Curriculum Vitae of Huili Grace Xing

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Contact Information

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Summary

Dr. Xing is a Richard Lunquist Sesquicentennial Professor at Cornell University, with a 50/50 joint appointment with the School of Electrical & Computer Engineering and the Department of Materials Science & Engineering. She was with Electrical Engineering at the University of Notre Dame (UND) from 2004 to 2014, after earning her Ph.D. and subsequent one-year postdoctoral experience in Electrical and Computer Engineering from the University of California, Santa Barbara. During her research career, she has received the Young Investigator Program (YIP) Award from the Air Force Office of Scientific Research (AFOSR) in October 2008, the National Science Foundation (NSF) CAREER Award in January 2009, the John Cardinal O'Hara C.S.C. professorship by the University of Notre Dame in 2010, the Young Scientist Award at the International Symposium on Compound Semiconductors (ISCS) in 2014. She is also the advisor to a recipient of the 2013 Eli J. and Helen Shaheen Graduate School Award in Engineering at UND, several best paper awards, including a Best Paper Award at International Workshop on Nitride Semiconductors (IWN) and the Best Student Presentation Award at IRMMW-THz in 2012.

Xing's research and teaching interests are in the area of electronic materials and devices. Her research projects involve growth, fabrication and characterization of semiconductor electronic and optical materials and devices, primarily III-V nitride semiconductors, 2D crystals and tunnel FETs. She is the author or co-author of 150+ journal articles, 70+ conference proceeding papers and 300+ conference presentations, delivered 80+ invited talks and contributed five chapters in five books. Her h-index is 36 with 4700+ citations according to Google Scholar.

She currently advises 6 graduate students, 3 postdoctoral researchers, co-advises a few graduate students and postdoctoral researchers, and collaborate closely with 1 Research Assistant Professor (RAP). She also worked closely with 2 RAPs at the Electrical Engineering Department, one of whom was promoted to a tenure-track assistant professor at UND in 2011. Nine students have been awarded Ph.D. degree, and five M.S. degrees have been awarded under her supervision. Since Fall 2004, her research efforts have been supported by about $60M in external research funding, with Xing serving as the leading principle investigator on over $12M.

Professional Preparation

1996 Peking University, Beijing, China
B.S. in Physics, Thesis Advisor: Hongdu Liu
Thesis: Fabrication and Characterization of Bragg Grating on Optical Fiber

1998 Lehigh University, Pennsylvania
M.S. in Material Science, Thesis Advisor: G. Slade Cargill III
Thesis: SEM-Cathodoluminescence Studies of ZnCdSe-Based Quantum Well Structures

2003 University of California, Santa Barbara, CA
Ph.D. in Electrical Engineering, Thesis Advisor: Umesh Mishra
Thesis: Growth, Fabrication and Characterization of GaN Bipolar Transistors

2003 University of California, Santa Barbara
Postdoc in Electrical Engineering, Advisor: Umesh Mishra
Project: AlGaN/GaN High Electron Mobility Transistor For Power Electronics

Honors:

2015 Richard E. Lunquist Sesquicentennial Faculty Fellow, Cornell University
2015 Co-author of the Best Paper in Journal of Electronic Materials
2014 Young Scientist Award, International Symposium on Compound Semiconductors (ISCS)
2014 NIST Uncertainty Analysis Student Award at Electronic Materials Conference (EMC), Advisor to Rusen Yan
2014 Award for Outstanding Self-Financed Student Abroad from the Education Ministry of China, Advisor to Rusen Yan
2013 Runner up for the Best Student Presentation Award at the IRMMW-THz, Advisor to Rusen Yan
2013 Eli J. and Helen Shaheen Graduate School Award in Engineering (Best Ph.D. Dissertation) from UND, Advisor to Berardi Sensale-Rodriguez
2012 Best Poster Award at TeraNano-3, Advisor to Rusen Yan
2012 Best Student Paper Award at International Workshop on Nitride Semiconductors (IWN), Advisor to Ronghua Wang
2012 Best Student Presentation Award at the International Conference on Infrared, Millimeter and Terahertz Wave (IRMMW-THz), Advisor to Berardi Sensale-Rodriguez
2012 Outstanding Notre Dame Faculty, featured at the UND-BYU football game
2010 John Cardinal O'Hare CSC professorship
2009 CAREER Award, National Science Foundation (NSF)
2008 Young Investigator Program (YIP) Award, Air Force Office of Scientific Research (AFOSR)
1993 Scholarship for Academic Excellence in Undergraduate Studies, Beijing University.

