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Education

January 2004 – August 2008, *Lehigh University (Bethlehem, PA)*
Doctor of Philosophy in Electrical Engineering, Department of Electrical and Computer Engineering

- GPA: **3.98/4.0**
- Sherman Fairchild Fellowship

Fall 1998 – May 2002, *Nanyang Technological University (Singapore)*
Bachelor of Applied Science (B.A.Sc.) in Materials Engineering

- Graduate with 1st Class Honors (**top 5%**)
- Singapore Department of Education Tuition Grant Scheme,

Professional Experiences

June 2009 - present *Cree, Inc (Durham, NC)*
Research Scientist

- Research and development of LEDs for solid state lighting application

October 2008 – June 2009, *Epiworks (Champaign, IL)*
Epitaxy Engineer

- Research, development, and production of semiconductor heteroepitaxial structures for wide array of electronic and optoelectronic devices based on GaAs and InP materials system. Current focus is on the development of highly-efficient dual and triple junction lattice-matched and metamorphic solar cells on GaAs and Ge substrates. Other devices include Light Emitting Diodes (LEDs), resonant-cavity light emitting diodes (RCLED), quantum well (QW) edge-emitting lasers, and Vertical Cavity Surface Emitting Lasers (VCSELs), p-i-n photodiode, and heterojunction bipolar transistors (HBT) using Metal Organic Chemical Vapor Deposition (MOCVD).

October 2002 – October 2003 *Agilent Technologies (Singapore)*
III-V Epitaxy Process Engineer at Semiconductor Products Group

Main responsibilities:

- Vapor phase epitaxy (VPE) optimization based on correlation of characterization data and growth condition; yield improvement; and new product development (p-i-n photodiode and stacked LED).

Awards, Scholarships and Honors

- **Sigma Xi Research Society** (Inducted in 2008), Lehigh University
- **Phi Beta Delta Honors** (Inducted in 2006), Lehigh University
- **Lehigh University Research Assistantship**, 2004-08
- **Sherman-Fairchild Fellowship for Solid-State Studies**, 2005-06
- **Singapore Ministry of Education (MOE) Tuition Grant Scheme**, 1998-2002
- **Who's Who in America 2010** (will be published in October 2009)

