

**MATERIALS RESEARCH SOCIETY
SYMPOSIUM PROCEEDINGS VOLUME 1178**

Semiconductor Nanowires – Growth, Size-Dependent Properties and Applications

April 13-17, 2009
San Francisco, California, USA

Printed from e-media with permission by:

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

ISBN: 978-1-61738-397-7

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

Copyright© (2009) 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

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: currans@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Electron Microscopy Characterization of Low-Temperature Growth Zn-doped TiO₂ Nanowires	1
<i>M. Eastman, H. Li, J. Jiao</i>	
Integration of a Silicon Nanowire Array into a Photovoltaic Device.....	7
<i>S. Perraud, S. Poncet, S. Noel, H. Marko, E. Rouviere, P. Thony, R. Delsol</i>	
ZnO Nano-pillar Resonators with Coaxial Bragg Reflectors	12
<i>R. Schmidt-Grund, A. Hinkel, H. Hilmer, J. Zuniga-Perez, C. Sturm, B. Rheinlander, M. Grundmann</i>	
High-Speed and Low-Power Performance of n-type InSb/InP and InAs/InP Core/Shell Nanowire Field Effect Transistors for CMOS Logic Applications	19
<i>M.A. Khayer, R.K. Lake</i>	
Controlled Growth and Characterization of Non-tapered InN Nanowires on Si(111) Substrates by Molecular Beam Epitaxy	25
<i>Y.L. Chang, A. Fatehi, F. Li, Z. Mi</i>	
Low Melting Metal Catalyzed Growth of Tin Disulfide Nanotubes	31
<i>A. Yella, E. Mugnaioli, M. Panthoefer, U. Kolb, W. Tremel</i>	
Seedless Templated Growth of Hetero-nanostructures for Novel Microelectronics Devices.....	37
<i>F. Iacopi, R. Rooyackers, R. Loo, W. Vanherle, A. Milenin, K. Arstila, A. Verhulst, S. Takeuchi, H. Bender, M. Caymax, T. Hantschel, A. Vandooren, P.M. Vereecken, S. De Gendt, M. Heyns</i>	
Measurements of Liquid Silicon Resistivity on Silicon Microwires.....	43
<i>G. Bakan, K. Cil, A. Cywar, H. Silva, A. Gokirmak</i>	
HWCVD-grown Silicon Nanocrystals: A Study of the Effect of Annealing on Structures Evolved with Varying Growth Rates	49
<i>P. Mahajan, T.C. Patil, S. Chakrabarti</i>	
ZnO Nanostructures Epitaxially Grown on ZnO Seeded Si (100) Substrates by Chemical Vapor Deposition	56
<i>Z. Chen, T. Salagaj, C. Jensen, K. Strobl, M. Nakarmi, K. Shum</i>	
Synthesis and Electrical Characterization of Tin Oxide Nanostructures	61
<i>O.M. Berengue, C.J. Dalmaschio, T.G. Conti, A.J. Chiquito, E.R. Leite</i>	
Hydrothermal Synthesis of Zinc Oxide Nanowires on Kevlar using ALD and Sputtered ZnO Seed Layers.....	67
<i>A.D. Mason, T.J. Waggoner, S.W. Smith, J.F. Conley Jr., B.J. Gibbons, D. Price, D. Allman</i>	
Guided Growth of In-plane Lateral SiNWs Led by Indium Catalysts.....	73
<i>L. Yu, O. Moustapha, M. Oudwan, P.R.I. Cabarrocas</i>	

Two-photon Absorption Induced Photoluminescence in a ZnO Nanostructure.....	79
<i>Z. Chen, T. Salagaj, C. Jensen, K. Strobl, V. Hongpinyo, B. Ooi, M. Nakarmi, K. Shum</i>	
Optical and Electrical Properties of TiO₂ Nanotubes Grown by Titanium Anodization.....	85
<i>Y. Alivov, V. Kuryatkov, M. Pandikunta, G. Rajanna, D. Johnstone, A. Bernussi, S. Nikishin, Z.Y. Fan</i>	
Photoconductivity Dependence on the Background Oxygen Pressure in Nanostructured ZnO UV Sensor	91
<i>N.V. Hullavarad, S.S. Hullavarad</i>	
CdSe Sensitized ZnO Nanowire/polymer Based p-i-n Heterojunction Solar Cell.....	95
<i>A. Nadarajah, R.C. Word, R. Koenenkamp</i>	
Silicon Carbide Nanowires Grown on 4H-SiC Substrates by Chemical Vapor Deposition	103
<i>S. Kotamraju, B. Krishnan, Y. Koshka, S. Sundaresan, H. Issa, R. Singh</i>	
Growth and Low Temperature Photoluminescence of Silicon Nanowires for Different Catalysts	109
<i>O. Demichel, F. Oehler, V. Calvo, P. Noe, A. Besson, N. Pauc, P. Gentile, T. Baron, N. Magnea</i>	
Characterizing the Two-Dimensional Doping Concentration inside Silicon Nanowires Using Scanning Spreading Resistance Microscopy	115
<i>T. Hantschel, V. Schulz, A. Schulze, E. Angeletti, F. Guder, V. Schmidt, S. Senz, P. Eyben, W. Vandervorst</i>	
The Role of the Surface Coverage on the Structural and Electronic Properties of TiO₂ Nanocrystals.....	121
<i>A. Iacomino, G. Cantele, F. Trani, D. Ninno, I. Marri, S. Ossicini</i>	
Optical Properties and Carrier Dynamics of Ensembles of InP Nanowires Grown on Non-single-crystal Platforms	127
<i>T. Onishi, A.J. Lohn, N.P. Kobayashi</i>	
Author Index	