Professional Experience:

Academic Appointments:

2004/08 University of Notre Dame, Notre Dame, IN
Department of Electrical Engineering
Title: Assistant Professor

2010/08 University of Notre Dame, Notre Dame, IN
Department of Electrical Engineering
Title: John Cardinal O'Hare C.S.C. Associate Professor

2012/08-12 University of California, Santa Barbara, CA
Department of Electrical and Computer Engineering
Title: Visiting Associate Professor

2013/08 University of Notre Dame, Notre Dame, IN
Department of Electrical Engineering
Title: Professor

2014/06-12 Cornell University, Ithaca, NY
School of Electrical and Computer Engineering
Title: Visiting Professor

2014/07 Technical University of Munich, Germany
Department of Electrical, Electronic and Computer Engineering
Title: Visiting Professor

2015/01 Cornell University, Ithaca, NY
School of Electrical and Computer Engineering, Department of Materials Science & Engineering
Title: Richard E. Lunquist Sesquicentennial Faculty Fellow, Professor

Activities with industry and National Institutes:

2009 Triquint Semiconductors, Richardson, TX
Task: Design, fabrication and characterization of high frequency GaN transistors

2010 Inlustra Technologies Inc., Santa Barbara, CA
Task: Characterization of semi-insulating non-polar GaN

2010 Electro-Optics Technology, Traverse City, MI
Task: Characterization of NIR optical isolators

2011 Kopin Corporation, Westboro, MA
Task: Fabrication and characterization of GaN HEMTs

2011 Nitek, Irmo, SC
Task: Design, fabrication and demonstration of III-V nitride UV LEDs using polarization-induced p-type doping

2011 Teledyne Scientific & Imaging, Thousand Oaks, CA
Task: Design, fabrication and characterization of high-speed GaN power switches

2012 National Institute of Standard and Technology
Task: Internal photoemission of heterostructures

2013 Northrop Grumman Corporation, Baltimore, MD

Task: Development of conformal deposition of metal by ALD

2013 Osram Opto Semiconductors GmbH, Germany
Task: Development of GaN-on-Si devices

2013 Hitachi Cable Ltd., Japan
Task: Development of GaN power transistors

2013 SixPoint Materials, LLC., CA
Task: Development of GaN high voltage Schottky diodes for power switching

2013 United Technology Research Center (UTRC), CT
Task: Development of GaN power transistors

2013 IQE
Task: Development of GaN power transistors

2014 ElementSix
Task: Development of GaN power transistors on diamond

2014 Agnitron, MN
Task: Development of GaN power transistors

Professional activities

Editorial:

Associate editor of the Journal of Electronic Materials (2012 – 2014)
Special Issue of the Journal of Electronic Materials on Wide Bandgap Semiconductors (2007 – 2013)

Program Committee Member:

European Solid State Device Research and Circuits (ESSDERC), 2016
North American Molecular Beam Epitaxy Conference, 2015
Silicon Nanoelectronics Workshop, 2014, 2015
International Symposium on Compound Semiconductors (ISCS), 2013
IEEE International Electron Device Meeting (IEDM), 2012 - 13
IEEE (Biennial) Lester Eastman Conference 2010, 2012, 2014 (Program Chair), 2016 (General Chair)
IEEE Device Research Conference (DRC), Local Arrangement, 2010.
IEEE (Biennial) International Semiconductor Device Research Symposium (ISDRS), 2009, 2011, 2013
Electronic Materials Conference (EMC), 2010 - 2015
University Government Industry Micro/Nano Symposium (UGIM) 2010

Session Organization/Participation:

Rump Session co-organizer in International Conference on Nitride Semiconductors (ICNS) 2015
Rump Session presenter in DRC 2015
Rump Session presenter in WOCSEMMAND 2015
Session chair in International Symposium on Compound Semiconductor (ISCS), 2009

Organizer and session chair in American Conference on Crystal Growth and Epitaxy (ACCGE), 2009
Session chair in ONR Electronic Materials Review 2007
Organizer and session chair in Electronic Materials Conference (EMC) in 2006-2009

Journal Reviewer:

Applied Physics Letters
ACS Nano
Carbon
IEEE Electron Device Letters
IEEE Transaction of Electron Devices
IEEE Transaction of Nanotechnology
IEEE Journal of Quantum Electronics
International Journal of High Speed Electronics and Systems
Japanese Journal of Applied Physics
Journal of Electronic Materials
Journal of Electrochemical Society
Journal of Physical Chemistry
Journal of Vacuum Science & Technology
Nano Letters
Nature journals
Physica Status Solidi
Optics Express
Science
Solid State Electronics

Funding Proposal Review & Panelist:

National Science Foundation (NSF)
Department of Energy (DOE)
MIT Deshpande Center Innovation Awards
Ohio State Institute for Materials Research (IMR) Grants
Hong Kong Research Grant Council (China)
Notre Dame AD&T Research Seedling

Member:

Institute of Electrical and Electronic Engineers (IEEE)
Material Research Society (MRS)
American Association for the Advancement in Science (AAAS)
American Society for Engineering Education (ASEE)
The Minerals, Metals and Materials Society (TMS)
The Electrochemical Society (ECS)

Other activities:

Board of Visitors for the Army Research Office (ARO) Biennial Review of the Electronic Division (2012)
Ph.D. dissertation international examiner, ETH, Switzerland, 2012
Ph.D. dissertation international examiner, UWA, Australia, 2013

Research Grants (RGs)

