

Jonathan J. Wierer, Jr., Ph.D.

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Academic Degrees

- | | | | |
|-------|--|--|---------|
| Ph.D. | Electrical Engineering | University of Illinois, Champaign Urbana, IL | 1995-99 |
| | <ul style="list-style-type: none">• Advisor: Nick Holonyak, Jr.• Thesis Title: Tunnel contact junction AlGaAs-GaAs-InGaAs quantum well heterostructure lasers and light emitters with native-oxide-defined lateral currents• Gregory Stillman Semiconductor Research Award (1998). | | |
| MS | Electrical Engineering | University of Illinois, Champaign Urbana, IL | 1994-95 |
| | <ul style="list-style-type: none">• Advisor: Paul D. Coleman• Thesis Title: Current Overview of the Far IR p-Ge Laser | | |
| BS | Electrical Engineering | University of Illinois, Champaign Urbana, IL | 1990-94 |
| | <ul style="list-style-type: none">• Honors | | |

Professional Experience

- July 2015-present Lehigh University, Bethlehem, PA
Associate Professor, Electrical and Computer Engineering,
- Oct 2008-June 2015 Sandia National Laboratories, Albuquerque, NM
Principle Member of Technical Staff, Semiconductor Materials and Device Sciences,
- March 2013-June 2013 Sandia National Laboratories, Albuquerque, NM
Acting Manager, Semiconductor Materials and Device Sciences Department
- June 2000-Sept 2008 Philips Lumileds Lighting Co., San Jose, CA
Senior Scientist, Advanced Laboratories

2000 Fall Semester San Jose State University, San Jose, CA (concurrent with Lumileds)
Instructor, Department of Chemical and Materials Engineering

May 1999-June 2000 Lumileds Lighting/Hewlett Packard, San Jose, CA
R&D Engineer, III-V Materials Development

Jan 1999-May 1999 Hewlett Packard, San Jose, CA
Laser Fabrication Engineer, Fiber Optics Division

June 1995-Jan 1999 University of Illinois, Champaign-Urbana, IL
Graduate Research Assistant, Solid State Devices Lab

Honors/Awards/Societies

- Gregory Stillman Semiconductor Research Award 1998.
- Senior Member of the IEEE 2011(Senior), 1998-present.
- Member of OSA 2011-present.
- Member of IES 2014(Honorary), 2014-present.
- CLEO Conference, Subcommittee Chair, S&I 15 LEDs, Photovoltaics, and Energy Efficient Photonics 2013, 2014.
- Electronics Materials Conference, Organizer, Group III-Nitrides: Growth, Processing, Characterization, Theory and Devices 2015.

Publication/Presentation/Patent Statistics

- Total Published Refereed Publications: 46
- Total Conference Presentations/Proceedings: 63, Invited: 10
- Total US Patents: 29 (5 applications pending)
- Book Chapters: 2
- Google Scholar: <http://scholar.google.com/citations?hl=en&user=mnUvAGMAAAAJ>
 - Citations: 3473, h-index: 28, i10-index: 40
- ISI Web of Knowledge: <http://www.researcherid.com/rid/G-1594-2013>
 - Citations: 1751, h-index: 18

Publications

1. P. D. Coleman and J. J. Wierer, "Establishment of a Dynamic Model for the p-Ge Far IR Laser," International Journal of Infrared and Millimeter Waves **16**, 3 (1995).
2. J. J. Wierer, "Current Overview of the Far IR p-Ge Laser", Masters Thesis, University of Illinois, May 1995.
3. J. J. Wierer, S. A. Maranowski, N. Holonyak, Jr., P. W. Evans, and E. I. Chen, "Double Injection and Negative Resistance in Stripe Geometry Oxide Aperture $\text{Al}_y\text{Ga}_{1-y}\text{As-GaAs-In}_x\text{Ga}_{1-x}\text{As}$ Quantum Well Heterostructure Laser Diodes," Appl. Phys. Lett. **69**, 2882-2884 (1996).
4. P. W. Evans, J. J. Wierer, and N. Holonyak, Jr., "Photopumped Laser Operation of an Oxide Post GaAs-AlAs Superlattice Photonic Lattice," Appl. Phys. Lett. **70**, 1119-1120 (1997).

