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(Ms.) Jing Zhang, Ph.D.

Information updated up to: **August 2014**

Contact Information

(Ms.) Jing Zhang, Ph.D.
Kate Gleason Endowed Assistant Professor
Department of Electrical and Microelectronic Engineering
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Birth Date and Place & Citizenship

October 26th 1986, Wuhan, Hubei Province, China & Chinese

Education

August 2009 – May 2013, Lehigh University (Bethlehem, Pennsylvania, USA)
Doctor of Philosophy (Ph.D.) in Electrical Engineering, Department of Electrical and Computer Engineering

- PhD Advisor: Prof. Nelson Tansu (ECE, Lehigh)
- Dissertation Title: “Physics of III-Nitride Semiconductors for Energy-Efficient and Lasers Applications”
- Research Areas: III-Nitride semiconductor nanostructures for thermoelectric and solid state lighting technologies.

Sep. 2005 – Jul. 2009, Huazhong University of Science and Technology (Wuhan, China)
Bachelor of Science (B.S.) in Electronic Science and Technology

Bachelor of Art (B.A.) in English

- Excellent graduate award of Huazhong University of Science and Technology
- Thesis: The Design of cross-coupling planar microwave filters with transmission zeros
- Awarded “Best Graduation Thesis”

Professional Experiences

August 2014 – Present, Rochester Institute of Technology (Rochester, NY, USA)
Kate Gleason Endowed Assistant Professor

Department of Electrical and Microelectronic Engineering
Kate Gleason College of Engineering

August 2013 – May 2014, St. John’s University (Jamaica, NY, USA)
Assistant Professor

Department of Physics,
St. John’s College of Liberal Arts and Sciences

May 2013 – July 2013, Lehigh University (Bethlehem, PA, USA)
Postdoctoral Research Fellow

Department of Electrical and Computer Engineering (ECE)
P. C. Rossin College of Engineering and Applied Science & Center for Photonics and Nanoelectronics
Postdoctoral Research Advisor: Prof. Nelson Tansu



August 2009 – May 2013,

Lehigh University (Bethlehem, PA, USA)

Ph.D. Candidate and Research Assistant

Department of Electrical and Computer Engineering (ECE)

P. C. Rossin College of Engineering and Applied Science & Center for Photonics and Nanoelectronics

Ph.D. Advisor: Prof. Nelson Tansu

Spring 2012

Lehigh University (Bethlehem, PA, USA)

Substitute Lecturer

ECE 203: Engineering Electromagnetics (Junior UG level) – Spring 2012

Department of Electrical and Computer Engineering

P. C. Rossin College of Engineering and Applied Science

Research Interests and Areas

Dr. Zhang's research works cover various aspects of computational / advanced simulations, MOCVD growths (epitaxy), and device fabrication of III-Nitride semiconductor for photonics, thermoelectric, and solid state lighting applications. Her research topics include the pursuit of novel materials for high thermoelectric figure of merit by using lattice-matched III-Nitride alloys, and the development of novel active regions and substrate engineering for enabling high performance Ultraviolet and visible light-emitting diodes (LEDs) / lasers, as well as the engineering of advanced device concept (surface plasmon and nanostructure engineering) for achieving high internal quantum efficiency in III-Nitride LEDs for solid state lighting applications.

Awards & Honors Received

- **2012 SPIE Scholarship in Optics and Photonics**, SPIE
- **Sherman-Fairchild Fellowship for Solid State Studies** (2012-2013), Lehigh University
- **Sherman-Fairchild Fellowship for Solid State Studies** (2011-2012), Lehigh University
- **Lehigh University Research Assistantship** (Aug. 2009- present), Lehigh University
- **Lehigh University Dean's Scholarship** (Aug. 2009- present), Lehigh University
- **Best Graduation Thesis** (June, 2009), Huazhong University of Science and Technology
- **Excellent Graduate Award** (June, 2009), Huazhong University of Science and Technology
- **Public Scholarship** (2005-2007), Huazhong University of Science and Technology
- **Certificates for TEM-8 (Test for English Majors) and TEM-4**

Professional Affiliations

2010 – present, Member, Institute of Electrical and Electronics Engineers (IEEE)

2010 – present, Member, International Society for Optical Engineering (SPIE)

2010 – present, Member, American Physical Society (APS)