Active grants (9, total ~$44.5M and as leading PI ~$7M):

RG-29. National Science Foundation (NSF)
Graphene-based electrically reconfigurable THz aperture arrays for imaging applications
P.I. (co-P.I. Lei Liu)
05/01/2012 - 04/31/2016
$360,000

RG-30. Office of Naval Research (ONR)
III-N devices and architectures for terahertz electronics (DATE)
Co-P.I. (P.I. Patrick Fay, Co-PI: Debdeep Jena), Ohio State University (Paul Berger, Siddharth Rajan, John Volakis, Kubilay Sertel), Wright State University (Elliot Brown)and John Hopkins University (Jacob Khurgin).
06/01/2011 - 05/31/2016 (2015-16 are the option period)
$6,288,908 (total award and $2.5M for Notre Dame)

RG-31. Semiconductor Research Corporation (SRC)
Chemically functionalized graphene as high performance heat spreader
Co-PI (PI: Tengfei Luo, co-PI: David Go)
11/01/13 - 10/31/16
$300,000

RG-32. Semiconductor Research Corporation (SRC)
LEAST: Center for low energy systems technology
Co-PI (PI: Alan Seabaugh, co-PIs at UND: Patrick Fay, Susan Fullerton, Xiaobo Sharon Hu, Debdeep Jena, Michael Niemier, Huili Grace Xing, and other co-PIs outside UND)
01/15/13 - 1/14/18
$30M (~ $1.25M per PI)

RG-33. National Science Fundation (NSF)
MRI: Development of an apertureless near-field scanning optical and magneto-optical Kerr effect microscope for nano-science applications.
P.I. (co-P.I.s Vladimir Protasenko, Gary Bernstein, Libai Huang and Gregory Hartland)
10/01/2013 - 09/30/2016

$440,000

RG-34. Advanced Research Program Agency - Energy (ARPA-E)
Program: Strategies for wide-bandgap inexpensive transistors for controlling high efficiency systems (SWITCHES)
Title: GaN epi-wafers for vertical high-power devices grown by vapor phase epitaxy on low-cost, high-quality ammonothermal GaN substrates
Subcontract from: SixPoint Materials, LLC.
PI (Co-PI: Debdeep Jena)
02/15/14 - 02/14/17
$560,000

RG-35. Advanced Research Program Agency - Energy (ARPA-E)
Program: SWITCHES
Title: PolarJFET: a novel vertical GaN power transistor concept
PI (Co-PIs: Paul Saunier at TQS, Joe Mantese at UTRC, Wayne Johnson at IQE; Co-PIs at UND: Debdeep Jena, Patrick Fay)
03/17/14 - 03/16/17
$3,435,070 ($4.27M including 20% cost share)

RG-36. National Science Foundation (NSF)
EFRI-2DARE: Monolayer Heterostructures: Epitaxy to Beyond-CMOS Devices
P.I. (Co-PIs: Debdeep Jena, Libai Huang, Morten Eskildsen, Tengfei Luo)
11/01/2014 - 10/31/2018
$1,999,997

RG-37. National Science Foundation (NSF)
DMREF: Collaborator Research - Extreme bandgap semiconductors
co-P.I. (PI: Debdeep Jena), Collaborators: Eric Pop (Stanford), Emmanouil Kioupakis (U. Michigan)
11/01/2015 - 10/31/2018
$840,000

Past grants (28, total $17.2M and as leading PI $5.5M):

RG-1. National Science Foundation (NSF)
MRI: Acquisition of Ultrafast Spectroscopy Instrumentation for Material Research and Education
Co-PI (PI: Jim Merz, 3 co-PIs: Alexander Mintairov and Debdeep Jena)
09/2006 - 08/2008
$291,658
Cost share: $30K (=$7.5K per PI)

RG-2. Office of Naval Research (ONR)

Polarization-doped GaN HBTs
P.I.
03/2007 - 09/2008
$116,000

RG-3. Office of Naval Research/Defense Advanced Research Projects Agency (ONR/ DARPA)
Ideal channel field effect transistors
P.I.
08/2007 - 03/2008
$90,000

RG-4. Office of Naval Research (ONR)
Nitride/Oxide multifunction materials: bridging the gap between materials and devices
Co-P.I. (PI: Debdeep Jena, 3 Co-PIs: Jim Merz and Alan Seabaugh)
11/2007 - 03/2009
$1,146,000

RG-5. University of Notre Dame (Faculty Research Program)
Graphene nanoribbon-based FETs and gated RTTs for integrated high-speed RF devices and circuits
P.I.
01/2008 - 12/2008
$10,000

RG-6. Air Force Office of Scientific Research (AFOSR)
DURIP: Transport characterization system for electronic, optical & multifunctional materials and devices
Co-PI (PI: Debdeep Jena)
10/2008 - 09/2009
$280,000

RG-7. Office of Naval Research/Defense Advanced Research Projects Agency (ONR/ DARPA)
Ultrascaled AlN/GaN HEMT technology for mm-wave applications
P.I. (co-PI: Debdeep Jena)
07/2008 - 07/2010
$260,000