5. J. J. Wierer, P. W. Evans, and N. Holonyak, Jr., "Buried Tunnel Contact Junction AlGaAs-GaAs-InGaAs Quantum Well Heterostructure Lasers with Oxide-Defined Lateral Currents," *Appl. Phys. Lett.* **71**, 2286-2288 (1997).
6. J. J. Wierer, P. W. Evans, N. Holonyak, Jr., and D. A. Kellogg, "Lateral Electron Current Operation of Vertical-Cavity Surface-Emitting Lasers with Buried Tunnel Contact Hole Sources," *Appl. Phys. Lett.* **71**, 3468-3470 (1997).
7. J. J. Wierer, P. W. Evans, and N. Holonyak, Jr., "Transition from Edge to Vertical Cavity Operation of Tunnel Contact AlGaAs-GaAs-InGaAs Quantum Well Heterostructure Lasers," *Appl. Phys. Lett.* **27**, 797 (1998).
8. J. J. Wierer, P. W. Evans, N. Holonyak, Jr., and D. A. Kellogg, "Vertical Cavity Surface Emitting Lasers Utilizing Native Oxide Mirrors and Buried Contact Junctions," *Appl. Phys. Lett.* **72**, 2743 (1998).
9. P. W. Evans, J. J. Wierer, and N. Holonyak, Jr., "AlGaAs Native-Oxide-Based Distributed Bragg Reflectors for Vertical-Cavity Surface-Emitting Lasers," *J. Appl. Phys.* **84**, 5436 (1999).
10. J. J. Wierer, D. A. Kellogg, and N. Holonyak, Jr., "Tunnel Contact Junction Native-Oxide Aperture Vertical-Cavity Surface-Emitting Lasers and Resonant-Cavity Light-Emitting Diodes," *Appl. Phys. Lett.* **74**, 926 (1999). **(Cited 59)**
11. J. J. Wierer, "Tunnel Contact Junction AlGaAs-GaAs-InGaAs Quantum Well Heterostructure Lasers and Light Emitters with Native-Oxide Defined Lateral Currents," PhD Thesis, University of Illinois, May 1999.
12. J. J. Wierer, D. A. Steigerwald, M. R. Krames, J. J. O'shea, M. J. Ludowise, G. Christenson, Y.-C. Shen, C. Lowery, P. S. Martin, S. Subramanya, W. Götz, N. F. Gardner, R. S. Kern, S. A. Stockman "High-Power AlGaInN Flip-Chip Light-Emitting Diodes," *Appl. Phys. Lett.* **78**, pp. 3379 (2001). **(Cited 520)**
13. A. Y. Kim, W. Götz, D. A. Steigerwald, J. J. Wierer, N. F. Gardner, J. Sun, S. A. Stockman, P. S. Martin, M. R. Krames, R. S. Kern, F. M. Steranka. "Performance of High-Power AlInGaN Light Emitting Diodes," *phys. Stat. Sol. (a)*, **188**, 15 (2001).
14. M. R. Krames, J. Bhat, D. Collins, N. F. Gardner, W. Götz, C. H. Lowery, M. Ludowise, P. S. Martin, G. Mueller, R. Mueller-Mach, S. Rudaz, D. A. Steigerwald, S. A. Stockman, and J. J. Wierer, "High Power III-Nitride Emitters for Solid State Lighting," *phys. stat. sol. (a)*, Volume 192, Issue 2, (2002).
15. F. M. Stranka, J. Bhat, D. Collins, L. Cook, M. G. Craford, R. Fletcher, N. Gardner, P. Grillot, W. Goetz, M. Keuper, R. Khare, A. Kim, M. Krames, G. Harbers, M. Ludowise, P. S. Martin, M. Misra, G. Mueller, R. Mueller-Mach, S. Rudaz, Y.-C. Shen, D. Steigerwald, S. Stockman, S. Subramanya, T. Trottier, J. J. Wierer, "High Power LEDs – Technology Status and Market Applications", *phys. Stat. Sol. (a)*, Volume 194, Issue 2, (2002).
16. Y.-C. Shen, J. J. Wierer, M. R. Krames, M. J. Ludowise, M. S. Misra, F. Ahmed, A. Y. Kim, G. O. Mueller, J. C. Bhat, S. A. Stockman, P. S. Martin, "Optical cavity effects in InGaN/GaN Quantum-Well-Heterostructure Flip-Chip Light-Emitting Diodes," *Appl. Phys. Lett.* **82**, pp. 2221 (2003).
17. J. J. Wierer, M. R. Krames, J. E. Epler, N. F. Gardner, M. G. Craford, J. R. Wendt, J. A. Simmons, M. M. Sigalas, "InGaN/GaN Quantum-Well Heterostructure Light-Emitting Diodes Employing Photonic Crystal Structures," *Appl. Phys. Lett.* **84**, pp. 3885 (2004). **(Cited 363)**