Technical Refereed Journal and Conference Publications

Refereed Journal Publications

- ✓ **ISI Web of Knowledge Record (as of August 14th 2014):** Total Citations = 976; h-index = 17
 - **Publication Name Search in ISI Web of Knowledge:** (zhang and tansu)
 - ✓ **Google Scholar (as of August 14th 2014):** Total Citations = 1191; h-index = 19
 - Google Scholar Link: <http://scholar.google.com/citations?user=FOqP658AAAAJ&hl=en>
 - ✓ Total First Authorship Refereed Publications: 22; Total Refereed Journal Publications: 22
1. (**Invited Review Article**) N. Tansu, H. P. Zhao, G. Y. Liu, X. H. Li, **J. Zhang**, H. Tong, and Y. K. Ee, "Breakthrough in Photonics 2009: III-Nitride Photonics", *IEEE Photonics Journal*, vol. 2 (2), pp. 241-248, April 2010.
 2. **J. Zhang**, H. P. Zhao, and N. Tansu, "Effect of Crystal-Field Split-Off Hole and Heavy-Hole Bands Crossover on Gain Characteristics of High Al-Content AlGaIn Quantum Well Lasers," *Appl. Phys. Lett.* vol. 97, Art. 111105, September 2010.
 3. H. Tong, **J. Zhang**, G. Y. Liu, J. Herbsommer, G. S. Huang, and N. Tansu, "Thermoelectric Properties of Lattice-Matched AlInN Alloy Grown by Metalorganic Chemical Vapor Deposition," *Appl. Phys. Lett.*, vol. 97, Art. 112105, September 2010. ([refers to co-first-authors](#))

4. G. Sun, G. Xu, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Efficient Terahertz Generation from Multiple InGaN / GaN Quantum Wells," *IEEE J. Sel. Top. Quantum Electron.*, vol. 17(1), pp. 48-53, January-February 2011.
5. [J. Zhang](#), H. Tong, G. Y. Liu, J. A. Herbsommer, G. S. Huang, and N. Tansu, "Characterizations of Seebeck Coefficients and Thermoelectric Figures of Merit for AlInN Alloys with Various In-Contents," *J. Appl. Phys.*, vol. 109(5), Art. 053706, March 2011.
6. G. Y. Liu, H. P. Zhao, [J. Zhang](#), J. H. Park, L. J. Mawst, and N. Tansu, "Selective Area Epitaxy of Ultra-High Density InGaN Quantum Dots by Diblock Copolymer," *Nanoscale Res. Lett.*, vol. 6, Art. 342, April 2011.
7. H. P. Zhao, [J. Zhang](#), G. Y. Liu, and N. Tansu, "Surface Plasmon Dispersion Engineering via Double-Metallic Au / Ag Layers for III-Nitride Based Light-Emitting Diodes," *Appl. Phys. Lett.*, vol. 98, Art. 151115, April 2011.
8. [J. Zhang](#), H. P. Zhao, and N. Tansu, "Large Optical Gain AlGa_N-Delta-GaN Quantum Wells Laser Active Regions in Mid- and Deep-Ultraviolet Spectral Regimes," *Appl. Phys. Lett.*, vol. 98, Art. 171111, April 2011.
9. **(Invited Journal Paper)** H. P. Zhao, G. Y. Liu, [J. Zhang](#), J. D. Poplawsky, V. Dierolf, and N. Tansu, "Approaches for high internal quantum efficiency green InGaN light-emitting diodes with large overlap quantum wells," *Optics Express*, vol. 19(S4), Pp. A991-A1007, July 2011.
10. G. Sun, G. B. Xu, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Investigation of fast and slow decays in InGaN/GaN quantum wells," *Appl. Phys. Lett.*, vol. 99, Art. 081104, August 2011.
