Mark A. Wistey

Curriculum Vitae
Texas State University
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Education

B.S., Honors	B.S. in Electrical Engineering, University Honors Degree of Highest Distinction, physics minor, summa cum laude, Montana State University, Bozeman, 1994. GPA 3.94.
--	National Student Exchange, University of Massachusetts at Amherst, 1991
M.S.	Electrical Engineering, Stanford University, 2000.
Ph.D.	Electrical Engineering, Stanford University, 2005. GPA 3.78.

Professional Experience

1988-1989	Swimming instructor and lifeguard, Livingston (Montana) City Pool.
1990-1991	Software Engineering, Video Lottery Consultants (now IGT), Bozeman, Montana.
1993	Science and Engineering Research Semester, Lawrence Livermore National Laboratory
1995-1997	Development Engineer at CinnabarMac, Livingston, Montana
2000-2001	Visiting Researcher, Lawrence Livermore National Laboratory
2005	Visiting Scholar, Stanford University
2006	Postdoctoral Research Associate at Arizona State University, Tempe, Arizona.
2007-2009	Postdoctoral Scholar at University of California Santa Barbara, California.
2009-2017	Assistant Professor at the University of Notre Dame du Lac, Notre Dame, Indiana.
2017-	Associate Professor at Texas State University - San Marcos, Texas.

Fellowships and Awards

1988-1989	Statewide top or finalist scores in AHSME, Rocky Mountain Science Symposium, and Montana Council of Teachers of Mathematics contests
1989-1993	Presidential Scholar, Montana State University
1990-1993	Barry Goldwater Scholar
1993	Texts and Critics Junior Fellow, MSU Honors Program
1997-2000	National Science Foundation Graduate Fellowship
2003	Outstanding Student Paper, North American Molecular Beam Epitaxy Conference.
2004	Ross N. Tucker Award (IEEE/TMS) for Advancement in Semiconductor Materials
2008, 2009	UCSB Materials Research Lab ScienceLine Award for K-12 Outreach (2 years)
2012	Advisor of Eilers Graduate Fellowship, Notre Dame
2012	Advisor of Best Poster award, International SiGe Technology and Device Meeting (ISTDM)
2013	MBE Young Investigator Award, North American Molecular Beam Epitaxy (NAMBE) conference.
2013	Outstanding Teacher Award, Department of Electrical Engineering, Notre Dame
2014	Advisor of the Best Student Manuscript Award, Electronic Materials Conference
2015-2017	Advisor of Notre Dame Energy Fellowship award

Teaching Experience

1988-1992	Instructor for advanced and standard first aid, CPR, and swimming. American Red Cross and Livingston (Montana) City Pool.
1989	Assembly language programming, Park High School, Livingston, Montana.
1990-1993	First Aid, Advanced First Aid, and CPR Instructor, American Red Cross.
1993	Texts and Critics Junior Fellow, Oxford tutorial, Montana State University Honors Program.

1996-1997 Macintosh Forensics Course Development, CinnabarMac, Livingston, Montana.
1999-2001 Teaching assistant, Stanford University: 4 courses.
2007 Co-developed and taught "Alternative Energy Materials and Devices," UC Santa Barbara.
2007 Co-taught "Molecular Beam Epitaxy and Heterostructure Devices," UC Santa Barbara.
2009-2010 New Faculty Teaching Workshop, Teaching Well By Design, Kaneb Center for Teaching and Learning, University of Notre Dame.

Courses Taught and Developed at Notre Dame (enrollment / composite evaluation out of 5.0)

EE 40447 Alternative Energy Devices and Materials (also 60647, formerly 47010/67034)
New course, Fall 2009 (19/4.6). Also: Fall 2010 (22/3.6), Fall 2012 (27/4.4), Fall 2014 (24/4.4), Fall 2016 (36/4.4).

EE 60566 Solid State Devices
Spring 2010 (16/4.3), Spring 2011 (11/4.1), Spring 2012 (16/4.6), Spring 2014 (14/4.4), Spring 2015 (11/4.8), Spring 2016 (13/4.2), Spring 2017 (11/4.6).

EE 30347 Semiconductors I
Fall 2011 (30/3.9), Fall 2013 (37/4.4), Fall 2015 (34/4.7).

EE 67051 Optoelectronics (mentor role). New course, Spring 2013.

Graduate Students (2 PhD, 2 MS)
Chad Stephenson (PhD 2015, Notre Dame). William O'Brien (PhD 2016, Rigetti Quantum Computing). Meng Qi (MS 2012). Victor Patel (MS 2013).

Post-doctoral Associates (2)
Wu Bin (Sandisk Electronics). Miriam Gillett-Kunnath (University of Syracuse).

Undergraduate Students (25)
Sara Miyako Taylor (ND '12): EE 48499. George Warner (ND '11): lab assistant 2010-2011. Kuijun Liang (ND '12): NURF 2011. Michael McSorley (ND '11): lab assistant 2010. Aaron Stewart (ND '13): lab assistant 2010-2011. Steven Cress (ND '13): NURF 2011, EE 48499, fall 2011. Alex Toombs (ND '13): lab assistant 2011-2012. Nicholas Ferruolo (ND '13): lab assistant 2011-2012. Rose Doerfler (ND '15): lab assistant, 2012. Anthony "A.J." Erdman (ND '13): NURF 2012. Jung Whan (Stephen) Kim (ND '13): EE 48499, fall 2012. Sean Baur (ND '13): NURF 2012; lab assistant, fall 2012. John Mullaney (ND '13): lab assistant, summer & fall 2012. Sam Bruce (ND '13'): lab assistant, summer 2013. Veronica Martinez (ND '14): Balfour-Hesburgh research scholar, summer 2013. Katie Loughran (ND '16): NURF research fellow, summer 2013. Alex Wentzel (ND '15): lab assistant (spring) and Slatt research scholar (summer) 2013. Patrick Whalen (ND '15): lab assistant, summer 2013. Matthew Henne (ND '15): NURF 2014. Hamim Nigena (Morehouse College, a Historically Black College): Slatt Scholar, 2014. Kathryn D'Alessandro (ND '18): lab assistant and NSF REU, 2015. Albert Pucci (ND '17): lab assistant and NURF 2015. Anne Conover (ND '17): lab assistant, 2015-16. Ben Wdowik (ND '18): lab assistant, fall 2016.

High School Teachers
Ms. Heather Nimon: NSF RET teacher, summer 2013. Ms. Brenda Mueller: NSF RET teacher, summer 2014. Mr. Greg Alberding: NSF RET teacher, summer 2015.

Other Leadership Experience

1990-1991 Dorm president
1991 Campus lead organizer, College Bowl, Montana State University
1996-1997 Executive team and re-founding member, Kiwanis Club, Livingston, Montana

Professional Activities

Editorial

Guest Editor, Journal of Vacuum of Science and Technology B special issue, 2012.

Reviewer: Applied Physics Letters, IET Optoelectronics, Journal of Applied Physics, Journal of Electronic Materials, Journal of Crystal Growth, Journal of Physical Chemistry Letters, Journal of Special Topics in Quantum Electronics, IEEE Journal of Photovoltaics, Journal of Vacuum Science and Technology A/B, Nature Communications, Physica Status Solidi A, Scripta Materialia, Surface Science

Proposal Review Panels (Federal agencies and major foundations)

1. National Science Foundation (NSF): 2009; 2011; three panels in 2015.
2. Keck Foundation: written reviews (2015).

National and International Societies

1. Institute of Electrical and Electronic Engineers (IEEE), 2004-:
   Senior Member 2016-. Member of Electron Device Society (EDS) and Photonics Society.
   Co-chair, local chapters of the IEEE Electron Device Society and Photonics Society, 2015-2016.
   Indium Phosphide and Related Materials (IPRM) Conference, 2012.
   Device Research Conference (DRC): Program Committee, 2015-present.
2. Electronic Materials Conference (EMC):
   Program Committee, 2015-18. Invited Organizer, 2012-15.
3. American Vacuum Society:
   Member, 2014-2015.
   North American Conference on Molecular Beam Epitaxy (NAMBE): Program committee 2010, 2012-2015.
4. Electrochemical Society:
   Member, 2009.

Major University Service

Department of Electrical Engineering

1. Graduate Committee: 2009-2011
2. Graduate Admissions Committee: 2009, 2011, 2014
3. Solid State Seminar Series Assistant organizer, 2010; Organizer, 2011.

Patents

1. "Low Voltage Tunnel Field-Effect Transistor (TFET) and Method of Making Same," Alan Seabaugh, Patrick Fay, Huili (Grace) Xing, Guangle Zhou, Yeqing Lu, Mark A. Wistey, Siyuranga Koswatta, US 8796733 B2 (2014), http://patft1.uspto.gov/netacgi/nph-Parser?patentnumber=8796733

Invited Lectures, Addresses, and Workshops

Several of these are also listed among Conference Papers.

1. "GaInNAs on GaAs: Fiber Optics Lasers for the Masses," Lockheed Martin ATC Colloquium, 5 Feb 2004
2. "What Moore Missed -- Is there life after transistors?" Department of Materials Science and Engineering, University of Texas - Dallas, Dallas, Texas, March 4, 2009
3. "What Moore Missed -- Is there life after transistors?" Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, Utah, March 13, 2009
4. "What Moore Missed -- Is there life after transistors?" Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana, March 18, 2009
5. "Challenges and Progress in Complementary Tunnel FETs," American Vacuum Society, 2013
6. "Development of Device Quality Dilute Nitrides," 30th North American Conf. on Molecular Beam Epitaxy (NAMBE), Banff, Alberta, Canada, Oct. 2013.
7. "Core-Shell Upconverting Nanostructures," New Approaches to Photon Energy Harvesting Workshop, University of Delaware, Newark, Delaware, May 15, 2013.
8. "What Arsine Smells Like (and other things you wish you didn't know)," invited talk on MBE safety, The Art of MBE Workshop, 30th North American Conf. on Molecular Beam Epitaxy (NAMBE), Banff, Alberta, Canada, Oct. 2013.
9. "Advanced Group IV Photonics and Solar Cells," Northrop Grumman New Semiconductors and Devices Workshop, Torrance, California, 12/11/2014
10. "Advanced Group IV Photonics and Solar Cells," OpTec Colloquium, Bozeman, Montana, 2/5/2015
11. "Band Structure of Germanium Carbides for Direct Bandgap Photonics," IEEE Summer Topicals, Newport Beach, California, 7/12/2016

Funding

1. Co-Principal Investigator, SRC ERC, "Energy-Efficient Devices and Architectures Based on Tunneling and Nanomagnetics", Midwest Initiative for Nanoelectronics Discovery (MIND 1.5), $1,100,493 per year for two years (ND share $642,446). Led to 1 patent.
2. Principal Investigator, The Patrick and Jana Eilers Graduate Student Fellowship for Energy Related Research (2013), $13,699.84, to graduate student Victor Patel.
3. Lead Principal Investigator, National Science Foundation: "Core-shell Upconverting Nanostructures (CSUNs) for Photovoltaics," CBET-1438608, $348,865, began 9/1/2014.
4. Lead Principal Investigator, National Science Foundation: "SusChEM: Direct Bandgap Ge:C on Silicon for Optoelectronics," DMR-1508646, $285,000, began 7/1/2015.
5. Lead Principal Investigator, National Science Foundation XSEDE: "Optoelectronic Properties of Dilute Germanium Carbides," DMR140133: 751,577 supercomputer cluster service units (SUs) worth $63,870. Also 130,000 SUs in startup time worth $11k.
6. ND Energy Postdoctoral Fellowship, $27,500/year, to Chad Stephenson. Began 5/16/2015, renewed 2016.
7. Lead Principal Investigator, National Science Foundation XSEDE: "Optoelectronic Properties of Dilute Germanium Carbides," DMR140133: 1,348,229 supercomputer cluster service units (SUs) worth $69,208.