RG-8. Office of Naval Research (ONR)
AlGaAs/GaAs/GaN HBTs by wafer fusions
P.I. of the subcontract from MURI: MINE-UCSB
04/2005 - 03/2010

$350,000

RG-9. Nanoelectronic Research Initiative (NRI)
MIND: Midwest Institute of Nanoelectronics Discovery (Phase 1.0)
Co-PI (PI: Alan Seabaugh, 7 co-PIs: Debdeep Jena, Patrick Fay, Wolfgang Porod, Gary Bernstein, Mike Niemier and Sharon Hu)
04/2008 - 03/2011
$3,100,000

RG-10. National Science Foundation (NSF)
Evaluation of nanoribbons for lateral bandgap engineering
Co-PI (PI: Debdeep Jena)
05/2008 - 04/2011
$299,999

RG-11. Office of Naval Research (ONR)
Engineering of oxide/nitride semiconductors (EONS)
Co-P.I. (PI: Debdeep Jena, 6 Co-PIs: Jim Merz, Alan Seabaugh, Patrick Fay, Tom Kosel and Doug Hall)
12/10/2008 - 12/31/2010
$1,529,349

RG-12. Inlustra Technologies, Inc.
Characterization of non-polar bulk GaN substrates (DoD STTR)
P.I.
5/3/2010 - 11/3/2010
$30,000

RG-13. Air Force Office of Scientific Research (AFOSR)
Stacked quantum wire AlN/GaN HEMTs
P.I. (co-PI: Debdeep Jena)
03/2009 - 11/2011
$450,000 - (201522 - ND account number)

RG-14. Air Force Office of Scientific Research (AFOSR)
YIP: Quantum limits of AlN/GaN RF HEMTs
P.I.
02/15/2009 - 11/30/2011
$450,000
Cost share: total $175K (EE $75K + College $75K for graduate students & EE $2.5K + College $5K + University $17.5K for instrumentation)

RG-15. Defense Advanced Research Projects Agency (DARPA)

The Compact Mid-Ultraviolet Technology (CMUVT) program
AlGaN MQW Mid UV LEDs over sapphire and bulk AlN
Co-P.I. (P. I. Debdeep Jena)
11/01/2010 - 12/31/2011
Subcontract total $175,000 for Notre Dame
Subcontract from Nitek, Inc. (South Carolina)

RG-16. Office of Naval Research (ONR)
THz power sources based on negative differential resistance in GaN
P.I. (2 Co-PIs: Debdeep Jena, Alan Seabaugh)
4/1/2009 - 5/31/2012
$260,000

RG-17. National Science Foundation (NSF)
Nanoscale optoelectronics with polarization and bandgap engineered nitride nanowire/ silicon heterostructures
Co-P.I. (P.I. Debdeep Jena and Co-P.I. Vladimir Protasenko)
06/01/2009 - 05/31/2012
$299,997

RG-18. Nanoelectronics Research Initiative (NRI)
MIND: Midwest Institute of Nanoelectronics Discovery (Phase 1.5)
Co-PI (PI: Alan Seabaugh, co-PIs Patrick Fay, Xiaobo Sharon Hu, Debdeep Jena, Michael Niemier, Grace Xing, Mark Wistey, Tom Kosel, Wolfgang Porod)
01/01/11 - 3/31/13
$2,200, 986

RG-19. University of Notre Dame (Faculty Research Program)
A microfluidic approach of terahertz chemical and biological sensing
Co-P.I. (P.I. Lei Liu, and co-PIs: T. Wang, L. Cheng, P. Fay and C. Chang)
06/2012 - 05/2013
$10,000

RG-20. Air Force Office of Scientific Research (AFOSR)
DURIP: Complex oxide heterostructure physics by chemical beam epitaxy
Co-P.I. (P.I. Debdeep Jena)
06/15/2012 - 06/14/2013
$400,000

RG-21. National Institute Standard & Technology (NIST)
Internal Photoemission Spectroscopy
Co-P.I. (P.I. Alan Seabaugh, co-PI: Patrick Fay)
06/1/2012 - 05/31/2013

$59,510

RG-22. National Science Foundation (NSF)
A room temperature portable terahertz camera using zero bias Sb-based heterostructure backward diodes for imaging applications
Co-P.I. (P.I. Lei Liu and Co-P. I. Patrick Fay)
08/01/2010 - 07/31/2013
$359,281 - (201676 - ND account number)

RG-23. Defense Advanced Research Projects Agency (DARPA)
The Microscale Power Conversion (MPC) Program
Co-P.I. (P. I. Debdeep Jena, Co-PI: Patrick Fay)
10/01/2011 - 03/31/2014
Subcontract total $700,000 for Notre Dame
Subcontract from Teledyne Scientific & Imaging, Inc.

