Eddy Jr., Paul M. Campbell, D. Kurt<br/>Gaskill</i> |    |
| <b>Analysis of Resistance Asymmetry Due to p-n Junctions in Graphene FETs</b> .....  | 23 |
| <i>Kangmu M. Lee, Lingquan Wang, Peter M. Asbeck, Jeong-Sun Moon</i>   |    |
| <b>Growth, Characterization and Comparisons of Few-layer Boron Nitride<br/>Nanosheets and Graphene</b> .....   | 29 |
| <i>H. X. Zhang, M. Sajjad, P. X. Feng</i>  |    |
| <b>Graphene Devices Processing Using Direct Writing Laser Lithography and<br/>Electrical Properties Characteristics</b> .....  | 35 |
| <i>J. A. Leon, E. S. Alves, D. C. Elias, L. M. Moreira, T. C. Barbosa, M. A. Pimenta,<br/>F. O. Plentz</i>   |    |
| <b>First-Principles and Quantum Transport Studies of Metal-Graphene End<br/>Contacts</b> .....   | 41 |
| <i>Cheng Gong, Geunsik Lee, Weichao Wang, Bin Shan, Eric M. Vogel, Robert M.<br/>Wallace, Kyeongjae Cho</i>  |    |
| <b>Nano-patterning of Graphene Structures Using Highly Focused Beams of<br/>Gallium Ions</b> .....   | 47 |
| <i>Jacques Gierak, Damien Lucot, Abdelkarim Ouerghi, Gilles Patriarche, Eric<br/>Bourhis, Giancarlo Faini, Dominique Mailly</i>  |    |
| <b>Author Index</b>  |    |