18. N. F. Gardner, J. C. Kim, [J. J. Wierer](#), M. R. Krames, and Y-C. Shen “Polarization Anisotropy in the Electroluminescence of *m*-plane InGaN Light-Emitting Diodes,” *Appl. Phys. Lett.* **86**, 111101 (2005).
19. [J. J. Wierer, Jr.](#), A. David, M. M. Megens, “III-nitride photonic-crystal light-emitting diodes with high extraction efficiency,” *Nature Photonics*, **3**,1 (2009). **(Cited 364)**
20. [J. J. Wierer, Jr.](#), Jr. A. J. Fischer, and D. D. Koleske, “The impact of piezoelectric polarization and nonradiative recombination on the performance of (0001) face GaN/InGaN photovoltaic devices,” *Appl. Phys. Lett.* **96**, 051107 (2010). **(Cited 63)**
21. [J. J. Wierer, Jr.](#), A. A. Allerman, and Q. Li, “Silicon impurity-induced layer disordering of AlGaN/AlN superlattices”, *Appl. Phys. Lett.*, **97**, 051907 (2010).
22. A. Neumann, [J. J. Wierer, Jr.](#), W. Davis, Y. Ohno, S. R. J. Brueck, and J. Y. Tsao, “Four-color laser white illuminant demonstrating high color rendering quality”, *Optics Express*, **19**, A982 (2011). **(Cited 36)**
23. [J. J. Wierer, Jr.](#), D. D. Koleske, and S. R. Lee, “Influence of barrier thickness on the performance of InGaN/GaN multiple quantum well solar cells” *Appl. Phys. Lett.*, **100**, 111119 (2012).
24. [J. J. Wierer, Jr.](#), D. D. Koleske, and S. R. Lee, “Influence of barrier thickness on the performance of InGaN/GaN multiple quantum well solar cells” *Virtual Jour. Nanoscale Science and Tech.*, **25** (2012).
25. [J. J. Wierer, Jr.](#), Q. Li, D. D. Koleske, S. R. Lee, and G. T. Wang, “III-nitride core-shell nanowire arrayed solar cells”, *Nanotechnology*, **23** 194007 (2012). **(Cited 34)**
26. T. Kim, Y. H. Jung, J. Song, D. Kim, Y. Li, H.-S. Kim, I.-S. Song, [J. J. Wierer](#), H. A. Pao, Y. Huang and J. A. Rogers, “Light-Emitting Diodes: High-Efficiency, Microscale GaN Light-Emitting Diodes and Their Thermal Properties on Unusual Substrates” *Small*, **8**, 1643 (2012).
27. S. R. Lee, D. D. Koleske, M. H. Crawford, and [J. J. Wierer, Jr.](#), “Effect of interface grading and lateral thickness variations on x-ray diffraction by InGaN-GaN multiple quantum wells” *J. Crystal Growth*, **355**, 63 (2012).
28. S. Howell, S. Padalkar, K. Yoon, Q. Li, [J. J. Wierer, Jr.](#), D. D. Koleske, G. Wang, and Lincoln J. Lauhon, “Spatial Mapping of Efficiency of GaN/InGaN Nanowire Array Solar Cells using Scanning Photocurrent Microscopy”, *Nano Letters* **13**, 5123, (2013).
29. J. R. Riley, S. Padalkar, Q. Li, P. Lu, [J. J. Wierer, Jr.](#), D. D. Koleske, G. T. Wang, and L. J. Lauhon, “Three-Dimensional Mapping of Quantum Wells in a GaN/InGaN Core-Shell Nanowire Array Light Emitting Diode”, *Nano Letters*, **13** 4317 (2013).
30. [J. J. Wierer, Jr.](#), D. S. Sizov, J. Y. Tsao, “Comparison between Blue Laser and Light-Emitting Diodes for Future Solid-State Lighting”, *Lasers and Photonics Reviews*, **7** 963 (2013). **(Cited 28)**
31. G. T. Wang, Q. Li, [J. J. Wierer](#), D. D. Koleske, and J. J. Figiel, “Top-down fabrication and characterization of axial and radial III-nitride nanowire LEDs”, *physica status solidi (a)*, **211**, 748 (2014).
32. D. D. Koleske, [J. J. Wierer, Jr.](#), A. J. Fischer, and S. R. Lee, “Controlling indium incorporation in InGaN barriers with dilute hydrogen flows”, *J. Crystal Growth*, **390**, 38 (2014).
33. M E. Coltrin, A. M. Armstrong, I. Brener, W. W. Chow, M. H. Crawford, A. J. Fischer, D. F. Kelley, D. D. Koleske, Q. Li, L. J. Lauhon, J. E. Martin, M. Nyman, E. F. Schubert, L. E. Shea-Rohwer, G. Subramania, J. Y. Tsao, G. T. Wang, [J. J. Wierer, Jr.](#), and J. B. Wright, “The Energy