Refereed Journal and Conference Publications

1. **R. A. Arif**, and N. Tansu, "Interdiffused InGaAsSbN Quantum Wells on GaAs for 1300-1550 nm Lasers," in Proc. of the *SPIE Photonics West 2005, Physics and Simulation of Optoelectronics Devices XIII*, San Jose, CA, Jan 2005.
2. **R. A. Arif**, and N. Tansu, "Interdiffused SbN-Based Quantum Wells on GaAs for 1300-1550 nm Lasers: Theory and Experiments," in *IEEE Semiconductor Lasers Workshop 2005*, Baltimore, MD, May 2005.
3. **R. A. Arif**, N. H. Kim, L. J. Mawst, and N. Tansu, "Interdiffused InGaAsP Quantum Dots Lasers on GaAs by Metalorganic Chemical Vapor Deposition," in *Proc. of the MRS Fall Meeting 2005: Symposium EE: Progress in Semiconductor Materials V—Novel Materials and Electronic and Optoelectronic Applications*, Boston, MA, USA, November-December 2005.
4. **R. A. Arif**, and N. Tansu, "Interdiffused SbN-Based Quantum Wells on GaAs for 1300-1550 nm Lasers," in *Proc. of the MRS Fall Meeting 2005: Symposium EE: Progress in Semiconductor Materials V—Novel Materials and Electronic and Optoelectronic Applications*, Boston, MA, USA, November-December 2005.
5. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Type-II 450-550 nm InGaN-GaNAs Quantum Well Lasers and Light Emitters Active Region on GaN," in Proc. of the *SPIE Photonics West 2006, Physics and Simulation of Optoelectronics Devices XIV*, San Jose, CA, Jan 2006.
6. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Polarization Field Engineering with Type-II InGaN-GaNAs Quantum Well for Improved Nitride Gain Media at 420-550 nm," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2006*, Long Beach, CA, May 2006.
7. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Nitride-Based Type-II InGaN-GaNAs 'W' Quantum Well Gain Media at 420-550 nm," in *Proc. of the TMS Electronics Material Conference (EMC) 2006*, State College, PA, June 2006.
8. H. Li, J. T. Perkins, H. M. Chan, R. P. Vinci, Y. K. Ee, **R. A. Arif**, R. S. Tummidi, J. Li, and N. Tansu, "Nanopatterning of Sapphire for GaN Heteroepitaxy by Metalorganic Chemical Vapor Deposition," in *Proc. of the MRS Fall Meeting 2006: Symposium I: Advances in III-V Nitride Semiconductor Materials and Devices*, Boston, MA, USA, November-December 2006.
9. **R. A. Arif**, R. S. Tummidi, Y. K. Ee, and N. Tansu, "Design Analysis of Lattice-Matched AllInGaN-GaN Quantum Wells for Optimized Intersubband Absorption in the Mid-IR Regime," in Proc. of the *SPIE Photonics West 2007, Physics and Simulation of Optoelectronics Devices XV*, San Jose, CA, Jan 2007.
10. Y. K. Ee, Y. P. Gupta, **R. A. Arif**, and N. Tansu, "Quantum 3-D Finite-Difference-Time-Domain (FDTD) Analysis of InGaAs-GaAsP and InN-GaN Quantum Dots Nanostructures," in Proc. of the *SPIE Photonics West 2007, Physics and Simulation of Optoelectronics Devices XV*, San Jose, CA, Jan 2007.
11. M. Jamil, Y. K. Ee, **R. A. Arif**, H. Tong, and N. Tansu, "Study of Nucleation and Growth Modes of InN films by MOCVD on Sapphire Substrate for Photovoltaic Applications," Poster Session, *MRS Spring 2007: Symposium Y: Thin-Film Compound Semiconductor Photovoltaics*, San Francisco, CA, USA, April 2007.
12. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Enhancement of Radiative Efficiency of Nitride-Based LEDs via Staggered InGaN Quantum Wells Emitting at 420-500 nm," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2007*, Baltimore, MD, May 2007.
13. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, J. F. Gilchrist, and N. Tansu, "Enhancement of Light Extraction Efficiency of InGaN Quantum Wells LEDs Using SiO₂ Microspheres," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2007*, Baltimore, MD, May 2007.
14. Y. K. Ee, **R. A. Arif**, M. Jamil, and N. Tansu, "MOCVD Epitaxy and Optical Properties of Self-Assembled InGaN Quantum Dots via Stranski-Kastranow Growth Mode Emitting at 520-nm," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2007*, Baltimore, MD, May 2007.
15. (**Invited Conference Paper**) **R. A. Arif**, Y. K. Ee, H. Zhao, M. Jamil, and N. Tansu, "Nanostructure Engineering of InGaN-Based Active Regions for Improved III-Nitride Gain Media Emitting at 420-650 nm," in *Proc. of the European MRS (E-MRS) Spring Meeting 2007: Symposium F: Novel Gain Materials and Devices Based on III-N-V Compounds*, Strasbourg, France, May-June 2007.
16. M. Jamil, **R. A. Arif**, Y. K. Ee, H. Tong, J. B. Higgins, and N. Tansu, "MOCVD Epitaxy of InN Films on GaN Templates Grown on Sapphire and Silicon (111) Substrates," in *Proc. of the 13th Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE) 2007*, Salt Lake City, UT, August 2007.