Outreach

1. Solar power lectures and demonstrations, Ms. Brenda Mueller's environmental sciences class, Elkhart Memorial High School, 2015.
2. High school Siemens competition team consultant, Penn High School, 2012.
3. Saturday Science lecture preceding Notre Dame football game: "Solar Power at Long Last. Or, These Cells Had Better Last!" (November 23, 2013).

Books and Monographs

1. J. S. Harris, Jr., M. Wistey, S. Bank, L. Goddard, V. Lordi, H. Bae, H. Yuen, "Long-Wavelength Dilute Nitride-Antimonide Lasers," Chapter 17 in Dilute Nitride (III-N-V) Semiconductors: Physics and Technology, M. Henini, editor. Taylor & Francis, 2004.
2. J. S. Harris, Jr., H. Yuen, M. Wistey, S. Bank, V. Lordi, T. Gugov, H. Bae, L. Goddard, "MBE Growth and Characterization of Long Wavelength Dilute Nitride III-V Alloys," Chapter 1 in Dilute Nitride (III-N-V) Semiconductors: Physics and Technology, M. Henini, editor. Taylor & Francis, 2004.

Refereed Publications (P):

82 refereed publications, 130 conference papers. Web of Science: 1849 citations, *h*=27 including only peer reviewed journals. Google Scholar: 2679 citations, *h*=30.

P.1. W. Ha, V. Gambin, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "Long Wavelength GaInNAsSb/GaNAsSb Multiple Quantum Well Lasers," *Electron. Lett.*, Vol. 38, No. 6, pp. 277–8, Mar. 2002.

P.2. W. Ha, V. Gambin, **M. Wistey**, S. Bank, S. Kim, J. Harris, "Multiple Quantum Well GaInNAs/GaNAs Ridge-Waveguide Laser Diodes Operating Out to 1.4 μm," *IEEE Photon. Technol. Lett.*, Vol. 14, No. 5, May 2002.

P.3. V. Gambin, W. Ha, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "GaInNAsSb for 1.3–1.6 μm Long-Wavelength Lasers Grown by Molecular Beam Epitaxy," *J. Select. Topics Quantum Electron.*, Vol. 8, No. 4, pp. 795–800, July 2002.

P.4. W. Ha, V. Gambin, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "Long Wavelength GaInNAs(Sb) Lasers on GaAs," *J. Quantum Electron.*, Vol. 38, No. 9, pp. 1260–7, Sep. 2002.

P.5. V. Gambin, V. Lordi, W. Ha, **M. Wistey**, T. Takizawa, K. Uno, S. Friedrich, J. S. Harris, "Structural changes on annealing of MBE grown (Ga, In) (N, As) as measured by X-ray absorption fine structure," *J. Cryst. Growth*, Vol. 251, No. 1–4, p. 408–411, Apr. 2003.

P.6. S. Bank, W. Ha, V. Gambin, **M. Wistey**, H. Yuen, L. Goddard, J. S. Harris, "1.5-μm GaInNAs(Sb) Lasers Grown on GaAs by MBE," *J. Cryst. Growth*, Vol. 251, pp. 367–371, 2003.

P.7. K. Volz, V. Gambin, W. Ha, **M. A. Wistey**, H. Yuen, S. Bank, J. S. Harris, "The role of Sb in the MBE growth of (GaIn)(NAsSb)," *J. Cryst. Growth*, Vol. 251, pp. 360–366, 2003.

P.8. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, J. S. Harris, "A Low Threshold CW GaInNAsSb/GaAs Laser at 1.49 μm," *Electron. Lett.*, vol. 39, pp. 1445–6, Oct. 2, 2003. §

P.9. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris, "Monolithic, GaInNAsSb VCSELs at 1460nm on GaAs by MBE," *Electron. Lett.*, 39, pp. 1822–3, Dec. 12, 2003.

P.10. S. R. Bank, **M. A. Wistey**, L. L. Goddard, H. B. Yuen, J. S. Harris, "Low Threshold, Continuous Wave, 1.5 μm GaInNAsSb Lasers Grown on GaAs," *IEEE J. Quantum Electron.*, vol. 40, No. 6, pp. 656–664, June 2004.

P.11. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris, "GaInNAs(Sb) vertical-cavity surface-emitting lasers at 1.46μm," *J. Vac. Sci. Technol.-B*, 22, No. 3, pp. 1562–1564, May/Jun 2004.

P.12. T. Gugov, V. Gambin, **M. Wistey**, H. Yuen, S. Bank, J. S. Harris, "Use of transmission electron microscopy in the characterization of GaInNAs(Sb) quantum well structures grown by molecular beam epitaxy," *J. Vac. Sci. Technol.-B*, 22, No. 3, pp. 1588–1592, May/Jun 2004.

P.13. J.-X. Fu, S. R. Bank, **M. A. Wistey**, H. B. Yuen, J. S. Harris, "Solid-source molecular-beam epitaxy growth of GaInNAsSb/InGaAs single quantum well on InP with photoluminescence peak wavelength at 2.04 μm," *J. Vac. Sci. Technol.-B*, 22, No. 3, pp. 1463–1467, May/Jun 2004. §

P.14. S. R. Bank, **M. A. Wistey**, L. L. Goddard, H. B. Yuen, H. P. Bae, and J. S. Harris, "High Performance 1.5-μm GaInNAsSb Lasers Grown on GaAs," *Electron. Lett.*, Vol. 40, No. 19, pp. 1186–1187, 16 Sep 2004.

P.15. H. B. Yuen, S. R. Bank, **M. A. Wistey**, J. S. Harris Jr., and A. Moto, "Comparison of GaNAsSb and GaNAs as Quantum Well Barriers for GaInNAsSb Optoelectronic Devices Operating at 1.3-1.55 μm," *J. Appl. Phys.*, Vol. 96, No. 11, 1 Dec. 2004.

P.16. D. Gollub, M. Kamp, A. Forchel, J. Seufert, S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard and J. S. Harris Jr., "Continuous-wave operation of GaInNAsSb distributed feedback lasers at 1.5 μm," *Electron. Lett.*, Vol. 40, No. 23, pp. 1487–1488, 11 Nov 2004.

P.17. R. Kudrawiec, K. Ryczko, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. P. Bae, and J. S. Harris Jr., "Photoreflectance and Photoluminescence Investigations of a Step-Like GaInNAsSb/GaAsN/GaAs Quantum Well Tailored at 1.5 μm: the Energy Level Structure and the Stokes Shift," *J. Appl. Phys.*, Vol. 97, No. 5, p. 053515, 1 March 2005.

P.18. R. Kudrawiec, P. Sitarek, J. Misiewicz, S. R. Bank, H. B. Yuen, **M. A. Wistey**, and J. S. Harris Jr., "Interference Effects in Electromodulation Spectroscopy Applied to GaAs-Based Structures: a Comparison of Photoreflectance and Contactless Electroreflectance," *Appl. Phys. Lett.*, Vol. 86, No. 9, p. 091115, 2005.

P.19. V. Lordi, H. B. Yuen, S. R. Bank, **M. A. Wistey**, J. S. Harris, and S. Friedrich, "Nearest-neighbor distributions in $Ga_{1-x}In_xN_yAs_{1-y}$ and $Ga_{1-x}In_xN_yAs_{1-y-z}Sb_z$ thin films upon annealing," *Phys. Rev. B*, Vol. 71, No. 12, p. 125309-1–8, 15 Mar 2005.

P.20. **M. A. Wistey**, S. R. Bank, H. B. Yuen, and J. S. Harris, "Nitrogen plasma optimization for high quality dilute nitrides," *J. Cryst. Growth*, Vol. 278, No. 1–4, p. 229–233, 2005.

P.21. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris, "Protecting wafer during plasma ignition by use of an arsenic cap," *J. Vac. Sci. Technol.-B*, Vol. 23, No. 3, p. 1324–1327, 2005.

P.22. R. Kudrawiec, K. Ryczko, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. P. Bae, and J. S. Harris Jr., "The Band Gap Discontinuity in GaNAsSb/GaAs Single Quantum Wells Investigated by Photoreflectance Spectroscopy," *Appl. Phys. Lett.*, Vol. 86, No. 14, p. 141908-1–3, 4 April 2005.

P.23. L. L. Goddard, S. R. Bank, **M. A. Wistey**, H. B. Yuen, Z. L. Rao and J. S. Harris Jr., "Recombination, Gain, Band Structure, Efficiency, and Reliability of 1.5 μm GaInNAsSb/GaAs Lasers," *J. Appl. Phys.*, Vol. 97, No. 8, p. 83101-1–15, 15 April 2005.

P.24. **M. A. Wistey**, S. R. Bank, H. B. Yuen, J. S. Harris, "Using beam flux monitor as Langmuir probe for plasma-assisted MBE," *J. Vac. Sci. Technol.-A*, Vol. 23, No. 3, p. 460–464, 2005.

P.25. S. R. Bank, **M. A. Wistey**, H. B. Yuen, V. Lordi, V. F. Gambin, and J. S. Harris Jr., "Effects of Antimony and Ion Damage on Carrier Localization in MBE-Grown GaInNAs," *J. Vac. Sci. Technol.-B*, Vol. 23, No. 3, pp. 1320–3, May 2005.

P.26. H. B. Yuen, **M. A. Wistey**, S. R. Bank, Hopil Bae, A. Moto, and J. S. Harris, "An investigation of nitrogen flow variation into an rf plasma cell on plasma properties and GaInNAs(Sb) grown by molecular beam epitaxy," *J. Vac. Sci. Technol.-B*, Vol. 23, No. 3, pp. 1328–32, May 2005.

P.27. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, H. P. Bae, and J. S. Harris Jr., "Molecular-Beam Epitaxy Growth of Low-Threshold CW GaInNAsSb Lasers at 1.5 μm," *J. Vac. Sci. Technol.-B*, Vol. 23, No. 3, pp. 1337–40, May 2005.

P.28. M. M. Oye, **M. A. Wistey**, J. M. Reifsnider, S. Agarwal, T. J. Mattord, S. Govindaraju, G. A. Hallock, A. L. Holmes Jr., S. R. Bank, H. B. Yuen, et al., "Ion damage effects from negative deflector plate voltages during the plasma-assisted molecular-beam epitaxy growth of dilute nitrides," *Appl. Phys. Lett.*, Vol. 86, No. 22, pp. 221902-1–3, 30 May 2005.

P.29. H. B. Yuen, S. R. Bank, **M. A. Wistey**, J. S. Harris Jr., M.-J. Seong, S. Yoon, R. Kudrawiec, and J. Misiewicz, "Improved optical quality of GaNAsSb in the dilute Sb limit," *J. Appl. Phys.*, Vol. 97, No. 11, pp. 1–5, 2005.

P.30. S. R. Bank, H. B. Yuen, **M. A. Wistey**, V. Lordi, H. P. Bae, and J. S. Harris, "Effects of growth temperature on the structural and optical properties of 1.55 μm GaInNAsSb quantum wells grown on GaAs," *Appl. Phys. Lett.*, Vol. 87, No. 2, p. 21908-1–3, 11 July 2005.