11. [J. Zhang](#), S. Kutlu, G. Y. Liu, and N. Tansu, "High-Temperature Characteristics of Seebeck Coefficients for AlInN Alloys Grown by Metalorganic Vapor Phase Epitaxy," *J. Appl. Phys.*, vol. 110, Art. 043710, August 2011.
12. [J. Zhang](#), and N. Tansu, "Improvement in spontaneous emission rates for InGaN quantum wells on ternary InGaN substrate for light-emitting diodes," *J. Appl. Phys.*, vol. 110, Art. 113110, December 2011.
13. G. Y. Liu, [J. Zhang](#), X. H. Li, G. S. Huang, T. Paskova, K. R. Evans, H. P. Zhao, and N. Tansu, "Metalorganic Vapor Phase Epitaxy and Characterizations of Nearly-Lattice-Matched AlInN Alloys on GaN / Sapphire Templates and Free-Standing GaN Substrates," *J. Cryst. Growth*, vol. 340 (1), pp. 66-73, February 2012.
14. G. Sun, R. Chen, Y. Ding, H. Zhao, G. Liu, [J. Zhang](#), and N. Tansu, "Strikingly Different Behaviors of Photoluminescence and Terahertz Generation in InGaN/GaN Quantum Wells," *IEEE J. Sel. Top. Quantum Electron.*, vol. 19, no. 1, Art. 8400106, January / February 2013.
15. G. Xu, G. Sun, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Investigation of Large Stark Shifts in InGaN / GaN Multiple Quantum Wells," *J. Appl. Phys.*, vol. 113, Art. 033104, January 2013.
16. [J. Zhang](#), and N. Tansu, "Optical Gain and Laser Characteristics of InGaN Quantum Wells on Ternary InGaN Substrates", *IEEE Photonics Journal*, vol. 5, no. 2, Art. 2600111, April 2013. DOI: 10.1109/JPHOT.2013.2247587
17. [J. Zhang](#), and N. Tansu, "Engineering of AlGa_N-Delta-GaN Quantum Wells Gain Media for Mid- and Deep-Ultraviolet Lasers", *IEEE Photonics Journal*, vol. 5, no. 2, Art. 2600209, April 2013. DOI: 10.1109/JPHOT.2013.2248705
18. H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Analysis of Internal Quantum Efficiency and Current Injection Efficiency in Nitride Light-Emitting Diodes", *Journal of Display Technology*, vol. 9, no. 4, pp. 212-225, April 2013. DOI: 10.1109/JDT.2013.2250252
19. C. K. Tan, [J. Zhang](#), X. H. Li, G. Y. Liu, B. O. Tayo, and N. Tansu, "First-Principle Electronic Properties of Dilute-As GaN_s Alloy for Visible Light Emitters", *Journal of Display Technology*, vol. 9, no. 4, pp. 272-279, April 2013. DOI: 10.1109/JDT.2013.2248342
20. G. Y. Liu, [J. Zhang](#), C. K. Tan, and N. Tansu, "Efficiency-Droop Suppression by Using Large-Bandgap AlGaInN Thin Barrier Layers in InGaN Quantum Wells Light-Emitting Diodes", *IEEE Photonics Journal*, vol. 5, no. 2, Art. 2201011, April 2013. DOI: 10.1109/JPHOT.2013.2255028
21. P. F. Zhu, G. Y. Liu, [J. Zhang](#), and N. Tansu, "FDTD Analysis on Extraction Efficiency of GaN Light-Emitting Diodes with Microsphere Arrays", *Journal of Display Technology*, vol. 9, no. 5, pp. 313-319, May 2013. DOI: 10.1109/JDT.2013.2250253
22. X. H. Li, P. F. Zhu, G. Y. Liu, [J. Zhang](#), R. B. Song, Y. K. Ee, P. Kumnorkaew, and J. F. Gilchrist, and N. Tansu, "Light Extraction Efficiency Enhancement of III-Nitride Light-Emitting Diodes by using 2-D Close-Packed TiO₂ Microsphere Arrays", *Journal of Display Technology*, vol. 9, no. 5, pp. 320-328, May 2013. DOI: 10.1109/JDT.2013.2246541