RG-24. Defense Advanced Research Projects Agency (DARPA)
The Nitride Electronic NeXt-Generation Technology (NEXT) program
Ultrafast RF and mixed-signal electronics with ultra-scaled binary AlN/GaN HEMTs
P.I. (Co-P.I. Debdeep Jena, Patrick Fay and Gregory Snider)
10/01/2009 - 10/31/2014
$3,290,000 for Notre Dame (total award: $16,188,131)
Subcontract from TriQuint Semiconductor (Texas)

RG-25. National Science Foundation (NSF)
CAREER: Graphene and graphene nanoribbon optoelectronic properties and devices
P.I.
02/01/2009 - 09/30/2015
$400,000
Cost share: total $150K (EE $50K, College $50K and University $50K)

RG-26. Air Force Office of Scientific Research (AFOSR)
2D crystal semiconductors: new materials for GHz-THz devices
Co-P.I. (P.I. Debdeep Jena)
07/01/2012 - 06/30/2015
$600,000

RG-27. Agnitron Technology, Inc.
Radiation hard multi-channel AlN/GaN HEMT for high efficiency X- and Ka-band power amplifiers: Phase I (NASA STTR)
P.I. (Co-PI: Debdeep Jena)
06/20/2014 - 12/19/2014
$40,000

RG-28. National Science Fundation (NSF)
2D crystal semiconductors: electron transport and device applications
Co-P.I. (P.I. Debdeep Jena)
08/1/2012 - 07/31/2015
$360,000

Invited Talks/Workshops/Seminars

[I-85] The University of South California, March 2016.

[I-84] The MRS Spring meeting, Phoenix, March 2016.
2D crystal heterostructures and growth by molecular beam epitaxy

[I-83] GOMAC Tech, Orlando, FL, March 2016.
Recent progress on GaN power devices with BV > 1200 V

[I-82] The Mercer Lecture Series, RPI, Dec. 2015.

[I-81] The AVS annual meeting, San Jose, Oct. 2015.
Secret ingredients in Thin-TFET: a 2D material based transistor

[I-80] The NSF-Advance Seminar Series, Rochester Institute of Technology, Rochester, Oct. 2015.

[I-79] The Steep Transistors Workshop, Notre Dame, Oct. 2015.
Thin-TFET: a 2D material based transistor

[I-78] The International Conference on Solid State Devices and Materials (SSDM) 2015, Sapporo, Japan, Sept. 2015.
THz devices based on 2D electron systems

[I-77] The International Conference on Nitride Semiconductors (ICNS) 2015, Beijing, China, Aug. 2015.
Ultimate GaN vertical transistor: PolarMOS

[I-76] The Science and Technology of 2D Materials Workshop, Orlando, August 2015.
Challenges and opportunities in 2D crystals: graphene and beyond

[I-75] The Device Research Conference (DRC) 2015, Columbus, Ohio, June 2015.
Unique opportunity to harness polarization in GaN to override the conventional power electronics figure-of-merits

[I-74] The US-EU workshop on 2D Layered Materials and Devices, Arlington, VA, April 2015.
Layered Materials for Electronics

[I-73] The SPIE DSS15, Baltimore, April 2015.
Challenges and opportunities in 2D crystals: graphene and beyond

[I-72] The SPIE DSS15, Baltimore, April 2015.
THz devices based on 2D electron systems

[I-71] Temasek Laboratory, Nanyang Technological University, Singapore, April 2015.

[I-70] IEEE International Microwave Symposium, Shenzhen, March 2015.
2D crystals for wireless communications: challenges and opportunities

[I-69] The China International Scientific & Technological Cooperation Week, Shenzhen, Dec. 2014.
Exploring polarization in GaN for power electronics

[I-68] Nanomodular Materials and Systems by Design (NMSD), Washington DC, Oct. 2014.
Modular materials and nanosystems from 2D materials

[I-67] The 18th International Conference on Molecular Beam Epitaxy (MBE 2014), Flagstaff, Sept. 2014.
Challenges and opportunities in MBE growth of 2D crystals

[I-66] Walter Schottky Institute, Technical University Munich, July 2014.

[I-65] IEEE Summer Topicals Meeting, Functional Meta- and Two-Dimensional Materials (FMTM) Symposium, Montreal, Canada, July 2014.
Terahertz electronics enabled by 2D electron systems

[I-64] CMOS emerging technologies Research, Grenoble, France, July 2014.
Tunnel FETs based on III-Vs and 2D crystals

[I-63] Nanjing University, May 2014.

[I-62] SPIE DSS14 Micro-Nanotechnology Sensors, Systems, and Applications Conference and the Passive and Active Millimeter-Wave Imaging Conference, Baltimore, MD, May 2014. (Delivered by B. Sensale-Rodriguez)
Resonant tunneling enhanced plasmonic terahertz devices

[I-61] Graphene and Beyond Workshop: from atoms to applications, Penn State University, April

2014.