P.31. R. Kudrawiec, M. Motyka, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. P. Bae, and J. S. Harris, "Photoluminescence from as-grown and annealed $GaN_{0.027}As_{0.863}Sb_{0.11}$/GaAs single quantum wells," *J. Appl. Phys.*, Vol. 98, No. 6, p. 063527, 15 Sep 2005.

P.32. S. R. Bank, L. L. Goddard, **M. A. Wistey**, H. B. Yuen, J. S. Harris, "On the Temperature Sensitivity of 1.5 μm GaInNAsSb Lasers," *IEEE J. Select. Topics Quantum Electron.*, Vol. 11, No. 5, pp. 1089–1098, Sep-Oct 2005.

P.33. R. Kudrawiec, M. Gladysiewicz, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. P. Bae, and J. S. Harris, "Photoreflectance spectroscopy of a $Ga_{0.62}In_{0.38}N_{0.026}As_{0.954}Sb_{0.02}$/GaAs single quantum well tailored at 1.5 μm," *Solid State Commun.*, Vol. 137, No. 3, pp. 138–141, January 2006.

P.34. S. R. Bank, H. P. Bae, H. B. Yuen, **M. A. Wistey**, J. S. Harris, "Room-temperature continuous-wave 1.55 μm GaInNAsSb laser on GaAs," *Electron. Lett.*, Vol. 42, No. 3, pp. 156–157, 2 Feb 2006.

P.35. **M. A. Wistey**, S. R. Bank, H. P. Bae, H. B. Yuen, E. R. Pickett, L. L. Goddard, J. S. Harris, "GaInNAsSb/GaAs vertical cavity surface emitting lasers at 1534nm," *Electron. Lett.*, Vol. 42, No. 5, pp. 282–283, 2 March 2006.

P.36. H. B. Yuen, S. R. Bank, H. Bae, **M. A. Wistey**, and J. S. Harris Jr., "The role of antimony on properties of widely varying GaInNAsSb compositions," *J. Appl. Phys.*, Vol. 99, no. 9, pp. 093504, 1 May 2006.

P.37. A. J. Ptak, D. J. Friedman, S. Kurtz, R. C. Reedy, M. Young, D. B. Jackrel, H. B. Yuen, S. R. Bank, **M. A. Wistey**, J. S. Harris, "Calcium impurities in enhanced-depletion-width GaInNAs grown by molecular-beam epitaxy," *J. Vac. Sci. Technol.-B*, Vol. 24, No. 3, pp. 1540-1543, May-June 2006.

P.38. S. R. Bank, H. B. Yuen, H. Bae, **M. A. Wistey**, J. S. Harris Jr., "Overannealing effects in GaInNAs(Sb) alloys and their importance to laser applications," *Appl. Phys. Lett.*, Vol. 88, p. 221115, 2 June 2006.

P.39. R. Kudrawiec, M. Motyka, M. Gladysiewicz, J. Misiewicz, H. B. Yuen, S. R. Bank, H. Bae, **M. A. Wistey**, and J. S. Harris, "Band gap discontinuity in $Ga_{0.9}In_{0.1}N_{0.027}As_{0.973-x}Sb_x$/GaAs single quantum wells with $0 \leq x \leq 0.06$ studied by contactless electroreflectance spectroscopy," *Appl. Phys. Lett.*, Vol. 88, p. 221113, 1 June 2006.

P.40. H. B. Yuen, S. R. Bank, H. Bae, **M. A. Wistey**, and J. S. Harris, "Effects of strain on the optimal annealing temperature of GaInNAsSb quantum wells," *Appl. Phys. Lett.*, Vol. 88, p. 221913, 1 June 2006.

P.41. S. R. Bank, H. B. Yuen, H. P. Bae, **M. A. Wistey**, A. Moto, J. S. Harris, "Enhanced luminescence in GaInNAsSb quantum wells through variation of the arsenic and antimony fluxes," *Appl. Phys. Lett.*, Vol. 88, p. 241923, 12 June 2006.

P.42. R. Kudrawiec, M. Gladysiewicz, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. Bae, and J. S. Harris, "Interband transitions in $GaN_{0.02}As_{0.98-x}Sb_x$/GaAs ($0 < x \leq 0.11$) single quantum wells studied by contactless electroreflectance spectroscopy," *Phys. Rev. B*, Vol. 73, No. 24, p. 245413, June 2006.

P.43. R. Kudrawiec, M. Gladysiewicz, M. Motyka, J. Misiewicz, H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. Bae, and J. S. Harris, "Contactless electroreflectance spectroscopy of Ga(In)NAs/GaAs quantum well structures containing Sb atoms," *Appl. Surf. Sci.*, Vol. 253, No. 1, p. 152-157, Oct 2006.

P.44. R. Kudrawiec, H. B. Yuen, M. Motyka, M. Gladysiewicz, J. Misiewicz, S. R. Bank, H. Bae, **M. A. Wistey**, and J. S. Harris, "Contactless electroreflectance of GaInNAsSb/GaAs single quantum wells with indium content of 8%-32%," *J. Appl. Phys.*, Vol. 101, No. 1, Art. 103504, 1 Jan 2007.

P.45. R. Kudrawiec, H. B. Yuen, S. R. Bank, H. Bae, **M. A. Wistey**, J. S. Harris, M. Motyka, and J. Misiewicz, "Fermi level shift in GaInNAsSb/GaAs quantum wells upon annealing studied by contactless electroreflectance," *Appl. Phys. Lett.*, Vol. 90, p. 061902, Feb 2007.

P.46. **M. A. Wistey**, Y.-Y. Fang, J. Tolle, A. V. G. Chizmeshya, and J. Kouvetakis, "Chemical routes to Ge/Si(100) structures for low temperature Si-based semiconductor applications," *Appl. Phys. Lett.*, Vol. 90, p. 082108, 19 Feb 2007. DOI: 10.1063/1.2437098

P.47. R. Kudrawiec, H. B. Yuen, S. R. Bank, H. P. Bae, **M. A. Wistey**, J. S. Harris, M. Motyka, M. Gladysiewicz, J. Misiewicz, "Electromodulation spectroscopy of interband transitions in GaInNAsSb/GaAs quantum wells with high indium content," *Physica Status Solidi A.* Vol. 204, No. 2, p. 364-72, Feb. 2007.

P.48. R. Kudrawiec, H. B. Yuen, S. R. Bank, H. P. Bae, **M. A. Wistey**, J. S. Harris, M. Motyka, M. Gladysiewicz, J. Misiewicz, "The influence of antimony on the optical quality of highly strained GaInNAs/GaAs QWs investigated by contactless electroreflectance," *Physica Status Solidi A.* Vol. 204, No. 2, p. 543-546, Feb. 2007.

P.49. R. Kudrawiec, S. R. Bank, H. B. Yuen, H. Bae, **M. A. Wistey**, L. L. Goddard, J. S. Harris, "Conduction band offset for $Ga_{0.62}In_{0.38}N_xAs_{0.991-x}Sb_{0.009}/GaN_yAs_{1-y}$/GaAs systems with the ground state transition at 1.5-1.65 μm," *Appl. Phys. Lett.*. Vol. 90, No. 13, p. 131905, Mar. 2007.

P.50. M. M. Oye, D. Shahrjerdi, I. Ok, J. B. Hurst, S. D. Lewis, S. Dey, D. Q. Kelly, S. V. Joshi, T. J. Mattord, X. Yu, **M. A. Wistey**, J. S. Harris Jr., A. L. Holmes Jr., J. C. Lee, S. K. Banerjee, "Molecular-beam Epitaxy growth of device-compatible GaAs on Silicon substrates with thin (~80nm) Si(1-x)Ge(x) step-graded buffer layers for high-k III-V MOSFET applications," *J. Vac. Sci. Technol.-B*, Vol. 25, No. 3, p. 1098, May-June 2007.

P.51. H. P. Bae, S. R. Bank, H. B. Yuen, T. Sarmiento, E. R. Pickett, **M. A. Wistey**, J. S. Harris, "Temperature dependencies of annealing behaviors of GaInNAsSb/GaNAs quantum wells for long wavelength dilute-nitride lasers," *Appl. Phys. Lett.*, Vol. 90, p. 231119, 4 Jun 2007.

P.52. D. B. Jackrel, S. R. Bank, H. B. Yuen, **M. A. Wistey**, J. S. Harris, "Dilute nitride GaInNAs and GaInNAsSb solar cells by molecular beam epitaxy," *J. Appl. Phys.*, Vol. 101, No. 11, p. 114916, 1 Jun 2007.

P.53. J. S. Harris, R. Kudrawiec, H. B. Yuen, S. R. Bank, H. P. Bae, **M. A. Wistey**, D. Jackrel, E. R. Pickett, T. Sarmiento, L. L. Goddard, V. Lordi, T. Gugov, "Development of GaInNAsSb alloys: Growth, band structure, optical properties and applications," *Physica Status Solidi B*, Vol. 244, No. 8, p. 2707-2729, Aug. 2007.

P.54. H. Yang, A. Khalili, **M. A. Wistey**, J. S. Harris, "Evanescent-coupled GaInNAsSb in-line fibre photodetectors," *IET Optoelectronics*, Vol. 1, No. 4, p. 175-177, Aug. 2007.

P.55. S. R. Bank, H. Bae, L. L. Goddard, H. B. Yuen, **M. A. Wistey**, R. Kudrawiec, J. S. Harris, "Recent Progress on 1.55-μm Dilute-Nitride Lasers," *J. Quantum Electron.*, Vol. 43, No. 9, p. 773, Sept. 2007.

P.56. M. Oye, **M. Wistey**, J. Reifsnider, H. Yuen, A. Ptak, P. May, T. Mattord, S. Agarwal, J. Lee, S. Banerjee, G. Hallock, J. Harris, A. Holmes, S. Bank, "Effects of Different Plasma Species (atomic N, metastable N^*_2, and ions) on the Optical Properties of Dilute Nitride Materials Grown by Plasma-Assisted Molecular-Beam Epitaxy," *Appl. Phys. Lett.*, Vol. 91, No. 19, Art. 191903, 5 Nov 2007.

P.57. R. Kudrawiec, H. B. Yuen, S. R. Bank, H. P. Bae, **M. A. Wistey**, J. S. Harris, M. Motyka, J. Misiewicz, "Contactless electroreflectance approach to study the Fermi level position in GaInNAs/GaAs quantum," *J. Appl. Phys.*, Vol. 102, No. 11, p. 113712, 1 Dec. 2007.

P.58. Y. C. Xin, C. Y. Lin, Y. Li, H. P. Bae, H. B. Yuen, **M. A. Wistey**, J. S. Harris Jr., S. R. Bank, L. F. Lester, "Monolithic 1.55 μm GaInNAsSb quantum well passively modelocked lasers," *Electron. Lett.*, Vol. 44, No. 9, p. 581-582, 2008.

P.59. R. Kudrawiec, H. B. Yuen, S. R. Bank, H. P. Bae, **M. A. Wistey**, J. S. Harris, M. Motyka, J. Misiewicz, "On the Fermi level pinning in as-grown GaInNAs(Sb)/GaAs quantum wells with indium content of 8%-32%," *J. Appl. Phys.*, Vol. 104, No. 3, pp. 033526-1-6, 1 Aug 2008.

P.60. U. Singisetti, **M. A. Wistey**, J. D. Zimmerman, B. J. Thibeault, M. J. W. Rodwell, A. C. Gossard, and S. R. Bank, "Ultralow resistance *in situ* Ohmic contacts to InGaAs/InP," *Appl. Phys. Lett.*, Vol. 93, p. 183502, 2008.