Submitted Refereed Journal and Conference Publications

23. [J. Zhang](#), Hua Tong, Nelson Tansu, "Minimum Thermal Conductivity of Three-Layer Superlattices", *New Journal of Physics* (submitted).
24. Y. K. Ee, X. H. Li, [J. Zhang](#), G. Y. Liu, H. P. Zhao, J. M. Biser, W. Cao, H. M. Chan, R. P. Vinci, and N. Tansu, "Nano-pattern Pitch Dimension Dependence and Time-resolved Photoluminescence Study of InGaN Quantum Well Light-Emitting Diodes Grown by Abbreviated Growth Mode on Nano-patterned AGOG Substrate", *IEEE / OSA Journal of Display Technology* (submitted).
25. G. Y. Liu, [J. Zhang](#), C. K. Tan, and N. Tansu, "Characteristics of InGaN-Delta-InN Quantum Wells Light-Emitting Diodes for Green, Yellow and Red Emission", *IEEE Photonics Journal* (submitted).
26. C. K. Tan, [J. Zhang](#), G. Y. Liu, N. Tansu, "First-Principle Natural Band Alignment of Dilute-As GaNAs Alloy", *IEEE / OSA Journal of Display Technology* (submitted).

Refereed Conference Proceedings and Publications

1. (**Invited Conference Paper**) H. Zhao, G. Liu, R. A. Arif, Y. K. Ee, X. H. Li, [J. Zhang](#), H. Tong, G. S. Huang, and N. Tansu, "Novel Approaches for Efficiency Enhancement in InGaN-Based Light-Emitting Diodes", in *Proc. of the 2nd International Conference on White LEDs and Solid State Lighting 2009*, Taipei, Taiwan, December 2009.
2. (**Invited Conference Paper**) H. Zhao, G. Liu, X. H. Li, Y. K. Ee, H. Tong, [J. Zhang](#), G. S. Huang, and N. Tansu, "Novel Growth and Device Concepts for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2010*, San Jose, CA, May 2010.
3. G. Y. Liu, H. P. Zhao, [J. Zhang](#), G. S. Huang, and N. Tansu, "Growths of Lattice-Matched AlInN Alloys on GaN," in *Proc. of the American Physical Society (APS) Annual March Meeting 2010*, Portland, Oregon, March 2010.
4. [J. Zhang](#), H. Tong, G. Y. Liu, J. A. Herbsommer, G. S. Huang, and N. Tansu, "Thermoelectric Properties of MOVPE Grown AlInN Lattice-Matched to GaN," in *Proc. of the American Physical Society (APS) Annual March Meeting 2010*, Portland, Oregon, March 2010.
5. (**Invited Conference Paper**) H. P. Zhao, [J. Zhang](#), G. Y. Liu, X. H. Li, Y. K. Ee, H. Tong, T. Toma, G. S. Huang, and N. Tansu, "Approaches for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes – Device Physics and Epitaxy Engineering," in *Proc. of the American Vacuum Society (AVS) Meeting 2010*, Ann-Arbor, MI, May 2010.
6. (**Invited Conference Paper**) N. Tansu, H. P. Zhao, [J. Zhang](#), G. Y. Liu, X. H. Li, H. Tong, T. Toma, G. S. Huang, and Y. K. Ee, "Device Physics and Epitaxy Engineering for High-Efficiency III-Nitride Light-Emitting Diodes," in *Proc. of the International Union of Materials Research Societies - International Conference on Electronic Materials (IUMRS-ICEM) 2010*, Seoul, Korea, August 2010.
7. (**Late Breaking News Paper**) H. Tong, [J. Zhang](#), J. A. Herbsommer, G. S. Huang, and N. Tansu, "Record Thermoelectric Figure of Merit for MOVPE-Grown AlInN Alloys with Various In-Contents," *Proc. of the International Workshop on Nitride semiconductors (IWN) 2010*, Tampa Bay, FL, September 2010.
8. H. P. Zhao, [J. Zhang](#), T. Toma, G. Y. Liu, J. D. Poplawsky, V. Dierolf, and N. Tansu, "Cathodoluminescence Characteristics of Linearly-Shaped Staggered InGaN Quantum Wells Light-Emitting Diodes," in *Proc. of the 23rd Annual Meeting of the IEEE Photonics Society*, Paper WY4, Denver, CO, November 2010.
9. [J. Zhang](#), H. P. Zhao, and N. Tansu, "Gain and Spontaneous Emission Characteristics of High Al-Content AlGaIn Quantum Well Lasers," in *Proc. of the 23rd Annual Meeting of the IEEE Photonics Society*, Paper MI4, Denver, CO, November 2010.
10. G. Y. Liu, H. P. Zhao, [J. Zhang](#), H. Tong, G. S. Huang, and N. Tansu, "Growths of Lattice-Matched AlInN / GaN for Optoelectronics Applications," in *Proc. of the 23rd Annual Meeting of the IEEE Photonics Society*, Paper WY5, Denver, CO, November 2010.
11. G. Y. Liu, H. P. Zhao, [J. Zhang](#), J. H. Park, L. J. Mawst, and N. Tansu, "Selective Area Epitaxy of Ultra-High Density InGaIn Based Quantum Dots," in *Proc. of the 2011 IEEE Photonics Society Winter Topical Meeting on Low Dimensional Nanostructures and Sub-Wavelength Photonics*, Paper WA1.3, Keystone, CO, January 2011.
12. (**Invited Conference Paper**) N. Tansu, H. P. Zhao, [J. Zhang](#), G. Y. Liu, X. H. Li, Y. K. Ee, R. B. Song, T. Toma, L. Zhao, and G. S. Huang, "Novel Approaches for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes – Device Physics and Epitaxy Engineering," in *Proc. of the SPIE Photonics West 2011, LEDs: Materials, Devices, and Applications for Solid State Lighting XV*, Paper 7954-42, San Francisco, CA, Jan 2011.