[I-60] Cornell University, March 2014

[I-59] Texas Tech University, Feb. 2014
GaN electronics

[I-58] Arizona State University, Jan. 2014

[I-57] University of Wisconsin, Madison, Nov. 2013
GaN, III-Vs and graphene in tomorrow's electronics

[I-56] IEEE International Topical Meeting on Microwave Photonics (MWP13), Alexandra, VA, October 2013. (Delivered by B. Sensale-Rodriguez)
Graphene for reconfigurable THz devices

[I-55] Berkeley Symposium on Energy Efficient Electronics Systems (E3S), CA, October 2013.
Tunnel FETs with tunneling normal to the gate

[I-54] Gezhi Forum, School of Physics, Peking University, Beijing, China, October 2013.
GaN, III-Vs and graphene in tomorrow's electronics

[I-53] Solid State Physics Seminar, School of Physics, Peking University, Beijing, China, October 2013.
THz electronics enabled by 2D electron systems

[I-52] School of Software and Microelectronics, Peking University, Beijing, China, October 2013.
Tunnel FETs
GaN electronics

[I-51] HongKong University of Science and Technology, Oct. 2013
GaN, III-Vs and graphene in tomorrow's electronics

[I-50] SPIE Active Photonics Materials V, San Diego, August 2013.
Graphene THz devices

[I-49] Ohio State University, May 2013.

[I-48] Nanoelectronics Workshop, Porto Alegre, Brazil, April 2013.
Tunnel FETs
GaN electronics

[I-47] Cornell University, April 2013.

GaN, III-Vs and 2D crystals in future electronics

[I-46] Physics and Chemistry of Surfaces and Interfaces (PCSI), Hawaii, January 2013.
Unique optoelectronic properties and applications of Graphene

[I-45] Institute for Terahertz Science and Technology (ITST), Santa Barbara, December 2012.
THz devices built on 2DEGs.

[I-44] The 3rd International Workshop on Terahertz Nanoscience (TeraNano 3), Hawaii, December 2012.
Graphene and semiconductor plasmonics for THz technologies

[I-43] American Vacuum Society (AVS) annual meeting, Tampa, FL, October 2012.
Surfaces and interfaces in vertical tunnel FETs.

[I-42] IWN (International Workshop on Nitride Semiconductors), Hokkaido, October, 2012.
High speed GaN transistors.

[I-41] Tohoku University, Japan, October 2012.

[I-40] [KEYNOTE] ESREF (European Symposium on Reliability of Electron Devices, Failure Physics and Analysis), Cagliari, Italy, October 2012.
Ultra-scaled GaN HEMTs and their reliability challenges.

[I-39] IRMMW-THz, Wollongong, Australia, September 2012.
Exceptional tunability of THz reflection in graphene structures.

[I-38] University of Western Australia, Perth, September 2012.

[I-37] University of Minnesota, Minneapolis, September 2012.

[I-36] Kopin, Massachusetts, August 2012.

[I-35] NIST, Gaithersburg, June 2012.

[I-34] Purdue University, May 2012.

[I-33] North Carolina State University, May 2012.

[I-32] University of California, Santa Barbara, April 2012.

[I-31] HRL (Huges Research Laboratory), April 2012.
GaN, graphene and tunnel transistors

[I-30] Fudan University, Shanghai, March 2012.
GaN: The 3rd electronic revolution?

[I-29] CSTIC,(China Semiconductor Technology International Conference), Shanghai, March 2012.
GaN: The 3rd electronic revolution?

[I-28] CSTIC (China Semiconductor Technology International Conference), Shanghai, March 2012.
Tunnel field-effect transistors for low voltage electronics.

[I-27] Nippon Telegraph and Telephone Corporation (NTT), R&D center, Atsugi, Japan, 2011
GaN HEMT, TFETs and graphene THz modulators.

[I-26] The 9th Topical Workshop on Heterostructure Microelectronics (TWHM), Japan, Aug. 2011
GaN HEMTs with ultra-thin AlN barriers.

[I-25] ECS annual meeting, Boston, October, 2011
GaN transistors for power management.

[I-24] The Swiss Federal Institute of Technology Zurich (ETH Zurich), June, 2011
GaN: the 3rd electronic revolution?

[I-23] University of Michigan, May, 2011
GaN transistors.

[I-22] Indian Institute of Technology, Madras, December 2010
GaN transistors.

[I-21] Ohio State University, March, 2010
AlN/GaN HEMTs.

[I-20] The Fifteenth International Workshop on the Physics of Semiconductor Devices (IWPSD), New Delhi, India, December, 2009
Top-down AlN/GaN nanoribbon HFETs.

[I-19] Asia-Pacific Workshop on Widegap Semiconductors (APWS), ZhangJiaJie, China, May 2009
AlN/GaN based HEMTs.

[I-18] Advanced Heterostructure Workshop, Hawaii, 2008

Ultrashallow AlN/GaN heterostructures for HEMTs.

[I-17] International Conference on Compound Semiconductor Manufacturing Technology (CS ManTech), Chicago, April, 2008
Ultrathin AlN/GaN heterostructure based HEMTs.

[I-16] Argonne National Laboratory, April, 2008
Prospects of graphene based electronics.