P.61. R. Kudrawiec, P. Poloczek, J. Misiewicz, H. P. Bae, T. Sarmiento, S. R. Bank, H. B. Yuen, **M. A. Wistey**, and J. S. Harris, Jr., "Contactless electroreflectance of GaInNAsSb/GaNAs/GaAs quantum wells emitting at 1.5-1.65 μm: Broadening of the fundamental transition," *Appl. Phys. Lett.*, Vol. 94, No. 3, p. 031903, 19 Jan 2009.

P.62. Y. Hwang, **M. A. Wistey**, J. Cagnon, R. Engel-Herbert, S. Stemmer, "Metal-oxide-semiconductor capacitors with erbium oxide dielectrics on $In_{0.53}Ga_{0.47}As$ channels," *Appl. Phys. Lett.*, Vol. 94, No. 12, p. 122907, 23 Mar 2009.

P.63. G. J. Burek, **M. Wistey**, U. Singisetti, A. Nelson, B. Thibeault, S. Bank, A. Gossard, M. Rodwell, "Height-selective etching for regrowth of self-aligned contacts using MBE," *Journal of Crystal Growth*, Vol. 311, p. 1984-1987, 2009.

P.64. A. M. Mintairov, K. Sun, J. L. Merz, H. Yuen, S. Bank, **M. Wistey**, J. S. Harris, G. Peake, A. Egorov, V. Ustinov, R. Kudrawiec and J. Misiewicz, "Atomic arrangement and emission properties of GaAs(In, Sb)N quantum wells," *Semicond. Sci. Technol.*, Vol. 24, No. 7, p. 075013, Jul 2009.

P.65. A. K. Baraskar, **M. A. Wistey**, V. Jain, U. Singisetti, G. Burek, B. J. Thibeault, Y. J. Lee, A. C. Gossard, M. J. W. Rodwell, "Ultralow resistance, nonalloyed Ohmic contacts to n-InGaAs," *J. Vac. Sci. Technol.-B*, Vol. 27, No. 4, p. 2036-2039, Jul 2009.

P.66. Uttam Singisetti, **Mark A. Wistey**, Gregory Burek, Ashish K. Baraskar, Brian J. Thibeault, Arthur C. Gossard, Mark J. W. Rodwell, Byungha Shin, Eun J. Kim, Paul C. McIntyre, Bo Yu, Yu Yuan, Dennis Wang, Yuan Taur, Peter Asbeck, Yong-Ju Lee, "$In_{0.53}Ga_{0.47}As$ Channel MOSFETs With Self-Aligned InAs Source/Drain Formed by MEE Regrowth," *IEEE Electron Device Lett.*, Vol. 30, no. 11, p. 1128-1130, DOI: 10.1109/LED.2009.2031304, Nov 2009.

P.67. A. Baraskar, **M. A. Wistey**, E. Lobisser, V. Jain, U. Singisetti, G. Burek, Y. J. Lee, B. Thibeault, A. Gossard, M. Rodwell, "Ex-situ Ohmic Contacts to n-InGaAs Prepared by Atomic Hydrogen Cleaning," *J. Vacuum Science and Technology B*, Vol. 28, No. 4, pp C517-C519, Jul/Aug (2010).

P.68. A. Baraskar, **M. A. Wistey**, V. Jain, E. Lobisser, U. Singisetti, G. Burek, Y. J. Lee, B. Thibeault, A. Gossard, M. Rodwell, "Ex situ Ohmic contacts to n-InGaAs," J. Vac. Sci. Technol. B, Vol. 28. no. 4, p. C517-C519, Jul 2010.

P.69. Jia Guo, Yu Cao, Chuanxin Lian, Tom Zimmermann, Guowang Li, Jai Verma, Xiang Gao, Shiping Guo, Paul Saunier, **Mark Wistey**, Debdeep Jena, and Huili (Grace) Xing, "Metal-face InAlN/AlN/GaN high electron mobility transistors with regrown ohmic contacts by molecular beam epitaxy," *Phys. Status Solidi A*, vol. 208, No. 7, p. 1617-1619, Jun 2011. doi: 10.1002/pssa.201001177.

P.70. G. Zhou, Y. Lu, R. Li, Q. Zhang, W. S. Hwang, Q. Liu, T. Vasen, C. Chen, H. Zhu, J.-M. Kuo, S. Koswatta, T. Kosel, **M. Wistey**, P. Fay, A. Seabaugh, H. Xing, "Vertical InGaAs/InP tunnel FETs with tunneling normal to the gate," *IEEE Electron Device Letters*, vol. 32, no. 11, p. 1516-1518, doi: 10.1109/LED.2011.2164232, Nov 2011.

P.71. Rui Li, Yeqing Lu, Guangle Zhou, Qingmin Liu, Soo Doo Chae, Tim Vasen, Wan Sik Hwang, Qin Zhang, Patrick Fay, Tom Kosel, **Mark Wistey**, Huili L. Xing, Alan Seabaugh, "AlGaSb/InAs Tunnel Field-Effect Transistor with On-Current of 78 μA/μm at 0.5 V," *IEEE Electron Device Letters*, vol. 33, no. 3, p. 363-5, DOI: 10.1109/LED.2011.2179915, March 2012.

P.72. Jia Guo, Guowang Li; Faisa Faria, Yu Cao, Ronghua Wang, Jai Verma, Xiang Gao, Shiping Guo, Edward Beam, Andrew Ketterson, Michael Schuette, Paul Saunier, **Mark Wistey**, Debdeep Jena, Huili Xing,, "MBE-Regrown Ohmics in InAlN HEMTs With a Regrowth Interface Resistance of 0.05 Ω-mm," *IEEE Electron Device Letters*, vol. 33, no. 4, pp. 525-7, April 2012.

P.73. Y. Lu, G. Zhou, R. Li, Q. Liu, Q. Zhang, T. Vasen, S. D. Chae, T. Kosel, **M. Wistey**, H. Xing, A. Seabaugh, and P. Fay, "Performance of AlGaSb/InAs TFETs with gate electric field and tunneling direction aligned," *IEEE Electron Device Lett.*, v. 33, n. 5, p. 655-7, May 2012.

P.74. Faiza Afroz Faria, Jia Guo, Pei Zhao, Guowang Li, Prem Kumar Kandaswamy, **Mark Wistey**, Huili (Grace) Xing, Debdeep Jena, "Ultra-low resistance ohmic contacts to GaN with high Si doping concentrations grown by Molecular Beam Epitaxy," *Appl. Phys. Lett.*, v. 101, no. 3, p. 032109, Jul 2012. DOI: 10.1063/1.4738768.

P.75. Guangle Zhou, Yeqing Lu, Rui Li, Qin Zhang, Qingmin Liu, Tim Vasen, H. Zhu, J.-M. Kuo, Tom Kosel, **Mark Wistey**, Patrick Fay, Alan Seabaugh, and Huili (Grace) Xing, "InGaAs/InP tunnel FETs with a Sub-threshold Swing of 93 mV/dec and I_{ON}/I_{OFF} Ratio Near 10^6," *IEEE Electron Device Lett.*, v. 33, no. 6, p. 782-784, June 2012.

P.76. Faiza Afroz Faria, Jia Guo, Pei Zhao, Guowang Li, Prem Kumar Kandaswamy, **Mark Wistey**, Huili (Grace) Xing, Debdeep Jena, "Ultra-low resistance ohmic contacts to GaN with high Si doping concentrations grown by molecular beam epitaxy," *Appl. Phys. Lett.*, vol. 101, no. 3, p. 032109, 16 July 2012.

P.77. Meng Qi, Chad A. Stephenson, Vladimir Protasenko, William A. O'Brien, Alexander Mintairov, Huili (Grace) Xing, and **Mark A. Wistey**, "Ge Quantum Dots Encapsulated by AlAs Grown by Molecular Beam Epitaxy on GaAs Without Extended Defects," *Appl. Phys. Lett.*, vol. 104, p. 073113 (2014). doi:10.1063/1.4866278

P.78. William A. O'Brien, Bin Wu, Chad Stephenson, Meng Qi, Kuijun Liang, Steven Cress, Vladimir Protasenko, Christina Arisio, Marya Lieberman, Huili Grace Xing, **Mark A. Wistey**, "Optimal Oxide Passivation of Ge for Optoelectronics," *ECS J. Solid State Sci. Technol.*, vol. 3, no. 8, p. P273-P276 (2014). doi: 10.1149/2.0171407jss

P.79. William A. O'Brien, Meng Qi, Lifan Yan, Chad A. Stephenson, Vladimir Protasenko, Huili (Grace) Xing, Joanna M. Millunchick, and **Mark A. Wistey**, "Self-Assembled Ge QDs Formed by High Temperature Annealing on GaAs and $Al_xGa_{1-x}As$ (001)," *J. Electronic Materials*, (2015). arXiv: 1410.8117. doi: 10.1007/s11664-014-3583-6. Received **Best Manuscript Award** for 2014 Electronic Materials Conference.

P.80. **Mark A. Wistey**, Ashish K. Baraskar, Uttam Singisetti, Greg J. Burek, Byungha Shin, Eunji Kim, Paul C. McIntyre, Arthur C. Gossard, and Mark J. W. Rodwell, "Control of InGaAs and InAs facets using metal modulation epitaxy," *J. Vac. Sci. Technol.-B*, vol. 30, p. 011208 (2015). arXiv: 1408.3714. doi: 10.1116/1.4905497

P.81. Chad A. Stephenson, William A. O'Brien, Meng Qi, Michael Penninger, William F. Schneider, **Mark A. Wistey**, "Band Anticrossing in Dilute Germanium Carbides Using Hybrid Functionals," *J. Electronic Materials*, vol. 45, no. 4, p. 2121-6, April (2016). arXiv: 1410.8383. doi: 10.1007/s11664-015-4300-9

P.82. Chad A. Stephenson, William A. O'Brien, Meng Qi, Michael Penninger, William F. Schneider, **Mark A. Wistey**, "Band structure of germanium carbides for direct bandgap silicon photonics," *J. Appl. Phys.*, vol. 120, p. 053102 (2016). doi: 10.1063/1.4959255.

P.83. Chad A. Stephenson, Miriam Gillett-Kunnath, William A. O'Brien, Robert Kudrawiec, and **Mark A. Wistey**, "Gas Source Techniques for Molecular Beam Epitaxy of Highly Mismatched Ge Alloys," *Crystals*, vol. 6, no. 12, p. 159. doi:10.3390/cryst6120159

P.84.

Manuscripts in Preparation (M):

M.1. Chad A. Stephenson, Wilkie Olin-Ammentorp, Roy Stillwell, William A. O'Brien, Yoshiyuki Kondo, Alan Seabaugh, and **Mark A. Wistey**, "Tunneling Field Effect Transistor Designs using Dilute Germanium Carbides," to be submitted to *IEEE Electron Device Letters*.

M.2. Chad A. Stephenson, William A. O'Brien, Meng Qi, **Mark A. Wistey**, "Design of Tensile-Strained Ge Waveguides," to be submitted to *IEEE Photon. Technol. Lett.*

Conference (C) Papers and Other Unrefereed Publications:

Includes invited talks.

C.1. **M. A. Wistey**, J. Kallman, et al., "Optimization of Photoreceiver Designs," *Proceedings of the National Conf. on Undergraduate Research*, 1994.

C.2. S. G. B. Spruytte, **M. A. Wistey**, M. C. Larson, C. W. Coldren, H. Garrett and J. S. Harris, Jr., "1.3 μm Opto-electronic Devices on GaAs using Group III-Nitride-Arsenides," *Photonics West 2001*, San Jose, California, Proc. SPIE, vol. 4286, pp. 22–33.