13. H. P. Zhao, [J. Zhang](#), T. Toma, G. Y. Liu, J. D. Poplawsky, V. Dierolf, and N. Tansu, "MOCVD Growths of Linearly-Shaped Staggered InGa_N Quantum Wells Light-Emitting Diodes at Green Spectral Regime," in *Proc. of the SPIE Photonics West 2011, Gallium Nitride Materials and Devices VI*, Paper 7939-4, San Francisco, CA, Jan 2011.
14. [J. Zhang](#), H. P. Zhao, and N. Tansu, "Gain Characteristics of Deep UV AlGa_N Quantum Wells Lasers," in *Proc. of the SPIE Photonics West 2011, Novel In-Plane Semiconductor Lasers X*, Paper 7953-16, San Francisco, CA, Jan 2011.
15. [J. Zhang](#), H. Tong, G. Y. Liu, J. A. Herbsommer, G. S. Huang, and N. Tansu, "Thermoelectric Properties of MOCVD-Grown AlInN Alloys with Various Compositions," in *Proc. of the SPIE Photonics West 2011, Gallium Nitride Materials and Devices VI*, Paper 7939-37, San Francisco, CA, Jan 2011.
16. [J. Zhang](#), H. Tong, J. A. Herbsommer, and N. Tansu, "Analysis of Thermoelectric Properties of AlInN Semiconductor Alloys," in *Proc. of the SPIE Photonics West 2011, Physics and Simulation of Optoelectronics Devices XIX*, Paper 7933-32, San Francisco, CA, Jan 2011.
17. [J. Zhang](#), H. Tong, and N. Tansu, "Thermal Conductivity Characteristics of Three-Layer Superlattices," in *Proc. of the American Physical Society (APS) Annual March Meeting 2011*, Dallas, Texas, March 2011.
18. H. P. Zhao, [J. Zhang](#), T. Toma, G. Y. Liu, J. D. Poplawsky, V. Dierolf, and N. Tansu, "MOCVD Growths of Linearly-Shaped Staggered InGa_N Quantum Wells Light-Emitting Diodes," in *Proc. of the American Physical Society (APS) Annual March Meeting 2011*, Dallas, Texas, March 2011.
19. R. B. Song, L. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Growths of InGa_N Quantum Wells on GaN Micropyramids," in *Proc. of the American Physical Society (APS) Annual March Meeting 2011*, Dallas, Texas, March 2011.
20. H. P. Zhao, [J. Zhang](#), G. Y. Liu, and N. Tansu, "Surface Plasmon Dispersion Engineering via Double-Metallic Au / Ag Layers for Nitride Light-Emitting Diodes," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2011*, Paper CWF5, Baltimore, MD, May 2011.
21. [J. Zhang](#), H. P. Zhao, and N. Tansu, "High TE-Polarized Optical Gain from AlGa_N-Delta-GaN Quantum Well for Deep UV Lasers," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2011*, Paper JTuD4, Baltimore, MD, May 2011.
22. G. Y. Liu, H. P. Zhao, [J. Zhang](#), and N. Tansu, "Growths of InGa_N-Based Light-Emitting Diodes with AlInN Thin Barrier for Efficiency Droop Suppression," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2011*, Paper CMDD6, Baltimore, MD, May 2011.
23. G. Sun, G. B. Xu, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "High-Power Terahertz Generation due to Dipole Radiation within InGa_N/Ga_N Multiple Quantum Wells," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2011*, Paper CMM4, Baltimore, MD, May 2011.
24. G. B. Xu, G. Sun, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Investigation of Blueshift of Photoluminescence Emission Peak in InGa_N/Ga_N Multiple Quantum Wells," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2011*, Paper JWA70, Baltimore, MD, May 2011.
25. (**Invited Conference Paper**) H. P. Zhao, [J. Zhang](#), and N. Tansu, "Physics of Novel III-Nitride Gain Media for Visible and Ultraviolet Lasers," *Proc. of the 24th Annual Meeting of the IEEE Photonics Society*, Arlington, VA, October 2011.
26. [J. Zhang](#), H. P. Zhao, and N. Tansu, "Engineering of AlGa_N-Delta-GaN Quantum Wells Gain Media for Mid- and Deep-Ultraviolet Lasers," in *Proc. of the SPIE Photonics West 2012, Novel In-Plane Semiconductor Lasers XI*, San Francisco, CA, Jan 2012.
27. [J. Zhang](#), and N. Tansu, "Spontaneous Emission Characteristics of InGa_N Quantum Wells Light-Emitting Diodes on Ternary InGa_N Substrates," in *Proc. of the SPIE Photonics West 2012, LEDs: Materials, Devices, and Applications for Solid State Lighting XVI*, San Francisco, CA, Jan 2012.
28. G. Y. Liu, [J. Zhang](#), H. P. Zhao, and N. Tansu, "Device Characteristics of InGa_N Quantum Well Light-Emitting Diodes with AlInN Thin Barrier Insertion," in *Proc. of the SPIE Photonics West 2012, Gallium Nitride Materials and Devices VII*, San Francisco, CA, Jan 2012.
29. G. Y. Liu, J. D. Poplawsky, [J. Zhang](#), V. Dierolf, H. P. Zhao, and N. Tansu, "Quantum Efficiency Characterizations of Staggered InGa_N Quantum Wells Light-Emitting Diodes by Temperature-Dependent Electroluminescence Measurement," in *Proc. of the SPIE Photonics West 2012, LEDs: Materials, Devices, and Applications for Solid State Lighting XVI*, San Francisco, CA, Jan 2012.
30. (**Invited Conference Talk**) N. Tansu, [J. Zhang](#), G. Y. Liu, C. K. Tan, P. F. Zhu, and H. P. Zhao, "Advances in III-Nitride Semiconductors for Energy Efficiency Applications," in *Proc. of the KAUST-UCSB-NSF Solid State Lighting Workshop 2012*, Thuwal, Saudi Arabia, February 2012.