17. Y. K. Ee, H. Zhao, **R. A. Arif**, M. Jamil, and N. Tansu, "Self-Assembled InGaN Quantum Dots on GaN Grown by Metalorganic Vapor Phase Epitaxy," in *Proc. of the 13th Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE) 2007*, Salt Lake City, UT, August 2007.
18. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Polarization Engineering via Staggered InGaN Quantum Wells for Radiative Efficiency Enhancement of Light Emitting Diodes Emitting at 420-510 nm," *Appl. Phys. Lett.* 91, 091110 (2007). [Also featured in the Virtual Journal of Nanoscale Science and Technology; and Laser Focus World – News Break section, Nov 2007].
19. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Optical Gain Analysis of Strain Compensated InGaN-AlGaN Quantum Well Active Regions for Lasers Emitting at 420-520 nm," in *Proc. of the 7th International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD 2007)*, Newark, DE, September 2007.
20. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Optical Gain Analysis of Strain-Compensated InGaN-AlGaN Quantum Well Active Regions for Lasers Emitting at 420-500 nm," *Optical and Quantum Electronics*, vol. 39 (12-14), September 2007.
21. H. Li, J. T. Perkins, S. Dutta, H. M. Chan, R. P. Vinci, Y. K. Ee, **R. A. Arif**, N. Tansu, P. Capek, N. K. Jha, and V. Dierolf, "Sapphire Nano-Patterning and GaN Nano-Heteroepitaxy," in *Proc. of the MRS Fall Meeting 2007: Symposium I: Advances in III-V Nitride Semiconductor Materials and Devices*, Boston, MA, USA, November-December 2007.
22. E. Readinger, G. Chern, H. Shen, M. Wraback, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Optical and Physical Properties of In-faced InN/InGaN Multi-Quantum Wells Grown on GaN Templates by Plasma-Assisted Molecular Beam Epitaxy," in *Proc. of the North America Molecular Beam Epitaxy (NAMBE) Conference 2007, Albuquerque, NM*, September 2007.
23. Y. K. Ee, **R. A. Arif**, H. Li, H. M. Chan, R. P. Vinci, P. Capek, N. K. Jha, V. Dierolf, and N. Tansu, "Improved Photoluminescence of InGaN Quantum Wells Grown on Nano-Patterned AGOG Sapphire Substrate by Metalorganic Vapor Phase Epitaxy," in *Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2007*, Lake Buena Vista, FL, October 2007.
24. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Optical Gain Analysis of Staggered InGaN Quantum Wells: Theory and Experiments," in *Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2007*, Lake Buena Vista, FL, October 2007.
25. G. Tsvid, J. Kirch, L. J. Mawst, M. Kanskar, J. Cai, **R. A. Arif**, N. Tansu, P. M. Snowton, and P. Blood, "Radiative Efficiency of InGaAs/GaAs Quantum Well Lasers," in *Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2007*, Lake Buena Vista, FL, October 2007.
26. **R. A. Arif**, Y. K. Ee, H. Zhao, and N. Tansu, "Radiative Efficiency and Spontaneous Recombination Rate of Staggered InGaN Quantum Wells Light Emitting Diodes Emitting at 420-510 nm," in *Proc. of the SPIE Photonics West 2008, Physics and Simulation of Optoelectronics Devices XV*, San Jose, CA, Jan 2008.
27. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, H. Tong, J. F. Gilchrist, and N. Tansu, "Comparison of Numerical Modeling and Experiments of InGaN Quantum Wells Light Emitting Diodes with SiO₂ / Polystyrene Microlens Arrays," in *Proc. of the SPIE Photonics West 2008, Light-Emitting Diodes: Research, Manufacturing, and Applications XII*, San Jose, CA, Jan 2008.
28. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Optical Gain and Spontaneous Emission of Strain-Compensated InGaN-AlGaN Quantum Wells Including Carrier Screening Effect," in *Proc. of the SPIE Photonics West 2008, Physics and Simulation of Optoelectronics Devices XVI*, San Jose, CA, Jan 2008.
29. Y. K. Ee, **R. A. Arif**, N. Tansu, P. Kumnorkaew and J. F. Gilchrist, "Enhancement of light extraction efficiency of InGaN quantum wells light emitting diodes using SiO₂/polystyrene microlens arrays", *Appl. Phys. Lett.* 91, 221107, November 2007. [Also featured in the Laser Focus World, Jan 2008].
30. **R. A. Arif**, H. Zhao, and N. Tansu, "Type-II InGaN-GaNAs quantum wells for lasers applications", *Appl. Phys. Lett.* 92, 011104, January 2008.
31. **R. A. Arif**, Y. K. Ee, and N. Tansu, "Nanostructure engineering of staggered InGaN quantum wells light emitting diodes emitting at 420–510 nm", *physica status solidi (a)* 205, 96, 2008.
32. **R.A. Arif**, H. Zhao, Y. K. Ee, and N. Tansu, "Spontaneous Emission and Characteristics of Staggered InGaN Quantum Wells Light Emitting Diodes", *IEEE J. Quantum Electron.* vol 44. no. 6, 573 (March 2008).