C.3. Vincent Gambin, Wonill Ha, **Mark Wistey**, Seongsin Kim, and James S. Harris, "GaInNAs Material Properties for Long Wavelength Opto-Electronic Devices," *MRS Fall Meeting*, H7.1, 2001.

C.4. W. Ha, V. Gambin, **M. Wistey**, S. Kim, J. Harris, "High efficiency multiple quantum well GaInNAs/GaNAs ridge-waveguide laser diode operating out to 1.4μm," *Proc. 28th International Symposium on Compound Semiconductors (ISCS)*, Oct. 2001, Tokyo, Japan. Published as *Compound Semiconductors 2001*; Inst. Phys. Conf. Ser. No. 170, p. 165–169 (2002).

C.5. V. Gambin, W. Ha, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "Material Properties for Long Wavelength Opto-Electronic Devices," *Proc. Materials Research Soc. (MRS)*, Vol. 692, Nov. 2001, Boston, Massachusetts.

C.6. V. Gambin, W. Ha, S. R. Bank, **M. A. Wistey**, H. B. Yuen, S. Kim, and J. S. Harris Jr., "Nitrogen Incorporation in GaInNAs," *Fall 2001 MRS Meeting*, Boston, MA, November 2001.

C.7. W. Ha, V. Gambin, **M. Wistey**, S. Kim, J. S. Harris Jr., "Long wavelength GaInNAs Ridge Waveguide Lasers with GaNAs Barriers," *Proc. 14th IEEE Lasers and Electo-Optics Society (LEOS)*, Nov. 2001, San Diego, CA.

C.8. W. Ha, V. Gambin, S. Bank, **M. Wistey**, S. Kim, J. S. Harris Jr., "High Efficiency Multiple Quantum Well GaInNAs/GaNAs Ridge-Waveguide Diode Lasers," *Proc. SPIE Photonics West 2002*, Jan. 2002, San Jose, California.

C.9. E. Thrush, O. Levi, K. Wang, **M. A. Wistey**, J. S. Harris, S. J. Smith, "High throughput devices for biochip fluorescent detection," *Proc. SPIE*, Vol. 4982, pp. 162–169, 2002.

C.10. W. Ha, V. Gambin, **M. A. Wistey**, S. R. Bank, H. B. Yuen, S. Kim, and J. S. Harris Jr., "Long Wavelength GaInNAs(Sb) Lasers on GaAs," *Optical Fiber Communications 2002 Meeting*, Anaheim, CA, March 2002.

C.11. V. Lordi, V. Gambin, W. Ha, S. Bank, J. Harris, "Examination of N Incorporation into GaInNAs," *Proc. Materials Research Soc. (MRS)*, Vol. 722, Apr., 2002, San Francisco, California. I was 4th coauthor on this paper but inadvertently left off of the author list. Primary author Vincenzo Lordi has expressed his regret for the oversight.

C.12. V. Gambin, W. Ha, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "High Intensity 1.3–1.6 μm Luminescence from MBE Grown GaInNAsSb," *Proc. Materials Research Soc. (MRS)*, Vol. 722, Apr., 2002, San Francisco, California.

C.13. J. S. Harris Jr., M. Larson, S. Spruytte, C. Coldren, V. Gambin, W. Ha, **M. A. Wistey**, H. B. Yuen, S. R. Bank, T. Gugov, "GaInNAs: A New Material in the Quest for Communication Lasers," *Spring 2002 MRS Meeting*, San Francisco, CA, April 2002.

C.14. W. Ha, V. Gambin, S. Bank, **M. Wistey**, S. Kim, J. S. Harris Jr., "Long Wavelength GaInNAs(Sb) Lasers on GaAs," *Proc. 14th International Conf. on Indium-Phosphide and Related Materials (IPRM)*, May 2002, Stockholm, Sweden.

C.15. W. Ha, V. Gambin, S. Bank, **M. Wistey**, S. Kim, J. S. Harris Jr., "Long Wavelength GaInNAs(Sb) Lasers on GaAs," *Proc. 22nd Conf. on Lasers and Electro-Optics (CLEO)*, May 2002, Long Beach, California.

C.16. V. Gambin, W. Ha, **M. Wistey**, S. Bank, H. Yuen, S. Kim, J. Harris, "Long Wavelength, High Efficiency Photoluminescence from MBE Grown GaInNAsSb," *44th Electronic Materials Conf. (EMC)*, June 2002, Santa Barbara, California.

C.17. W. Ha, V. Gambin, S. Bank, **M. Wistey**, S. Kim, J. S. Harris Jr., "A 1.5 μm GaInNAs(Sb) Laser Grown on GaAs by MBE," *60th Device Research Conf. (DRC)*, June 2002, Santa Barbara, California.

C.18. V. Gambin, V. Lordi, W. Ha, **M. Wistey**, K. Volz, S. Bank, H. Yuen, J. Harris, "High Intensity 1.3–1.6 μm Luminescence and Structural Changes on Anneal from MBE Grown (GA, In)(N,As,Sb)," *12th International Conference on MBE*, Sep. 2002, San Francisco, California.

C.19. W. Ha, V. Gambin, S. Bank, **M. Wistey**, H. Yuen, L. Goddard, S. Kim, J. S. Harris Jr., "A 1.5 μm GaInNAs(Sb) Laser Grown on GaAs by MBE," *12th International Conference on MBE*, Sep. 2002, San Francisco, California.

C.20. K. Volz, V. Gambin, W. Ha, **M. Wistey**, J. S. Harris, "Structure and composition of (GaIn)(NAsSb)/GaAs multi quantum well structures grown by MBE," *12th International Conference on MBE*, 2002.

C.21. W. Ha, V. Gambin, S. Bank, **M. Wistey**, H. Yuen, S. Kim, J. S. Harris Jr., "A 1.5 μm GaInNAs(Sb) Laser Grown on GaAs by MBE," *Proc. 18th IEEE International Semiconductor Laser Conf. (ISLC)*, Sep. 2002, Garmisch, Germany.

C.22. H. Chin, G. A. Keeler, N. C. Helman, **M. Wistey**, D. A. B. Miller, and J. S. Harris, Jr., "Differential Optical Remoting of Ultrafast Charge Packets Using Self-Linearized Modulation," *IEEE Lasers and Electro-Optics Society 2002 Annual Meeting*, Glasgow, Scotland, Nov. 10-14, 2002. Paper WM5.

C.23. E. Thrush, K. Wang, O. Levi, **M. Wistey**, J. S. Harris Jr., S. J. Smith, "High throughput integration of optoelectronics devices for fluorescent detection," *16th International Symposium on Microscale Separations and Analysis (HPCE 2003)*, San Diego, CA, Jan. 2003.

C.24. E. Thrush, O. Levi, K. Wang, **M. A. Wistey**, J. S. Harris, "Integrated semiconductor fluorescent detection system for biochip and biomedical applications," *Proc. SPIE*, Vol. 4626, pp. 289–297, 2003.

C.25. Hyunsoo Yang, A. Khalili, **M. Wistey**, S. Bank, Homan Yuen, J. Harris, D. Falquier, B. Moslehi, "Long wavelength GaInNAs(Sb) in-line fiber photodetector on GaAs," *Conference on Lasers and Electro-Optics (CLEO)*, June 2003.

C.26. H. B. Yuen, S. R. Bank, **M. A. Wistey**, A. Moto, J. S. Harris, "An Investigation of GaNAs(Sb) for Strain Compensated Active Regions at 1.3 and 1.55 μm," *Electronic Materials Conf. (EMC)*, June 2003, Salt Lake City, Utah.

C.27. H. B. Yuen, S. R. Bank, **M. A. Wistey**, W. Ha, V. Gambin, A. Moto, J. S. Harris Jr., "Analysis of Material Properties of GaNAs(Sb) Grown by MBE," *Electronic Materials Conf. (EMC)*, June 2003, Salt Lake City, Utah.

C.28. S. R. Bank, H. B. Yuen, W. Ha, V. F. Gambin, **M. A. Wistey**, J. S. Harris, "Strong Photoluminescence Enhancement of 1.3 μm GaInNAs Active Layers by Introduction of Antimony," *45th Electronic Materials Conf. (EMC)*, June 2003, Salt Lake City, Utah.

C.29. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, J. S. Harris, "Low Threshold, CW, Room Temperature 1.49 μm GaAs-Based Lasers," *61st Device Research Conf. (DRC)*, Late News, June 2003, Salt Lake City, Utah.

C.30. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, J. S. Harris, "Low Threshold, CW, Room Temperature 1.49 μm GaAs-Based Lasers," *30th International Symposium on Compound Semiconductors (ISCS)*, Aug. 2003, San Diego, California.

C.31. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris, "Real-Time Ion Count from Nitrogen Plasma Source," *2003 North American Conf. on Molecular Beam Epitaxy (NAMBE)*, P2-9, Oct. 2003.

C.32. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris, "GaInNAs(Sb) VCSELs at 1460nm," *2003 North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Oct. 2003.

C.33. H. B. Yuen, V. Lordi, S. R. Bank, **M. A. Wistey**, J. S. Harris Jr., and A. Moto, "Analysis of Material Properties of GaNAs(Sb) Grown by MBE," *Fall 2003 MRS Meeting*, Boston, MA, December 2003.

C.34. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, J. S. Harris, "Progress Towards High Power 1.5 μm GaInNAsSb/GaAs Lasers for Raman Amplifiers," *2004 Optical Fiber Communication Conf. (OFC)*, Feb. 2004, Los Angeles, California.

C.35. V. Lordi, H. B. Yuen, S. R. Bank, **M. A. Wistey**, and J. S. Harris Jr., "Electroabsorption Properties of GaInNAs(Sb) Quantum Wells at 1300–1600 nm," *Spring 2004 MRS Meeting*, San Francisco, CA, April 2004.

C.36. L. L. Goddard, S. R. Bank, **M. A. Wistey**, H. B. Yuen, J. S. Harris, "Measurements of Intrinsic Properties of High Power CW Single Quantum Well GaInNAsSb/GaAs Lasers at 1.5μm," *2004 Conf. on Lasers and Electro-Optics (CLEO)*, May 2004, San Francisco, California.

C.37. S. R. Bank, L. L. Goddard, **M. A. Wistey**, H. B. Yuen, J. S. Harris, "The Temperature Sensitivity of 1.5 μm GaInNAsSb Lasers on GaAs," *2004 Conf. on Lasers and Electro-Optics (CLEO)*, San Francisco, California, May 2004.

C.38. **M. A. Wistey**, S. R. Bank, H. B. Yuen, L. L. Goddard, J. S. Harris,"GaInNAsSb/GaNAs VCSELs at 1.46 μm," *2004 Conf. on Lasers and Electro-Optics (CLEO)*, May 2004, San Francisco, California.

C.39. V. Lordi, H. B. Yuen, S. R. Bank, **M. A. Wistey**, J. S. Harris, "Electroabsorption of GaInNAs and GaInNAsSb quantum wells at 1300 and 1550 nm," *2004 Conf. on Lasers and Electro-Optics (CLEO)*, May 2004, San Francisco, California.

C.40. **M. A. Wistey**, "GaInNAs on GaAs: Fiber optics lasers for the masses," *Lockheed Martin Advanced Technology Center Colloquium*, Feb. 5, 2004. Invited talk.

C.41. A. Khalili, **M. A. Wistey**, J. S. Harris Jr., "Side-coupled in-line fiber-semiconductor laser," *Proc. SPIE*, Vol. 5355, p. 159, 2004.