- Frontier Research Center for Solid-State Lighting Science: Exploring New Materials Architectures and Light Emission Phenomena”, *J. Phys. Chem. C*, **118**, 13330 (2014).
34. A. Benz, S. Campione, M. W. Moseley, [J. J. Wierer, Jr.](#), A. A. Allerman, J. R. Wendt, I. Brener, “Optical strong coupling between near-infrared metamaterials and intersubband transitions in III-nitride heterostructures,” *ACS Photonics*, **1**, 906, (2014).
 35. [J. J. Wierer, Jr.](#), I. Montano, M. H. Crawford, and A. A. Allerman, “Effect of thickness and carrier density on the optical polarization of $\text{Al}_{0.44}\text{Ga}_{0.56}\text{N}/\text{Al}_{0.55}\text{Ga}_{0.45}\text{N}$ quantum well layers,” *J. Appl. Phys.* **115**, 174501 (2014).
 36. J. Y. Tsao, M. H. Crawford, M. E. Coltrin, A. J. Fischer, D. D. Koleske, G. Subramania, G. T. Wang, [J. J. Wierer](#), and B. Karlicek, “Toward Smart and Ultra-Efficient Solid-State Lighting”, *Adv. Opt. Mat.*, **2**, 803 (2014).
 37. M. Mosely, A. A. Allerman, M. Crawford, [J. J. Wierer, Jr.](#), M. Smith, and L. Biedermann, “Electrical current leakage and open-core threading dislocations in AlGaIn-based deep ultraviolet light-emitting diodes”, *J. Applied Physics*, **116**, 053104 (2014).
 38. [J. J. Wierer, Jr.](#), I. Montano, M. Mosely, and A. A. Allerman, “Influence of optical polarization on the improvement of light extraction efficiency with reflective scattering structures in ultra-violet light-emitting diodes,” *Appl. Phys. Lett.* **105**, 061106 (2014).
 39. [J. J. Wierer, Jr.](#), A. A. Allerman, E. J. Skogen, A. Tauke-Pedretti, C. Alford, G. A. Vawter, and I. Montano, “Layer disordering and doping compensation of an intersubband AlGaIn/AlN superlattice by silicon implantation”, *Appl. Phys. Lett.*, **105**, 131107 (2014).
 40. [J. J. Wierer, Jr.](#) and J. Y. Tsao, “Advantages of laser diodes in solid-state lighting” *physica status solidi (a)*, (2015).
 41. D. D. Koleske, A. J. Fischer, B. N. Bryant, P. G. Kotula, and [J. J. Wierer, Jr.](#), “On the increased efficiency in InGaIn-based multiple quantum wells emitting at 530–590nm with AlGaIn interlayers” **415**, 57 *J. Crystal Growth*, (2015).
 42. M. W. Moseley, A. A. Allerman, M. H. Crawford, [J. J. Wierer Jr.](#), M. L. Smith and L. B. Biedermann, “Defect-enabled electrical current leakage in ultraviolet light-emitting diodes” *physica status solidi (a)*, (2015).
 43. M. W. Moseley, A. A. Allerman, M. H. Crawford, [J. J. Wierer Jr.](#), M. L. Smith and A. A. Armstrong, “Detection and modeling of leakage current in AlGaIn-based deep ultraviolet light-emitting diodes” *J. Appl. Phys.* **117**, 095301 (2015).
 44. A. M. Armstrong, B. N. Bryant, M. H. Crawford, D. D. Koleske, S. R. Lee, and [J. J. Wierer Jr.](#), “Defect-reduction mechanism for improving radiative efficiency in InGaIn/GaN light-emitting diodes using InGaIn underlayers” *J. Appl. Phys.* **117**, 134501 (2015).
 45. A. M. Armstrong, M. Moseley, A. A. Allerman, M. H. Crawford, and [J. J. Wierer Jr.](#), “Growth temperature dependence of Si doping efficiency and compensating deep level defect incorporation in $\text{Al}_{0.7}\text{Ga}_{0.3}\text{N}$ ” *J. Appl. Phys.* **117**, 185704 (2015).
 46. [J. J. Wierer, Jr.](#), A. A. Allerman, E. J. Skogen, A. Tauke-Pedretti, G. A. Vawter, and I. Montano, “Selective layer disordering in intersubband $\text{Al}_{0.028}\text{Ga}_{0.972}\text{N}/\text{AlN}$ superlattices with silicon nitride capping layer” *Applied Physics Express*, **8**, 061004 (2015).