33. Y. K. Ee, H. Zhao, **R. A. Arif**, M. Jamil, and N. Tansu, "Self-Assembled InGaN Quantum Dots on GaN Grown by Metalorganic Vapor Phase Epitaxy," *J. Crystal Growth*, vol. 310/7-9, 2320, April 2008.
34. S. K. Tripathy, G. Xu, X. Mu, Y. J. Ding, M. Jamil, **R. A. Arif**, and N. Tansu, "Resonant Raman Scattering of Coherent Picosecond Pulses by One and Two Longitudinal-Optical Phonons in GaN Film Grown on Silicon (111) Substrate," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
35. **R. A. Arif**, H. Zhao, and N. Tansu, "InGaN-GaNAs Type-II 'W' Quantum Well Lasers for Emission at 450-nm," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
36. H. Zhao, **R. A. Arif**, G. S. Huang, Y. K. Ee, and N. Tansu, "Self-Consistent Optical Gain Analysis and Epitaxy of Strain-Compensated InGaN-AlGaIn Quantum Wells for Laser Applications," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
37. **R. A. Arif**, H. Zhao, Y. K. Ee, S. T. Penn, V. Dierolf, and N. Tansu, "Spontaneous Recombination Rate and Luminescence Efficiency of Staggered InGaN Quantum Wells Light Emitting Diodes," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
38. X. Mu, Y. J. Ding, **R. A. Arif**, M. Jamil, and N. Tansu, "Observation of Enhanced THz Emission from InGaN/GaN Multiple Quantum Wells," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
39. Y. K. Ee, P. Kumnorakaw, **R. A. Arif**, H. Tong, J. F. Gilchrist, and N. Tansu, "Size Effects and Light Extraction Efficiency Optimization of III-Nitride Light Emitting Diodes with SiO₂ / Polystyrene Microlens Arrays," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008*, San Jose, CA, May 2008.
40. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, "Approaches for Low-Threshold 'Green' Nitride Lasers Diodes," in IEEE Semiconductor Lasers Workshop 2008, San Jose, CA, May 2008.
41. (**Invited Conference Paper**) N. Tansu, R. A. Arif, Y. K. Ee, H. Zhao, H. Tong, M. Jamil, and G. S. Huang, "Nano- Engineering of III-Nitride Semiconductor Optoelectronics and New Applications," in Proc. of the International Conferences of Materials and Technologies (CIMTEC) 2008 – 3rd International Conference on Smart Materials, Structures and Systems, Acireale, Sicily, Italy, June 2008.
42. M. Jamil, **R. A. Arif**, Y. K. Ee, H. Tong, J. B. Higgins, and N. Tansu, "MOCVD Epitaxy of InN Films on GaN Templates Grown on Sapphire and Silicon (111) Substrates," in *Physica Stat. Solidi (a)*, vol. 205 (7), pp. 1619-1624, July 2008..
43. (**Invited Conference Paper**) N. Tansu, **R. A. Arif**, H. Zhao, and Y. K. Ee, "Polarization Engineering of III-Nitride Nanostructures for High-Efficiency Light Emitting Diodes," in Proc. of the SPIE Optics + Photonics 2008, The 8th International Conference on Solid State Lighting, vol. 7058, paper 7058-45, San Diego, CA, August 2008.
44. G. Tsvid, J. Kirch, L. J. Mawst, M. Kanskar, J. Cai, **R. A. Arif**, N. Tansu, P. M. Snowton, and P. Blood, "Spontaneous Radiative Efficiency and Gain Characteristics of Strained Layer InGaAs / GaAs Quantum Well Laser," in *IEEE J. Quantum Electron.*, vol. 44(8), pp. 732-739, August 2008.
45. H. Zhao, **R. A. Arif**, and N. Tansu, "Self Consistent Gain Analysis of Type-II 'W' InGaN-GaNAs Quantum Well Lasers," *J. Appl. Phys.*, vol. 104 (4), Art. 043104, August 2008.
46. S. K. Tripathy, G. Xu, X. Mu, Y. J. Ding, M. Jamil, **R. A. Arif**, N. Tansu, and J. B. Khurgin, "Phonon-Assisted Ultraviolet Anti-Stokes Photoluminescence from GaN Film Grown on Si (111) Substrate," *Appl. Phys. Lett.*, vol. 93, Art. 201107, November 2008.
47. X. Mu, Y. J. Ding, **R. A. Arif**, M. Jamil, and N. Tansu, "Nonlinear Power Dependence for Efficient THz Generation from InGaN / GaN Multiple Quantum Wells," in Proc. of the 21st IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2008, paper ThM3, pp. 788-789, Newport Beach, CA, November 2008.
48. (**Invited Conference Paper**) N. Tansu, H. Zhao, **R. A. Arif**, Y. K. Ee, G. Liu, X. Li, and G. S. Huang, "Polarization Engineering of InGaN-Based Nanostructures for Low-Threshold Diode Lasers and High-