C.42. Tihomir Gugov, **Mark Wistey**, Homan Yuen, Seth Bank, James S. Harris Jr., "Structural characterization of molecular beam epitaxy grown GaInNAs and GaInNAsSb quantum wells by transmission electron microscopy," *Spring 2004 MRS Meeting*, San Francisco, CA, April 2004.

C.43. H. B. Yuen, S. R. Bank, **M. A. Wistey**, H. Bae, J. S. Harris Jr., and A. Moto, "Effects of N_2 Flow on GaInNAs Grown by a RF Plasma cell in MBE," *Spring 2004 MRS Meeting*, San Francisco, CA, April 2004.

C.44. S. R. Bank, V. Lordi, **M. A. Wistey**, H. B. Yuen, and J. S. Harris, "Temperature Dependent Behavior of GaInNAs(Sb) Alloys Grown on GaAs," *46th Electronic Materials Conf.*, Notre Dame, June 2004.

C.45. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, and J. S. Harris, "The role and suppression of carrier leakage in 1.5 μm GaInNAsSb/GaAs lasers," *62nd Device Research Conf. (DRC)*, June 2004, Notre Dame.

C.46. **M. A. Wistey**, S. R. Bank, H. B. Yuen, V. F. Gambin, and J. S. Harris, "Low-Voltage Deflection Plates Reduce Plasma Damage in MBE Dilute Nitride Growth," *46th Electronic Materials Conf.*, Notre Dame, 2004.

C.47. H. B. Yuen, **M. A. Wistey**, S. R. Bank, Hopil Bae, A. Moto, and J. S. Harris, "An investigation of nitrogen flow variation into an rf plasma cell on plasma properties and GaInNAs(Sb) grown by molecular beam epitaxy," *North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Canada, Oct. 2004.

C.48. **M. A. Wistey**, S. R. Bank, H. B. Yuen, Hopil Bae, and J. S. Harris, "Nitrogen Plasma Optimization for High Quality Dilute Nitrides," *International Conf. on Molecular Beam Epitaxy*, Edinburgh, Scotland, 2004.

C.49. S. R. Bank, **M. A. Wistey**, H. B. Yuen, V. Lordi, V. F. Gambin, and J. S. Harris Jr., "Effects of Antimony and Ion Damage on Carrier Localization in MBE-Grown GaInNAs," *2004 North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Canada, Oct. 2004.

C.50. S. R. Bank, **M. A. Wistey**, H. B. Yuen, L. L. Goddard, H. P. Bae, and J. S. Harris Jr., "MBE Growth of Low-Threshold CW GaInNAsSb Lasers at 1.5 μm," *2004 North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Canada, Oct. 2004.

C.51. J. S. Harris Jr, S. R. Bank, **M. A. Wistey**, H. B. Yuen, "GaInNAs(Sb) long wavelength communications lasers," *IEE Proceedings-Optoelectronics*, Vol. 151, No. 5, pp. 407-16. Publisher: IEE, UK. 27 Oct. 2004.

C.52. **M. A. Wistey**, S. R. Bank, H. B. Yuen, Lynford Goddard, Tihomir Gugov, and J. S. Harris, "Protecting wafer surface during GaInNAs plasma ignition by use of an arsenic cap," *2004 North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Canada, Oct. 2004.

C.53. L. L. Goddard, S. R. Bank, **M. A. Wistey**, H. B. Yuen, H. P. Bae, J. S. Harris, "Reduced monomolecular recombination in GaInNAsSb/GaAs lasers at 1.5μm," *LEOS 2004*.

C.54. H. B. Yuen, M. J. Seong, S. Yoon, R. Kudrawiec, S. R. Bank, **M. A. Wistey**, J. Misiewicz, A. Mascarenhas, and J. S. Harris Jr., "Improved Optical Quality from Indium-Free GaNAsSb in the Dilute Sb (<3%) Limit," *Fall 2004 MRS Meeting*, Boston, MA, December 2004.

C.55. L. L. Goddard, S. R. Bank, **M. A. Wistey**, H. B. Yuen, J. S. Harris, "High performance GaInNAsSb/GaAs lasers at 1.5 μm," *Photonics West 2005*, San Jose, CA, 2005. In *Proc. of SPIE*, Vol. 5738, pp. 180–191, 2005.

C.56. H. B. Yuen, R. Kudrawiec, K. Ryczko, J. Misiewicz, S. R. Bank, **M. A. Wistey**, H. P. Bae, J. S. Harris, "Investigation of GaNAsSb and GaInNAsSb/GaAs Band Offsets," *Spring 2005 MRS Meeting*, San Francisco, CA, March 2005.

C.57. D. B. Jackrel, H. B. Yuen, S. R. Bank, **M. A. Wistey**, X. Yu, J. Fu, Z. Rao, J. S. Harris Jr., "A comparison of lattice-matched GaInNAs and metamorphic InGaAs photodetector devices," *Spring 2005 MRS Meeting*, Vol. 864, pp. 271-6. March 2005.

C.58. L. L. Goddard, S. R. Bank, **M. A. Wistey**, H. B. Yuen, H. P. Bae, J. S. Harris Jr., "Differential gain and nonlinear gain compression of GaInNAsSb/GaAs lasers at 1.5μm," *2005 Conference on Lasers and Electro-Optics (CLEO)*, Baltimore, Maryland. (IEEE Cat. No. 05TH8796.) Vol. 1, p. 86-8. May 2005.

C.59. S. R. Bank, **M. A. Wistey**, L. L. Goddard, H. B. Yuen, H. P. Bae, J. S. Harris Jr., "1.5 μm GalnNAsSb lasers on GaAs," *2005 Conference on Lasers and Electro-Optics (CLEO)*, Baltimore, Maryland. (IEEE Cat. No. 05TH8796.) Vol. 1, p. 89-91. May 2005.

C.60. D. Jackrel, H. Yuen, S. Bank, **M. Wistey**, J. Fu, X. Yu, Z. Rao, and J. S. Harris, "Thick lattice-matched GaInNAs films in photodetector applications," *Proceedings of SPIE*, Vol. 5726, pp. 27–34, 2005.

C.61. S. R. Bank, H. P. Bae, H. B. Yuen, L. L. Goddard, **M. A. Wistey**, T. Sarmiento, and J. S. Harris, "Low-Threshold CW 1.55-μm GaAs-Based Lasers," *Optical Fiber Communication Conference and National Fiber Optic Engineers Conference (OFC-NFOEC)*, Anaheim, CA, March 2006.

C.62. **M. A. Wistey**, S. R. Bank, H. P. Bae, H. B. Yuen, L. L. Goddard, E. R. Pickett, and J. S. Harris, "Monolithic GaInNAsSb Vertical Cavity Surface Emitting Lasers at 1534nm," *Conf. on Lasers and Electro-Optics (CLEO)*, Long Beach, California, May 2006.

C.63. S. R. Bank, H. Bae, H. B. Yuen, **M. A. Wistey**, L. L. Goddard, and J. S. Harris, "Low-Threshold Continuous-Wave 1.55-μm GaInNAsSb Lasers," *Conf. on Lasers and Electro-Optics (CLEO)*, Long Beach, California, May 2006.

C.64. S. R. Bank, H. P. Bae, L. L. Goddard, H. B. Yuen, **M. A. Wistey**, J. S. Harris, "Very low-threshold 1.55-μm dilute-nitride lasers," *Device Research Conference*, (IEEE Cat. No. 06TH8896), pp. 25-6. 2006.

C.65. D. Jackrel, A. Ptak, S. Bank, H. Yuen, **M. Wistey**, D. Friedman, S. Kurtz, J. S. Harris Jr., "GaInNAsSb solar cells grown by molecular beam epitaxy," *Conference Record of the 2006 IEEE 4th World Conference on Photovoltaic Energy Conversion*, Piscataway, NJ, USA, 2006, pp. 4.

C.66. M. Rodwell, E. Lind, Z. Griffith, S.. R.. Bank, A. M. Crook[U], U. Singisetti, **M. Wistey**, G. Burek, A. C. Gossard, "Frequency Limits of InP-based Integrated Circuits," *IEEE 19th International Conference on Indium Phosphide & Related Materials (IPRM)*, 14-18 May 2007.

C.67. K. Sun, A. Mintairov, T. Kosel, J. Merz, H. Yuen, S. Bank, **M. Wistey**, E. Pickett, J. Harris, A. Egorov, V. Ustinov, G. Peake, "Composition Fluctuation and Carrier Localization in GaAs(In,Sb)N Quantum Wells," *49th Electronic Materials Conf. (EMC)*, June 2007, Notre Dame, Indiana.

C.68. M. Oye, **M. Wistey**, J. Reifsnider, H. Yuen, A. Ptak, P. May, T. Mattord, S. Agarwal, J. Lee, S. Banerjee, G. Hallock, J. Harris, A. Holmes, S. Bank, "Effects of Different Plasma Species on the Optical Properties of Dilute Nitrides Grown by Plasma-Assisted Molecular-Beam Epitaxy," *49th Electronic Materials Conf. (EMC)*, June 2007, Notre Dame, Indiana.

C.69. U. Singisetti, A. M. Crook[U], E. Lind, **M. A. Wistey**, J. D. Zimmerman, A. C. Gossard, M. J. W. Rodwell, S. R. Bank, "Ultra-Low Resistance Ohmic Contacts to InGaAs/InP," *65th Device Research Conf. (DRC)*, 2007, Notre Dame, Indiana.

C.70. K. Sun, A. M. Mintairov, J. L. Merz, G. Peak, H. Yuen, S. Bank, **M. Wistey**, J. S. Harris, A. Egorov, and V. Ustinov, "Effect of composition fluctuations on emission properties of GaAs(In,Sb)N QWs," *Proc. 15 Int. Symp. Nanostructures: Physics and Technology*; Novosibirsk, Russia (June 25-29, 2007).

C.71. M. Rodwell, E. Lind, Z. Griffith, A. M. Crook[U], S. R. Bank, U. Singisetti, **M. Wistey**, G. Burek, A. C. Gossard, "On the feasibility of few-THz bipolar transistors," *2007 IEEE Bipolar/BiCMOS Circuits and Technology Meeting*, IEEE. pp. 17-21. Piscataway, NJ, USA.

C.72. Y.-C. Xin, L. F. Lester, S. R. Bank, H. P. Bae, H. B. Yuen, **M. A. Wistey**, J. S. Harris Jr., "Monolithic 1.55-μm GaInNAsSb quantum well mode-locked lasers," *Conference on Lasers and Electro-Optics 2007 (CLEO '07)*, Baltimore, Maryland. IEEE, pp. 1668-9, Piscataway, NJ, USA. May 2007.

C.73. M. Rodwell, E. Lind, Z. Griffith, A. M. Crook[U], S. R. Bank, U. Singisetti, **M. Wistey**, G. Burek, A. C. Gossard, "On the feasibility of few-THz bipolar transistors," *2008 Government Microcircuit Applications and Circuit Technology Conference*, March17-20, 2008, Las Vegas, NV.

C.74. M. Rodwell, **M. Wistey**, U. Singisetti, G. Burek, A. Gossard, S. Stemmer, R. Engel-Herbert, Y. Hwang, Y. Zheng, C. Van de Walle, P. Asbeck, Y. Taur, A. Kummel, B. Yu, D. Wang, Y. Yuan, C. Palmstrøm, E. Arkun, P. Simmonds, P. McIntyre, J. Harris, M. V. Fischetti, Sachs, C., "Technology

development & design for 22 nm InGaAs/InP-channel MOSFETs," *20th International Conference on Indium Phosphide and Related Materials, 2008 (IPRM 2008*, pp.1-6, 25-29 May 2008.