31. G. Sun, R. Chen, Y. J. Ding, H. P. Zhao, G. Y. Liu, [J. Zhang](#), and N. Tansu, "Strikingly Different Behaviors of Photoluminescence Intensity and Terahertz Output Power versus Period of InGaN/GaN Quantum Wells," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2012*, San Francisco, CA, May 2012.
32. **(Invited Keynote Plenary Conference Talk)** N. Tansu, [J. Zhang](#), G. Y. Liu, C. K. Tan, P. F. Zhu, and H. P. Zhao, "Physics and Technology of III-Nitride Semiconductors for Energy Efficiency Applications," in *Proc. of the IUMRS-ICRAM Conference 2012*, Material Research Society (MRS), Singapore, July 2012.
33. **(Invited Conference Paper)** [J. Zhang](#), G. Y. Liu, C. K. Tan, P. F. Zhu, H. P. Zhao, and N. Tansu, "Engineering Nanostructures in Active Regions and Devices for High-Efficiency III-Nitride Light-Emitting Diodes – Epitaxy and Physics," in *Proc. of the SPIE Optics + Photonics 2012*, NanoEpitaxy : Materials and Devices IV, San Diego, CA, August 2012.
34. G. Y. Liu, [J. Zhang](#), C. K. Tan, and N. Tansu, "Characteristics of InGaN Quantum Wells Light-Emitting Diodes with Thin AlGaInN Barrier Layers," in *Proc. of the IEEE Photonics Conference 2012*, Burlingame, CA, Sep 2012.
35. [J. Zhang](#), and N. Tansu, "Gain and Laser Characteristics of InGaN Quantum Wells on Ternary InGaN Substrates," in *Proc. of the IEEE Photonics Conference 2012*, Burlingame, CA, September 2012.
36. C. K. Tan, [J. Zhang](#), X. H. Li, G. Y. Liu, and N. Tansu, "Dilute-As GaNAs Semiconductor for Visible Emitters," in *Proc. of the IEEE Photonics Conference 2012*, Burlingame, CA, September 2012.
37. P. F. Zhu, [J. Zhang](#), G. Y. Liu, and N. Tansu, "FDTD Modeling of InGaN-Based Light-Emitting Diodes with Microsphere Arrays," in *Proc. of the IEEE Photonics Conference 2012*, Burlingame, CA, September 2012.
38. **(Invited Conference Paper)** N. Tansu, [J. Zhang](#), G. Y. Liu, H. P. Zhao, C. K. Tan, and P. F. Zhu, "Physics of High-Efficiency III-Nitride Quantum Wells Light-Emitting Diodes," in *Proc. of the Asian Communications and Photonics (ACP) Conference 2012*, Guangzhou, China, November 2012.
39. **(Invited Conference Paper)** [J. Zhang](#), H. Tong, G. Y. Liu, and N. Tansu, "III-Nitride Based Thermoelectric – Current Status and Future Potential," in *Proc. of the Asian Communications and Photonics (ACP) Conference 2012*, Guangzhou, China, November 2012.
40. G. Y. Liu, [J. Zhang](#), C. K. Tan, and N. Tansu, "InGaN-Delta-InN Quantum Well Light-Emitting Diodes with Carrier Transport Effect," *Proc. of the SPIE Photonics West 2013*, San Francisco, CA, January 2013.
41. [J. Zhang](#), and N. Tansu, "Optical and Polarization Properties with Staggered AlGaIn Quantum Wells for Mid- and Deep-Ultraviolet Lasers and Light Emitting Diodes," *Proc. of the SPIE Photonics West 2013*, San Francisco, CA, January 2013.
42. P. F. Zhu, P. O. Weigel, G. Y. Liu, [J. Zhang](#), A. L. Weldon, T. Muangnaphor, J. F. Gilchrist, and N. Tansu, "Optimization of Deposition Conditions for Silica / Polystyrene Microlens and Nanolens Arrays for Light Extraction Enhancement in GaN Light-Emitting Diodes," *Proc. of the SPIE Photonics West 2013*, San Francisco, CA, January 2013.
43. C. K. Tan, [J. Zhang](#), G. Y. Liu, and N. Tansu, "Effect of Interband Energy Separation on the Interband Auger Processes in III-Nitride Semiconductors," *Proc. of the SPIE Photonics West 2013*, San Francisco, CA, Jan 2013.
44. **(Tutorial Conference Paper)** N. Tansu, [J. Zhang](#), G. Y. Liu, H. P. Zhao, C. K. Tan, and P. F. Zhu, "Internal and External Efficiency in InGaN-Based Light-Emitting Diodes," *Proc. of the Asian Communications and Photonics (ACP) Conference 2013*, Beijing, China, November 2013.
45. **(Invited Conference Paper)** [J. Zhang](#), and N. Tansu, "Superlattice Physics for Minimal Thermal Conductivity," *Proc. of the Asian Communications and Photonics (ACP) Conference 2013*, Beijing, China, November 2013.