Conference Presentations/Proceedings

1. M. R. Krames, et. al., “High Brightness AlGaInN Light-Emitting Diodes,” *Proceedings of the SPIE*, **3938**, pp. 2 (26-27 Jan. 2000).
2. [J. J. Wierer](#), et. al. “High-Power AlGaInN Light-Emitting Diodes,” *Proceedings of the SPIE*, **4278**, pp. 127 (24-25 Jan. 2001).

3. P. S. Martin, J. C. Bhat, C.-H. Chen, L. W. Cook, M. G. Craford, N. F. Gardner, W. Götz, R. S. Kern, R. Khare, A. Kim, M. R. Krames, M. J. Ludowise, R. Mann, M. Misra, J. O'Shea, Y.-C. Shen, F. M. Steranka, S. A. Stockman, S. Subramanya, S. L. Rudaz, D. A. Steigerwald, and J. J. Wierer, "High-Power Red, Green, Blue and White LEDs" SPIE (Jan. 2001).
4. W. Goetz, F. Ahmed, J. Bhat, L. Cook, N.F. Gardner, E. Johnson, M. Misra, R.S. Kern, A.Y. Kim, J. Kim, J. Kobayashi, M.R. Krames, M. Ludowise, P.S. Martin, T. Mihopoulos, A. Munkholm, S. Rudaz, S. Salim, Y-C. Chen, D.A. Steigerwald, S.A. Stockman, J. Sun, J.J. Wierer, D. Vanderwater, F.M. Steranka, and M.G. Craford "POWER III-NITRIDE LEDs", ICNS-4, (July 16 – 20 2001).
5. D. A. Steigerwald, J. J. Bhat, C.-H. Chen, W. Goetz, R. , C.-H. Chen, W. Goetz, R. Khare, A. Kim, M. R. Krames, M. Ludowise. P. S. Martin, S. Rudaz, S. Stockman, S. Subramanya S-C Tan, J. Thompson, and J. J. Wierer "High Power, High Efficiency InGaN Light Emitting Diodes", SPIE Photonics West (2001), San Jose CA.
6. S.A. Stockman, W. Götz, L. Cook, M. Misra, A.Y. Kim, N.F. Gardner, J.J. Wierer, D.A. Steigerwald, D. Collins, P.S. Martin, M.R. Krames, D. Sun, E. Johnson, and R.S. Kern, "High-Power GaN-based LEDs for Solid State Lighting", SPIE Photonics West (Jan. 2002), San Jose, CA.
7. F. M. Steranka, J. Bhat, D. Collins, L. Cook, M. G. Craford, R. Fletcher, N. Gardner, P. Grillot, R. Fletcher, W. Goetz, M. Keuper, R. Khare, A. Kim, M. Krames, G. Harbers, M. Keuper, R. Khare, A. Kim,, M. Ludowise, P.S. Martin, M. Misra, G. Mueller, R. Mueller-Mach, S. Rudaz, Y. -C. Shen, D. Steigerwald, S. Stockman, D. Steigerwald, S. Subramanya, T. Trottier, and J. J. Wierer "High High-Power Power LEDs LEDs - Technology Status and Market Applications" IWN (2002).
8. N. F. Gardner, et. al., "High-flux and high-efficiency nitride-based light emitting devices", LEOS (2002).
9. Y.C. Shen, J. J. Wierer, M. R. Krames, M. J. Ludowise, M. S. Misra, F. Ahmed, A. Y. Kim, G. O. Mueller, J. C. Bhat, S. A. Stockman, and P. S. Martin, "Optical Cavity Effects in InGaN/GaN Quantum-Well-Heterostructure Flip-Chip Light-Emitting Diodes", SPIE Photonics West, San Jose, CA (Jan. 2004).
10. J. J. Wierer, M. R. Krames, J. E. Epler, N. F. Gardner, J. R. Wendt, and, M. M. Sigalas, "III-Nitride LEDs with Photonic Crystal Structures," SPIE Photonics West, (Jan. 2005), San Jose, CA.
11. J. J. Wierer, "High-power III-Nitride LEDs and Photonic Crystal LEDs," PLMCN5 (June 2005), Edinburgh, UK, **(invited)**.
12. N. Gardner, J. Kim, J. J. Wierer, Y. C. Shen, M. R. Krames "Linearly polarized spontaneous emission from m-plane InGaN/GaN multiple-quantum-well LEDs", SPIE Photonics West (Jan. 2005), San Jose, CA.
13. N. Gardner, J. J. Wierer, J. Kim, M. R. Krames, Linearly polarized spontaneous electroluminescence from m-plane InGaN/GaN multiple-quantum-well light-emitting diodes", ICNS6 (Aug 2005), Bremen, Germany.
14. A. David and J. J. Wierer, "Photonic Crystal-Assisted Light Extraction From GaN LEDs", (July 2007), OSA Nanophotonics .
15. J. J. Wierer and A. David, "Directional Emission III-Nitride Photonic Crystal LEDs" ICNS7, (Sept 2007) Las Vegas, NV.
16. J. J. Wierer, "Light Generation and Extraction in III-Nitride Light-Emitting Diodes", Spring MRS, (April 2009) San Francisco, CA (Invited).