C.75. **M. A. Wistey**, U. Singisetti, G. Burek, J. Cagnon, S. Stemmer, A. Gossard, M. Rodwell, E. Arkun, C. Palmstrøm, S. Bank, "Regrown Contacts for InGaAs Field Effect Transistors," *50th Electronic Materials Conference (EMC 2008)*, Santa Barbara, California, June 2008.

C.76. **M. A. Wistey**, U. Singisetti, G. J. Burek, B. J. Thibeault, J. Cagnon, S. Stemmer, S. R. Bank, Y. Sun, E. J. Kiewra, D. K. Sadana, A. C. Gossard, M. J. W. Rodwell, "Regrowth of Self-Aligned, Ultra Low Resistance Ohmic Contacts on InGaAs," *15th International Conference on Molecular Beam Epitaxy*, Vancouver, British Columbia, Canada, 4 August 2008.

C.77. Mark Rodwell, E. Lobisser, **M. Wistey**, V. Jain, A. Baraskar, E. Lind, J. Koo, B. Thibeault, A. C. Gossard, Z. Griffith, J. Hacker, M. Urteaga, D. Mensa, Richard Pierson, B. Brar, "Development of THz Transistors and (300-3000 GHz) sub-mm-wave Integrated Circuits," *11th International Symposium on Wireless Personal Multimedia Communications (WPMC 2008)*, Lapland, Finland, 8 September 2008.

C.78. U. Singisetti, **M. A. Wistey**, G. J. Burek, E. Arkun, Y. Sun, E. J. Kiwera, B. J. Thibeault, A. C. Gossard, C. J. Palmstrøm, and M. J. W. Rodwell, "InGaAs channel MOSFET with self-aligned source/drain MBE regrowth technology," *35th International Symposium on Compound Semiconductors (ISCS)*, Europa Park, Rust, Germany. Published in *Physica Status Solidi (C)*, v. 6, p. 1394 (2009). DOI: 10.1002/pssc.200881532.

C.79. M. Rodwell, **M. Wistey**, U. Singisetti, G. Burek, A. Gossard, S. Stemmer, R. Engel-Herbert, Y. Hwang, Y. Zheng, C. van de Walle, P. Asbeck, Y. Taur, A. Kummel, B. Yu, D. Wang, Y. Yuan, C. Palmstrøm, E. Arkun, P. Simmonds, P. McIntyre, J. Harris, M. V. Fischetti, C. Sachs, "Device architecture and processing for III-V MOS technology," Workshop on Germanium and III-V MOS technology (during 2008 European Solid-State Devices Conference), Edinburgh International Conference Center, Friday September 19, 2008.

C.80. Mark Rodwell, E. Lobisser, **M. Wistey**, V. Jain, A. Baraskar, E. Lind , J. Koo, Z. Griffith, J. Hacker, M. Urteaga, D. Mensa, Richard Pierson, B. Brar, "THz Bipolar Transistor Circuits: Technical Feasibility, Technology Development, Integrated Circuit Results," *2008 IEEE Compound Semiconductor IC symposium*, Monterey, CA, October 12-14, 2008.

C.81. Vibhor Jain, Ashish K. Baraskar, **Mark A. Wistey**, Uttam Singisetti, Zach Griffith, Evan Lobisser, Brian J. Thibeault, Arthur. C. Gossard, Mark. J. W. Rodwell, "Effect of surface preparations on contact resistivity of TiW to highly doped n-InGaAs," 2009 IEEE 21st International Conference on Indium Phosphide & Related Materials (IPRM), p. 358-361, May 10-14, 2009.

C.82. Uttam Singisetti, **Mark A. Wistey**, Gregory J. Burek, Ashish K. Baraskar, Joel Cagnon, Brian Thibeault, Arthur C. Gossard, Susanne Stemmer, Mark J. W. Rodwell, Eunji Kim, Byungha Shin, Paul C. McIntyre, "Enhancement Mode $In_{0.53}Ga_{0.47}As$ MOSFET with self-aligned epitaxial Source/Drain regrowth," 2009 IEEE 21st International Conference on Indium Phosphide & Related Materials (IPRM), p. 120-123, 2009.

C.83. **M. A. Wistey**, U. Singisetti, G. Burek, A. Baraskar, V. Jain, B. Thibeault, A. Nelson, E. Arkun, C. Palmstrøm, J. Cagnon, S. Stemmer, A. Gossard, M. Rodwell, P. McIntyre, B. Shin, E. Kim, S. Bank, Y.-J. Lee, "III-V/Ge Channel Engineering for Future CMOS," 215th ECS Meeting, San Francisco, 28 May 2009.

C.84. U. Singisetti, **M. A. Wistey**, G. J. Burek, A. K. Baraskar, J. l. Cagnon, B. J. Thibeault, S. Stemmer, A. C. Gossard, M. J. W. Rodwell, E. Kim, B. Shin, P. C. McIntyre, and Y-J. Lee, "0.37 mS/μm In(0.53)Ga(0.47)As MOS- FET with 5 nm channel and Self-aligned Epitaxial Raised Source/Drain," Device Research Conference (DRC 2009), Pennsylvania State University, University Park, Pennsylvania, p. 253, June 24, 2009.

C.85. **M. A. Wistey**, U. Singisetti, G. Burek, A. Baraskar, V. Jain, B. Thibeault, A. Nelson, E. Arkun, C. Palmstrøm, J. Cagnon, S. Stemmer, A. Gossard, M. Rodwell, P. McIntyre, B. Shin, E. Kim, S. Bank, Y.-J. Lee, "Improved Migration-Enhanced Epitaxy for Self-Aligned InGaAs Devices," *Electronic Materials Conference (EMC)*, Pennsylvania State University, University Park, Pennsylvania, June 25, 2009.

C.86. Nidhi, S. Dasgupta, M. H. Wong, U. Singisetti, **M. Wistey**, M. Rodwell, J. Speck, U. Mishra, "Ultra-Low Contact Resistance for Self-Aligned HEMT Structures on N-Polar GaN by MBE Regrowth of InGaN-Based Contact Layers," *Electronic Materials Conference (EMC)*, Pennsylvania State University, University Park, Pennsylvania, June 25, 2009.

C.87. M. J. W. Rodwell, **M. A. Wistey**, U. Singisetti, G. J. Burek, E. Kim, A. Baraskar, J. Cagnon, Y.-J. Lee, S. Stemmer, P. C. McIntyre, A. C. Gossard, B. Yu, P. Asbeck, Y. Taur, "Process Technologies for Sub-100-nm InP HBTs and InGaAs MOSFETs," *8th Topical Workshop on Heterostructure Microelectronics (TWHM 2009)*, Nagano, Japan, August 2009.

C.88. M. J. W. Rodwell, E. Lobisser, V. Jain, A. Baraskar, **M. A. Wistey**, U. Singisetti, G. J. Burek, B. J. Thibeault, A. C. Gossard, E. Kim, P. C. McIntyre, B. Yu, P. Asbeck, Y. Taur, "Sub-100-nm Process Technologies For THz InP HBTs & MOSFETs," *2009 International Workshop on Terahertz Technology*, Osaka, Japan, Nov. 30 -Dec. 3, 2009

C.89. A. Baraskar, **M. A. Wistey**, E. Lobisser, V. Jain, U. Singisetti, G. Burek, Y. J. Lee, B. Thibeault, A. Gossard, M. Rodwell, "Ex-situ Ohmic Contacts to n-InGaAs Prepared by Atomic Hydrogen Cleaning," *37th Conference on the Physics and Chemistry of Surfaces and Interfaces*, Santa Fe, New Mexico, USA, January 10-14, 2010.

C.90. Mark J. W. Rodwell, Vibhor Jain, Evan Lobisser, Ashish Baraskar, **Mark A. Wistey**, Uttam Singisetti, Greg J. Burek, Brian J. Thibeault, A. C. Gossard, Eun Ji Kim, Paul C. McIntyre, Bo Yu, Peter Asbeck, Yuan Taur, "THz Transistors: Design and Process Technologies," *2010 Government Microcircuit Applications and Critical Technology Conference*, Reno, NV, March 22-25, 2010.

C.91. M. J. W. Rodwell, A. D. Carter, G. J. Burek, **M. A. Wistey**, B. J. Thibeault, A. Baraskar, U. Singisetti, Byungha Shin, E. Kim, J. Cagnon, Y.-J. Lee, S. Stemmer, P. C. McIntyre, A. C. Gossard, C. Palmstrøm, D. Wang, B. Yue, P. Asbeck, Y. Taur, "A Self-Aligned Epitaxial Regrowth Process for Sub-100-nm III-V FETs," *2010 MRS Spring Meeting*, San Francisco, April 5-9, 2010

C.92. A. Baraskar, V. Jain, **M. A. Wistey**, U. Singisetti, Yong Ju Lee, Brian Thibeault, Arthur Gossard, Mark J. W. Rodwell, "High doping effects on in-situ Ohmic contacts to n-InAs," *2010 22nd International Conference on Indium Phosphide and Related Materials [1092-8669]*, 2010.

C.93. M. J. W. Rodwell, U. Singisetti, **M. Wistey**, G. J. Burek, A. Carter, A. Baraskar, J. Law, B. J. Thibeault, E. J. Kim, B. Shin, Y. J. Lee, S. Steiger, S. Lee, H. Ryu, Y. Tan, G. Hegde, L. Wang, E. Chagarov, A. C. Gossard, W. Frensley, A. Kummel, C. Palmstrom, P. C. McIntyre, T. Boykin, G. Klimek, P. Asbeck, "III-V MOSFETs: Scaling Laws, Scaling Limits, Fabrication Processes," *2010 22nd International Conference on Indium Phosphide and Related Materials [1092-8669]*, 2010.

C.94. Jia Guo, Yu Cao, Chuanxin Lian, Tom Zimmermann, Guowang Li, Jai Verma, Xiang Gao, Shiping Guo, Paul Saunier, **Mark Wistey**, Debdeep Jena, and Huili (Grace) Xing, "Metal-face InAlN/AlN/GaN high electron mobility transistors with regrown ohmic contacts by molecular beam epitaxy," *International Workshop on Nitrides (IWN2010)*, September 19–24, 2010.

C.95. G. Zhou, J. Zhu, P. Pinsukanjana, Y.-C. Kao, T. Kosel, P. Fay, **M. Wistey**, A. Seabaugh, and H. Xing, "Regrown InGaAs tunnel junctions for TFETs," Electronic Materials Conference, June 2010, Notre Dame, IN.

C.96. **M. A. Wistey**, "Hybrid Integration of Photonics: Direct Bandgap Group IV's?", Workshop on Compound Semiconductor Materials and Devices (WOCSEMMAD 2011), Savannah, Georgia.

C.97. Ashish Baraskar, Vibhor Jain, **Mark A. Wistey**, Brian J. Thibeault, Arthur C. Gossard and Mark J. W. Rodwell, "In-situ and Ex-situ Ohmic Contacts To Heavily Doped p-InGaAs," *16th International Conference on Molecular Beam Epitaxy*, Berlin, Germany, Aug 22-27, 2010.

C.98. A K. Baraskar, V. Jain, **M. A. Wistey**, E. Lobisser, B. J. Thibeault, A. C. Gossard, M. J. W. Rodwell, "In- situ Refractory Ohmic Contacts to p-InGaAs," *27th North American Molecular Beam Epitaxy Conference*, Breckenridge, Colorado, USA, September 26-29, 2010.