[I-15] ECS annual meeting, Washington DC, October, 2007
MBE grown ultrashallow AlN/GaN HEMT technology.

[I-14] Advanced Heterostructure Workshop, Hawaii, 2006
Ultrashallow AlN/GaN heterostructures for HEMTs.

[I-13] GE Global Research Center, Schenectady, NY, 2006
The development of GaN-based bipolar transistors.

[I-12] Naval Research Laboratory, Washington DC, 2004
AlGaN/GaN heterojunction bipolar transistors.

[I-11] University of New Mexico, Albuquerque, New Mexico, 2004
GaN-based bipolar transistors.

[I-10] Northwester University, Chicago, 2004
GaN-based devices and their perspectives.

[I-9] University of Notre Dame, Indiana, 2004
GaN-based devices and their perspectives.

[I-8] Rensselaer Polytechnic Institute, Troy, 2004
GaN-based devices and their perspectives.

[I-7] University of South Carolina, Columbia, 2003
GaN-based devices and their perspectives.

[I-6] University of Notre Dame, Indiana, 2003
GaN-based devices and their perspectives.

[I-5] North Carolina State University, Raleigh, 2003
GaN-based devices and their perspectives.

[I-4] University of Wisconsin, Madison, 2003

GaN-based devices and their perspectives.

[I-3] Compound Semiconductor (CS) Outlook, Dallas, Texas, 2003
The growth of III-V nitrides and its effects on devices.

[I-2] BIPOLAR/BiCMOS Circuits and Technology Meeting, Minneapolis, MN, USA, Sept. 2001
Progress in gallium nitride-based bipolar transistors.

[I-1] Nippon Telegraph and Telephone Corporation (NTT), R&D center, Atsugi, Japan, 2001
AlGaN/GaN heterojunction bipolar transistors with regrown emitter.

Publications

Patents: 6, pending and issued
Book Chapters and Monographs: 5
Journal Articles (detailed attached in the end): 154 total, in Science, Nature Comm, Proceedings of IEEE, EDL, PRL, Nano Lett, APL etc.
Conference Proceeding papers (detailed attached in the end): 79 (IEDM, DRC, CSMantech, IRMMW-THz, Proc. of SPIE, etc)
Conference Presentations: >300 (235 till Dec. 2013, not recorded afterwards)

Patents (4+2, issued & pending):

P-1 (issued): Polarization-doped field effect transistors (POLFETs) and materials and methods for making the same.
US Patent No. 11/241,804, (2005).
Umesh Mishra, Huili Xing, Debdeep Jena, and Siddarth Rajan

P-2 (issued): Compositionally graded heterojunction semiconductor device and method of making of the same.
US Patent No. 8,835,998, (2014).
John Simon, Huili Xing and Debdeep Jena

P-3 (issued): Low voltage tunnel field-effect transistor (TFET) and the method of making same.
US Patent No. 8,796,733, (2014).
Alan Seabaugh, Patrick Fay, Huili Xing, Yeqing Lu, Guangle Zhou, Mark Wistey and Siyuranga Koswatta

P-4 (issued): Methods and apparatus for terahertz wave amplitude modulation.
US Patent No. 8,836,446, (2014).
Berardi Sensale-Rodriguez, Rusen Yan, Tian Fang, Michelle Kelly, Debdeep Jena, Lei Liu and Huili (Grace) Xing

P-5 (pending): Polarization doped transistors
US Patent Application No. 14/479,569, filed in 2013.
Huili G. Xing, Debdeep Jena, Kazuki Nomoto, So Song, Zongyang Hu and Mingda Zhu

P-6 (pending): Two-dimensional heterojunction interlayer tunneling field effect transistors.
US Patent Application No. 14/629,222, filed in 2014.
Mingda Li, David Esseni, Gregory Snider, Debdeep Jena, and Huili (Grace) Xing

Books and Monographs (5):

Book chapter-1: III-V nitride heterojunction bipolar transistors.
Huili (Grace) Xing, Chuanxin Lian* and John Simon**
Advanced semiconductor materials and device research - SiC and III-Nitrides, Edited by Ho-Young Cha, 2010.
(*Lian, Ph.D student of Xing's; and **Simon, Ph.D student of Prof. D. Jena's)

Book chapter-2: Graphene transistors.
Kristof Tahy,** Tian Fang,* Pei Zhao,** Aniruddha Konar,** Chuanxin Lian,* **Huili Xing,** Michelle Kelly* and Debdeep Jena
Intechweb, 2010.
(*Co-advisees of Xing's; and **Advisees of Prof. D. Jena's)

Book chapter-3: Nitride LEDs on quantum wells and quantum dots.
Jai Verma, Amit Verma, Vladimir Protasenko*, S.M. Islam, **Huili Xing**, and Debdeep Jena
Nitride semiconductor LEDs, Woodhead Publishers, Cambridge 2013.
(*Co-advisee of Xing's)

Book chapter-4: Graphene and 2D crystal tunnel transistors.
Qin Zhang, Pei Zhao, Nan Ma, **Grace (Huili) Xing,** and Debdeep Jena
CMOS and Beyond: Logic Switches for Terascale Integrated Circuits
Cambridge University Press, Edited by Tsu Jae King and Kelin Kuhn, 2014.