- Efficiency Light Emitting Diodes,” in Proc. of the *IEEE Photonics Global 2008, Nanophotonics Symposium*, Singapore, Republic of Singapore, December 2008.
49. **(Best Paper Award)** Y. K. Ee, **R. A. Arif**, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, “Optimization and Fabrication of III-Nitride Light-Emitting Diodes with Self-Assembled Colloidal-Based Convex Microlens Arrays,” in Proc. of the *IEEE Photonics Global 2008, Nanophotonics Symposium*, Singapore, Republic of Singapore, December 2008.
 50. H. Zhao, **R. A. Arif**, G. S. Huang, Y. K. Ee, and N. Tansu, “Growths of Staggered InGaN Quantum Wells Light Emitting Diodes at 470-480 nm Employing Graded Temperature Profile,” in Proc. of the *SPIE Photonics West 2009, LEDs: Materials, Devices, and Applications for Solid State Lighting XIII*, San Jose, CA, Jan 2009.
 51. H. Zhao, **R. A. Arif**, and N. Tansu, “Design of Staggered InGaN Quantum Wells for Green Diode Lasers,” in Proc. of the *SPIE Photonics West 2009, Novel In-Plane Semiconductor Lasers VIII*, San Jose, CA, Jan 2009.
 52. H. Zhao, **R. A. Arif**, and N. Tansu, “Analysis of Current Injection Efficiency and Efficiency Droop of InGaN Quantum-Wells Light-Emitting Diodes,” in Proc. of the *SPIE Photonics West 2009, Physics and Simulation of Optoelectronics Devices XVII*, San Jose, CA, Jan 2009.
 53. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, H. Tong, J. F. Gilchrist, and N. Tansu, “Enhancement of Light Extraction Efficiency of InGaN Quantum Wells Light-Emitting Diodes with Polydimethylsiloxane Concave Microstructures,” in Proc. of the *SPIE Photonics West 2009, LEDs: Materials, Devices, and Applications for Solid State Lighting XIII*, San Jose, CA, Jan 2009.
 54. H. Zhao, **R. A. Arif**, Y. K. Ee, and N. Tansu, “Self-Consistent Analysis of Strain-Compensated InGaN-AlGaIn Quantum Wells for Lasers and Light Emitting Diodes,” *IEEE J. Quantum Electron.*, vol. 45(1-2), pp. 66-78, January- February 2009.
 55. S. K. Tripathy, G. Xu, X. Mu, Y. J. Ding, M. Jamil, **R. A. Arif**, N. Tansu, and J. B. Khurgin, “Observation of Anti-Stokes Fluorescence from GaN Film Grown on Si (111) Substrate,” in Proc. of the APS/OSA International Quantum Electronics Conference (IQEC) 2009, Baltimore, MD, May 2009. **(accepted)**
 56. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, H. Tong, J. F. Gilchrist, and N. Tansu, “The Use of Polydimethylsiloxane Concave Microstructures Arrays to Enhance Light Extraction Efficiency of InGaN Quantum Wells Light-Emitting Diodes,” in Proc. of the *IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2009*, Baltimore, MD, May 2009. **(accepted)**
 57. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, H. Tong, H. Zhao, J. F. Gilchrist, and N. Tansu, “Optimization of Light Extraction Efficiency of III-Nitride Light Emitting Diodes with Self-Assembled Colloidal-based Microlenses,” *IEEE J. Selected Topics in Quantum Electronics*, vol. 15 (3), July-August 2009. **(accepted)**.
 58. H. Zhao, **R. A. Arif**, and N. Tansu, “Design Analysis of Staggered InGaN Quantum Wells Light-Emitting Diodes at 500-540 nm,” *IEEE J. Selected Topics in Quantum Electronics*, vol. 15 (3), July-August 2009. **(accepted)**.
 59. **(Invited Journal Paper)** H. Zhao, G. Liu, X. H. Li, R. A. Arif, G. S. Huang, J. D. Poplawsky, S. Tafon Penn, V. Dierolf, and **N. Tansu**, “Design and Characteristics of Staggered InGaN Quantum Well Light-Emitting Diodes in the Green Spectral Regimes,” *IET Optoelectronics* **(accepted)**.
 60. **(Invited Conference Paper)** N. Tansu, H. Zhao, **R. A. Arif**, Y. K. Ee, G. Liu, X. Li, H. Tong, and G. S. Huang, “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.