Other Technical Publications

1. [J. Zhang](#), W. Z. Lu, G. F. Fan, and F. Liang, "Microstructures and Electrical Properties of $\text{Bi}_{0.5}(\text{Na}_{1-x-y}\text{K}_x\text{Li}_y)_{0.5}\text{TiO}_3$ Lead-free Piezoelectric Ceramics", *Journal of Wuhan University of Technology-Materials Science Edition*, 25(3), 361-364, June 2010.

Selected Research Works Featured in Magazine / Newspapers

1. "You build yourself into what you do" in *Lehigh News Center Highlight*, August 15th, 2012.
<http://www4.lehigh.edu/news/newsarticle.aspx?Channel=%2fChannels%2fNews%3a+2012&WorkflowItemID=aab27191-029a-43fa-9abe-198d4e34aea2>
2. "A Revolution in Lighting" in Feature Section of *Resolve magazine*, vol. 2, Fall 2012.
http://www.nxtbook.com/nxtbooks/lehigh/resolve_2012vol2/#/20
3. "Nanoscale Work Yields Greener Lighting" in Research Section of *Lehigh Alumni Bulletin*, Winter 2012-2013.
http://www.nxtbook.com/nxtbooks/lehigh/alumni_2013winter/#/14



Patents or Invention Disclosures

1. Nelson Tansu, Hua Tong, [J. Zhang](#), Guangyu Liu, and Gensheng Huang, Novel techniques to achieve high thermoelectric figure of merit based on nitride semiconductor. (US Patent Pending).

Teaching and Educational Aspects

Courses Taught at Rochester Institute of Technology:

- EEEE 281: Circuits I (*Sophomore UG level*)

Courses Taught at St. John's University:

- PHY3210: Electricity and Magnetism I (*Junior and Senior UG level*)
Course Evaluation: 3.83/ 5.0
- PHY3240: Basic Electronics (*Junior and Senior UG level*)
Course Evaluation: 4.00/ 5.0
- PHY3241: Basic Electronics Lab (*Junior and Senior UG level*)
Course Evaluation: 4.33/ 5.0
- PHY3230: Electricity and Magnetism Lab (*Junior and Senior UG level*)
Course Evaluation: 4.14/ 5.0
- PHY 1940: University Physics II (*Freshman and Sophomore UG level*)
Course Evaluation: 4.21/ 5.0

Other Teaching Experiences:

- **Other related teaching experiences (Spring 2012):** substitute lecturer for ECE 203 (Engineering Electromagnetics) at the Lehigh University. The ECE 203 is the second course of the undergraduate engineering electromagnetic course offered for ECE junior students.