C.99. G. Zhou, Y. Lu, R. Li, Q. Zhang, W. Hwang, Q. Liu, T. Vasen, H. Zhu, J. Kuo, S. Koswatta, T. Kosel, **M. Wistey**, P. Fay, A. Seabaugh, and H. G. Xing, "Self-aligned InAs/Al0.45Ga0.55Sb vertical tunnel FETs," *2011 69th Annual Device Research Conference (DRC)*, p 205-6, June, 2011.

C.100. Guangle Zhou, Yeqing Lu, Rui Li, Tim Vasen, Qingmin Liu, Wan Sik Hwang, Qin Zhang, Haijun Zhu, Jenn-Ming Kuo, Siyuranga Koswatta, **Mark Wistey**, Tom Kosel, Patrick Fay, Alan Seabaugh,

Huili Xing, "Passivation Effects of ALD Oxides on Self-Aligned $In_{0.53}Ga_{0.47}As$/InAs/InP Vertical Tunnel FETs," *Electronic Materials Conference (EMC)*, June, 2011.

C.101. William O'Brien, Bin Wu, Chad Stephenson, Christina Arisio, Marya Lieberman, **Mark Wistey**, "Oxide Surface Passivation of Ge for Optoelectronic Applications," *Electronic Materials Conference (EMC)*, p, 119, June, 2011.

C.102. Jia Guo, Jai Verma, Yu Cao, Xiang Gao, Shiping Guo, Ed Beam, Andrew Ketterson, Michael Schuette, Paul Saunier, **Mark Wistey**, Debdeep Jena, Huili (Grace) Xing, "MBE Regrown Ohmic Contacts with Rc of 0.15 ohm-mm in InAlN/ GaN High Electron Mobility Transistor," *Electronic Materials Conference (EMC)*, June, 2011.

C.103. A. Seabaugh, S. Chae, P. Fay, W. Hwang, T. Kosel, R. Li, Q. Liu, Y. Lu, T. Vasen, **M. Wistey**, G. Xing, G. Zhou, and Q. Zhang, "III-V Tunnel Field-Effect Transistors," *220th ECS Meeting & Electrochemical Energy Summit*, Symposium: E9 - ULSI Process Integration 7, October 9-14, 2011.

C.104. A. Seabaugh, S. D. Chae, P. Fay, W. S. Hwang, T. Kosel, R. Li, Q. Liu, Y. Lu, T. Vasen, **M. Wistey**, H. Xing, G. Zhou, Q. Zhang, and R. Wallace, "Interface traps and low subthreshold swing in III-V tunnel FETs," *AVS 58th Annual International Symposium and Exhibition*, October 30, 2011, Nashville, TN.

C.105. T. Vasen, Q. Liu, M. S. Rahman, G. Zhou, Y. Lu, R. Li, C. Chen, Q. Zhang, N. Goel, C. Park, J.-M. Kuo, H. Zhu, S. Koswatta, D. Wheeler, P. Fay, H. Xing, T. Kosel, **M. Wistey**, and A. Seabaugh, "Lateral $In_{0.53}Ga_{0.47}As$ tunneling field-effect transistor with regrown, self-aligned tunnel junction by molecular beam epitaxy," *SRC TECHCON*, Sept. 2011, Austin, TX.

C.106. S. D. Chae, G. Zhou, I. Kwihangana, R. Li, Y. Lu, Q. Liu, T. Vasen, Q. Zhang, W.-S. Hwang, P. Fay, T. Kosel, **M. Wistey**, H. Xing, and A. Seabaugh, "Characterization of interface traps in metal-high k-InAs/GaSb TFETs," *IEEE Semiconductor Interface Specialists Conference (SISC)*, Arlington, VA, Dec. 2011.

C.107. Rui Li, Yeqing Lu, Soo Doo Chae, Guangle Zhou, Qingmin Liu, Chen Chen, M. Shahriar Rahman, Tim Vasen, Qin Zhang, Patrick Fay, Tom Kosel, **Mark Wistey**, Huili (Grace) Xing, Siyuranga Koswatta and Alan Seabaugh, "InAs/AlGaSb heterojunction tunnel field-effect transistor with tunnelling in-line with the gate field," *Physica Status Solidi (C)*, vol. 9, no. 2, p. 389-92, Feb. 2012. doi: 10.1002/pssc.201100241.

C.108. Meng Qi, William A. O'Brien, Chad A. Stephenson, Ning Cao, Brian J. Thibeault and **Mark A. Wistey**, "Stability of Tensile-strained Ge Studied by Transmission Electron Microscopy," *2012 Intl. Si-Ge Technology and Device Meeting (ISTDM)*, June 4-6, 2012, Berkeley, CA, USA. Received **Best Poster Award.**

C.109. William A. O'Brien, Meng Qi, Chad Stephenson, Vladimir Protasenko, Ning Cao, Brian Thibeault, and **Mark A. Wistey**, "SiN_x-strained Ge toward a Direct Bandgap," *Electronic Materials Conference (EMC)*, Pennsylvania State University, University Park, Pennsylvania, June, 2012.

C.110. Guangle Zhou; Li, R.; Vasen, T.; Qi, M.; Chae, S.; Lu, Y.; Zhang, Q.; Zhu, H.; Kuo, J.-M.; Kosel, T.; **Wistey, M**.; Fay, P.; Seabaugh, A.; Huili Xing, "Novel gate-recessed vertical InAs/GaSb TFETs with record high I_{ON} of 180 μA/μm at V_{DS} = 0.5 V," *2012 IEEE International Electron Devices Meeting (IEDM 2012)*, p 32.6, 2012.

C.111. **Mark A. Wistey**, ``Core-Shell Upconverting Nanostructures," Energy and Photon Harvesting Workshop, University of Delaware, Newark, Delaware, 13 May 2013.

C.112. Meng Qi, William O'Brien, Chad Stephenson, Victor Patel, Ning Cao, Brian Thibeault, Thomas Kosel, Andreas Rosenauer, Marco Schowalter, Vladimir Protasenko, Huili Xing and **Mark Wistey**, "Strain Limitation Study of Tensile Strained Ge for Optical Device Applications," *Electronic Materials Conference (EMC)*, University of Notre Dame, Indiana, June, 2013.

C.113. William A. O'Brien, Chad A. Stephenson, Meng Qi, Victor Patel, Vladimir Protasenko, Tatyana Orlova, Huili (Grace) Xing and **Mark A. Wistey**, "Freestanding Ge Membranes Hydrostatically Strained by Compressive SiNx Films toward a Direct Bandgap," *Electronic Materials Conference (EMC)*, University of Notre Dame, Indiana, June, 2013.

C.114. Meng Qi, Chad A. Stephenson, William A. O'Brien and **Mark A. Wistey**, "Volmer-Weber Growth of Ge Quantum Dots on AlAs for Strong Carrier Confinement," *30th North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Alberta, Canada, Oct. 2013.

C.115. **Mark A. Wistey**, "Development of Device Quality Dilute Nitrides"(invited talk), *30th North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Alberta, Canada, Oct. 2013.

C.116. **Mark A. Wistey**, "What Arsine Smells Like (and other things you wish you didn't know)" (invited talk), The Art of MBE Workshop, *30th North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Banff, Alberta, Canada, Oct. 2013.

C.117. **Mark Wistey**, G. Zhou, Y. Lu, R. Li, Q. Zhang, W. S. Hwang, Q. Liu, T. Vasen, C. Chen, M. Qi, H. Zhu, J.-M. Kuo, S. Chae, Y. Lu, H. Zhu, J.-M. Kuo, T. Kosel, S. Koswatta, P. J. Fay, A. Seabaugh, H. Xing, "Challenges and Progress in Complementary Tunnel FETs" (invited talk), *American Vacuum Society 60th International Symposium & Exhibition (AVS-60)*, Long Beach, CA, 28 Oct 2013.

C.118. H. G. Xing, Guangle Zhou, Mingda Li, Yiqing Lu, Rui Li, **M. Wistey**, P. Fay, D. Jena, A. Seabaugh, "Tunnel FETs with tunneling normal to the gate," *2013 Third Berkeley Symposium on Energy Efficient Electronic Systems (E3S)*, Berkeley, California, USA, Oct. 28-29, 2013.

C.119. **Mark A. Wistey**, Victor Patel, Joseph L. Loof, William A. O'Brien, Meng Qi, Anthony J. Erdman, Chad A. Stephenson, "Analysis and Design of Core-Shell Upconverting Nanostructures (CSUNs)," *40th IEEE Photovoltaic Specialists Conference (PVSC)*, paper #921, June 8-13 (2014).

C.120. Chad A. Stephenson, William A. O'Brien, Meng Qi, Michael Penninger, Miriam Gillett-Kunnath, Jaroslav Zajicek, William Schneider, and **Mark A. Wistey**, "Influence of C in Dilute $Ge_{1-x}C_x$ Alloys," *56th Electronic Materials Conference (EMC)*, Santa Barbara, CA, 2014.

C.121. William A. O'Brien, Meng Qi, Chad A. Stephenson, Vladimir Protasenko, A. Mintairov, Huili Xing, **Mark A. Wistey**, "Self-Assembled Ge QDs Formed by High Temperature Annealing on AlAs (100)," *56th Electronic Materials Conference (EMC)*, Santa Barbara, CA, 2014.

C.122. Chad A. Stephenson, William A. O'Brien, Meng Qi, Michael Penninger, Miriam Gillett-Kunnath, Jaroslav Zajicek, William Schneider, **Mark A. Wistey**, "Dilute $Ge_{1-x}C_x$ Alloys and Their Properties", *18th International Conference on Molecular Beam Epitaxy (MBE 2014)*, Flagstaff, Arizona, September 7-12, 2014.

C.123. **Mark A. Wistey**, "Hide and Seek with Viewport Leaks," *18th International Conference on Molecular Beam Epitaxy (MBE 2014)*, Flagstaff, Arizona, September 7-12 (2014).

C.124. **Mark A. Wistey**, "Core-Shell Upconverting Nanostructures (CSUNs)," *Workshop on Compound Semiconductor Materials And Devices* (WOCSEMMAD 2015), Isle of Palms, SC, February 20, 2015.

C.125. **Mark A. Wistey**, "Advanced Group IV Photonics and Solar Cells," *Northrop Grumman New Semiconductors and Devices Workshop*, Redondo Beach, California, 11 Dec. 2014.

C.126. Chad A. Stephenson, William O'Brien, Meng Qi, Michael Penninger, William Schneider, Miriam Gillett-Kunnath, Jaroslav Zajicek, **Mark Wistey**, "Band Structure and Optical Properties of Dilute Ge:C Alloys," *American Physical Society March Meeting*, San Antonio, Texas (2015).

C.127. Chad A. Stephenson, William O'Brien, Michael Penninger, William Schneider, Miriam Gillett-Kunnath, Jaroslav Zajicek, R. Kudrawiec, **M. A. Wistey**, "Band Structures and Extraction of Bowing Parameters from MBE Grown Ge:C," accepted to *32nd North American Conf. on Molecular Beam Epitaxy (NAMBE)*, Playa del Carmen, Mexico, Oct. 2015.

C.128. Chad A. Stephenson, William A. O'Brien, Miriam Gillett-Kunnath, Kin Man Yu, Robert Kudrawiec, Roy A. Stillwell, and **Mark A. Wistey**, "Band Structure of Germanium Carbides for Direct Bandgap Photonics," *IEEE Summer Topicals*, Newport Beach, California, 7/12/2016.