Submitted Journal and Conference Publications

61. **(Invited Topical Review Article)** N. Tansu, **R. A. Arif**, Y. K. Ee, H. Zhao, G. S. Huang, H. Tong, and M. Jamil, “Recent Progress on High Efficiency InGaN Quantum Wells and Quantum Dots Light Emitting Diodes for Solid State Lighting – A Review,” *J. Phys. D: Appl. Phys.* (submitted).
62. **(Invited Review Article)** N. Tansu, **R. A. Arif**, Y. K. Ee, H. Zhao, H. Tong, and G. S. Huang, “Physics and Devices of III-Nitride Diode Lasers,” *Lasers and Photonics Review* (submitted).
63. H. Zhao, **R. A. Arif**, and N. Tansu, “Optical Gain and Lasing Properties of Staggered InGaN Quantum Well Lasers Emitting at 500 nm,” *J. Appl. Phys.* (submitted).

64. H. Zhao, **R. A. Arif**, and N. Tansu, "Current Injection Efficiency Quenching Leading to Efficiency Droop in InGaN Quantum Well Light-Emitting Diodes," *J. Appl. Phys.* (submitted).
65. Y. K. Ee, P. Kumnorkaew, **R. A. Arif**, H. Tong, J. F. Gilchrist, and N. Tansu, "Light Extraction Efficiency Enhancement of InGaN Quantum Wells Light-Emitting Diodes with Polydimethylsiloxane Concave Microstructures," *Optics Express* (submitted).
66. **(Invited Journal Paper)** H. Zhao, **R. A. Arif**, Y. K. Ee, H. Zhao, G. S. Huang, H. Tong, and N. Tansu, "Staggered InGaN Quantum Well Light-Emitting Diodes in Green Spectral Regimes," *IET Optoelectronics* (submitted).
67. **(Invited Journal Paper)** H. Zhao, **R. A. Arif**, Y. K. Ee, H. Zhao, G. S. Huang, H. Tong, and N. Tansu, "Approaches for High Internal Quantum Efficiency in InGaN Quantum Well Light Emitting Diodes," *IEEE Photonics Journal* (submitted).