17. M. Crawford, et al., “Roadblocks to High Efficiency Solid-State Lighting: Bridging the ‘Green-Tellow Gap’” PhAST Baltimore, MD (June 2009).
18. J. J. Wierer, “Light Extraction in III-Nitride Light-Emitting Diodes”, COT Open House, (Oct 2009) Lehigh University, **(invited)**.
19. J. Y. Tsao, M. Crawford, Y. Ohno, J. Simmons, P. Waide, J. J. Wierer, Jr., (Lighting and Solid-State Lighting :Science, Technology, Economic Perspective, SPIE Photonics West, (26 Jan 2010), San Jose, CA.
20. A. A. Allerman, J. J. Wierer, Jr., M. Crawford, Q. Li., “Influence of MOVPE Growth Conditions on Intersubband Absorption in AlN –AlGaN Superlattices”, Electronic Materials Conference, (June 2010).
21. A. A. Allerman, J. J. Wierer, M. H. Crawford, Q. Li, S. R. Lee, Impurity-Induced Disorder in Mg- and Si-doped AlGaN-AlN Superlattices, International Workshop on Nitride Semiconductors, (Sept 2010), Tampa, FL.
22. J. J. Wierer, Jr., D. D. Koleske, A. J. Fischer, S. R. Lee, G. N. Nielson, M. Okandan, InGaN-based Photovoltaic Devices for High Efficiency Mechanically Stacked Multijunction Cell Structures, International Workshop on Nitride Semiconductors (Sept 2010), Tampa, FL **(invited)**.
23. A. A. Allerman, M. H. Crawford, S. R. Lee, K. C. Cross, M. A. Miller, J. J. Wierer, and B. Clark, “Low Dislocation Density Al_{0.32}Ga_{0.68}N by Overgrowth of Patterned Templates”, 53rd Electronic Materials Conference 2011 (June 2011), Santa Barbara, CA.
24. J. J. Wierer, Jr., “Light Extraction Methods in Light-Emitting Diodes”, CLEO, (May, 2011), Baltimore, MD **(invited tutorial)**.
25. A. A. Allerman, M. H. Crawford, S. R. Lee, K. C. Cross, M. A. Miller, J. J. Wierer, and B. Clark, “Low Dislocation Density Al_{0.32}Ga_{0.68}N by Overgrowth of Patterned Templates” 53rd Electronic Materials Conference (June 2011), Santa Barbara, CA.
26. Q. Li, G. T. Wang, J. B. Wright, I. Brener, T. S. Luk, M. H. Crawford, G. S. Subramania, D. D. Koleske, J. J. Wierer, S. R. Lee, “ Internal Quantum Efficiency in Nanorod LED Arrays Created by Top-Down Techniques” 53rd Electronic Materials Conference (June 2012), Santa Barbara, CA.