Invited Seminars

1. [J. Zhang](#), "III-Nitride Semiconductors for Photonics and Energy-Efficiency Technologies," School of Electrical, Computer and Energy Engineering, Ira A. Fulton Schools of Engineering, [Arizona State University](#), Tempe, Arizona, April 2013.
2. [J. Zhang](#), "III-Nitride Semiconductors for Photonics and Energy-Efficiency Technologies," Department of Physics, [St. John's University](#), Queens, New York, April 2013.
3. [J. Zhang](#), "III-Nitride Semiconductors for Photonics and Energy-Efficiency Technologies," Department of Electrical and Microelectronic Engineering, Kate Gleason College of Engineering, [Rochester Institute of Technology](#), Rochester, New York, April 2014.

Refereed Conference Program Committee / Presider

1. **Conference Presider (Session Chair)** – IEEE / SPIE / OSA Asia Communications and Photonics Conference (ACP) 2012, LED Technologies and Applications, Guangzhou, China, November 2012.

Journal Reviewer

1. *IEEE Photonics Journal (IEEE)*
2. *Optical Materials Express (Optical Society of America)*
3. *Nanoscale Research Letters (Springer)*
4. *IEEE/OSA Journal of Display Technology (IEEE / OSA)*
5. *Nanoscale (RSC Publishing)*
6. *Journal of Applied Physics (American Institute of Physics)*
7. *Journal of Photonics for Energy (SPIE)*
8. *Optics Letters (OSA)*
9. *Physica Status Solidi (Wiley)*
10. *International Journal of Photoenergy (Hindawi)*



Internal Scientific Lectures & Seminars (Non-Refereed)

1. H. P. Zhao, G. Y. Liu, X. H. Li, [J. Zhang](#), G. S. Huang, J. D. Poplawsky, V. Dierolf, and N. Tansu, "Enhancement of Radiative Efficiency via Staggered InGaN Quantum Well Light Emitting Diodes," Invited Poster Presentation in *Transformation in Lighting 2010*, DOE R&D Workshop on Solid State Lighting 2010, Raleigh, NC, USA, February 2010.
2. H. P. Zhao, G. Y. Liu, [J. Zhang](#), T. Toma, G. S. Huang, J. Poplawsky, V. Dierolf, and N. Tansu, "Enhancement of Internal Quantum Efficiency with Staggered InGaN Quantum Wells Light Emitting Diodes," Poster Presentation in *Lehigh Nano-Energy Workshop 2010*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, September 2010.
3. H. Tong, [J. Zhang](#), J. A. Herbsommer, G. Y. Liu, G.S. Huang, and N. Tansu, "Thermoelectric Characteristics and Measurements of AlInN," Poster Presentation in *Lehigh Nano-Energy Workshop 2010*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, September 2010.
4. H. P. Zhao, G. Y. Liu, [J. Zhang](#), T. Toma, G. S. Huang, J. Poplawsky, V. Dierolf, and N. Tansu, "Enhancement of Internal Quantum Efficiency with Staggered InGaN Quantum Wells Light Emitting Diodes," Poster Presentation in *Lehigh Center for Optical Technologies (COT) Open House 2010*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, October 2010.
5. H. Tong, [J. Zhang](#), J. A. Herbsommer, G. Y. Liu, G.S. Huang, and N. Tansu, "Thermoelectric Characteristics and Measurements of AlInN," Poster Presentation in *Lehigh Center for Optical Technologies (COT) Open House 2010*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, October 2010.
6. [J. Zhang](#), H. P. Zhao, and N. Tansu, "Physics of AlGaIn Quantum Well Gain Media," Poster Presentation in *Lehigh Center for Optical Technologies (COT) Open House 2010*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, November 2011.
7. H. P. Zhao, G. Y. Liu, [J. Zhang](#), J. Poplawsky, V. Dierolf, and N. Tansu, "Enhancement of Internal Quantum Efficiency with InGaN Quantum Wells Light-Emitting Diodes with Large Overlap Design," Poster Presentation in *Lehigh Center for Optical Technologies (COT) Open House 2011*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, November 2011.
8. [J. Zhang](#), H. Tong, J. A. Herbsommer, G. Y. Liu, G.S. Huang, and N. Tansu, "Thermoelectric Characteristics and Measurements of III-Nitride Alloys," Poster Presentation in *Lehigh Center for Optical Technologies (COT) Open House 2011*, [Lehigh University](#), Bethlehem, Pennsylvania, USA, November 2011.



References

1. **Prof. Nelson Tansu** (PhD Advisor)
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