Book Chapters

1. Nelson Tansu, **Ronald A. Arif**, and Zhian Jin, "Semiconductor Nano-electronics and Nano-optoelectronics," Book Chapter in **"The Electrical Engineering Handbook"** (Editor-in-Chief: Dr. Richard C. Dorf), 3rd Edition, CRC Press and IEEE Press, 2005.
2. **Ronald A. Arif**, and Nelson Tansu, "Interdiffused InGaAsSbN Quantum Well on GaAs for 1300-1550 nm Diode Lasers", Book Chapter (Chapter 19) in **"Dilute Nitrides: Physics and Applications"** (Edited by: Dr. Ayse Erol), February 2008.

Patents or Invention Disclosures

1. Nelson Tansu, **Ronald A. Arif**, and Yik Khoon Ee, *Novel techniques to achieve high performance visible LEDs and lasers.* (US Patent approved).
2. Nelson Tansu, **Ronald A. Arif**, Yik Khoon Ee, and Hongping Zhao, *Novel approach using polarization engineering for achieving nitride-based gain media with significant enhancement in radiative recombination rate and optical gain for high efficiency LEDs and lasers.* (PCT Application and US Patent Pending).
3. Nelson Tansu, **Ronald A. Arif**, and Yik Khoon Ee, *Novel methods for achieving nitride-based gain media with significant enhancement in radiative recombination rate and optical gain for high efficiency LEDs and lasers.* (PCT Application and US Patent Pending).
4. Nelson Tansu, Yik Khoon Ee, James F. Gilchrist, Pisist Kumnorkaew, and **Ronald A. Arif**, *Novel techniques to achieve large light extraction efficiency of nitride-based LEDs using a low cost and straight forward approach.* (PCT Application and US Patent Pending).
5. Nelson Tansu, **Ronald A. Arif**, Yik Khoon Ee, and Hongping Zhao, *Novel approach using polarization engineering for achieving nitride-based gain media with significant enhancement in radiative recombination rate and optical gain for high efficiency LEDs and lasers.* (PCT Application and US Patent Pending).

Selected Research Works Featured in Magazine / Newspapers

1. "Staggered InGaN Quantum Wells Improve LEDs" in *NewsBreak* section of **Laser Focus World** magazine, vol. 43(11), pp. 17, November 2007.
http://www.laserfocusworld.com/display_article/311568/12/ARTCL/none/NBrea/Staggered-InGaN-quantum-wells-improve-LEDs
2. "LIGHT-EMITTING DIODES: Microlens Arrays Improve the Extraction Efficiency of Nitride LEDs" in *World News* section of **Laser Focus World** magazine, vol. 44(1), pp. 15, January 2008.
http://www.laserfocusworld.com/display_article/317036/12/ARTCL/none/News/LIGHT-EMITTING-DIODES:-Microlens-arrays-improve-the-extraction-efficiency-of-nitride-LED
3. "DOE Announces Selections for SSL Core Technology and Product Development Funding Opportunities (Round 4)" in *US Department of Energy (DOE) – National Energy Technology Laboratory (NETL) Press Release*, February 2008: <http://www.netl.doe.gov/ssl/021108.html>
4. "U. S. Department of Energy to Invest up to \$20.6 Million for Solid-State Lighting Research and Development Projects" in *US Department of Energy (DOE) Office of Public Affairs Press Release*, February 2008: <http://www.energy.gov/print/5983.htm>
5. "DOE Awards 4th-Round of Funding for Solid State Lighting Development" in *News* section of **Semiconductor Today** magazine, February 2008.
http://www.semiconductor-today.com/news_items/2008/FEB/NETL_140208.htm
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