27. A. A. Allerman, M. H. Crawford, S. R. Lee, K. C. Cross, M. A. Miller, J. J. Wierer, and B. Clark, “Low Dislocation Density Al_xGa_{1-x}N Alloys x<0.3) on Overgrowth of Patterned Templates” 9th Int. Conf. of Nitride Semiconductors” (July 2011), Glasgow, U. K.
28. J. J. Wierer, Jr. “Lasers and Nanowire Architectures for SSL” EERE-NETL-SSL Roundtable, (Nov. 2011), Washington D. C.
29. G. T. Wang, Q. Li., J. J. Wierer, J. J. Figel, J. B. Wright, T. S. Luk, and I. Brener, “Top-Down Fabrication of GaN-based nanorod LEDs and lasers” Proc. of SPIE, vol 8278, (2012).
30. G. T. Wang, Q. Li, J. J. Wierer, D. D. Koleske, J. J. Figiel, “Fabrication and characterization of vertically-integrated, III-nitride nanowire based LEDs and solar cells”, Spring MRS (March 2012), San Francisco, CA.
31. J. J. Wierer, Jr., G. T. Wang, Q. Li, D. D. Koleske, and S. R. Lee, “III-nitride nanowire array solar cells” CLEO, (May 2012), San Jose, CA. **(postdeadline talk)**
32. Q. Li, G. T. Wang, J. B. Wright, I. Brener, T. S. Luk, M. H. Crawford, G. S. Subramania, D. D. Koleske, J. J. Wierer, S. R. Lee, “ Top-Down III-nitride nanowires” Electronic Materials Conference (June 2012), Santa Barbara, CA.

33. A. A. Allerman, J. J. Wierer, Q. Li, S. R. Lee, and M. H. Crawford, "MOVPE Growth of Intersubband Absorption in AlN-AlGa_N Superlattices," 16th MOVPE Conference, (May 2012), Korea.
34. G. T. Wang, Q. Li, J. J. Wierer, D. D. Koleske, J. J. Figiel, J. B. Wright, T. S. Luk, and I. Brener, "III-nitride nanowires: Novel Materials for Lighting and Photovoltaics" Photonics North (June 2012), Montreal, Canada.
35. G. T. Wang, Q. Li, J. J. Wierer, D. D. Koleske, J. J. Figiel, J. B. Wright, T. S. Luk, and I. Brener, "III-nitride nanowires: From the Bottom-Up to the Top-Down" SPIE Optics and Photonics Conference (Aug 2012), San Diego, CA.
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