Book chapter-5: Epitaxy of GaN on Silicon.
Yu Cao, Oleg Laboutin, Wayne Johnson, Satyaki Ganguly, **Grace (Huili) Xing,** and Debdeep Jena
Thin Films on Si: Electronic and Photonic Applications
Series of "Materials and Energy"
World Scientific Publishing, Edited by Vijay Narayanan, Martin M. Frank and Alex Demkov, 2014.

Past Research Assistants:

Visiting and Research Scholars/professors (5):

Dr. Xiangyang Li (Dec. 2005 - Feb. 2006)
Co-director of Photodetector Department, Shanghai Institute of Technical Physics, Chinese Academy of Science

Dr. Michelle Kelly (Aug. 2009 - June 2012, RAP of ND Nano)

Dr. Lei Liu (Sept. 2009 - Dec. 2012, RAP of AD&T), now tenure-track Assistant Professor at UND

Dr. Jai Verma (Aug. 2013-Aug. 2014, RAP), now with Intel

Prof. Erhard Kohn, University of Ulm (Feb. 2014 - July 2014)

Postdoctoral scholars (5):

Qingling Hang (Aug. 2008- July 2009) jointly with Prof. Debdeep Jena

Chuanxin Lian (Jan. 2010- June 2010) jointly with Prof. Debdeep Jena, now with M/A-COM (MA)

Tom Zimmermann (Sept. 2006 - April 2011), now with Fraunhofer Institute, Head of Biohybrid Systems, Duisburg, Germany

Ms. Yuping Zeng (Oct. 2011 - Nov. 2011), now with UC Berkeley

Prem Kumar Kandaswamy (Jan. 2011- March 2012) jointly with Prof. Debdeep Jena, now with IMEC, Belgium

Yuanzheng Yue (April 2011 - October 2014) jointly with Prof P. Fay, now a postdoc with ASU.

Ph.D theses directed (7 +2):

1. Chuanxin Lian (Sept. 2004-, M.S. April 2006, Ph.D., Notre Dame, April 2009)
   Title: *Wafer-fused AlGaAs/GaAs/GaN HBTs*
   His doctoral work has resulted in 8 first-author publications and 16 conference presentations. Currently he is with M/A-COM.

2. Yu Cao (Sept. 2006-, M. S. April 2007, Ph.D., Notre Dame, Sept. 2010, co-advised with D. Jena)
   Title: *Study of AlN/GaN HEMTs: MBE growth, transport properties and device issues.*
   His doctoral work has resulted in over 7 first-author publications out of over 24 journal publications and numerous conference presentations. Currently he is with HRL (California).

3. David Deen (Sept. 2005 -, M.S. April 2007, Ph.D., Notre Dame, November 2010).
   Title: *Advanced design of ultra-thin barrier AlN/GaN HEMTs; a study of device design, modeling and analysis.* He worked at Naval Research Laboratory, SVT Associates. Currently he is with Seagate (Minneapolis).

4. Tian Fang (Sept. 2006 -, M.S. April 2009, Ph.D., Notre Dame, February 2012, co-advised

with D. Jena).
Title: *Carrier transport in graphene and GaN high electron mobility transistors.*
Currently he is with First Solar (Ohio).

5. Jia Guo (January 2008 -, Ph.D., Notre Dame, December 2012).
Title: *InAlN HEMTs with regrown ohmic contacts by MBE*
Currently he is with On Semiconductor (Oregon).

6. Guangle Zhou (January 2008 -, Ph.D., Notre Dame, December 2012).
Title: *III-V Tunnel FETs with tunneling aligned with the gate field*
Currently he is a R&D scientist with Sandisk (CA).

7. Ronghua Wang (August 2008 -, Ph.D., Notre Dame, April 2013).
Title: *InAlGaN-barrier GaN HEMTs for high speed applications*
Currently he is with Transphorm (CA).

8. Berardi Sensale-Rodriguez (Oct. 2009 -, Ph.D., Notre Dame, April 2013).
Title: *Novel terahertz devices based on tunable 2DEG systems*
Shaheen Award (Best Ph.D. Dissertation in Engineering)
Currently he is a tenure-track assistant professor at the University of Utah.

9. Zongyang Hu (May 2008 -, Ph.D., Notre Dame, December 2014).
Title: *GaN HEMTs and MOSHEMTs for power switching applications*
Currently he is a postdoc in Prof. Xing's group.

Master's theses directed (5):

1. Chuanxin Lian (MS, Notre Dame, spring 2006)
Title: *Scanning Kelvin probe microscopic study of Ni-(Al)GaN and heterogeneous integration of GaAs/GaN by wafer fusion*
Master's thesis work has resulted in one first-author publication in Applied Physics Letters, and one conference presentation.

2. Ms. Jing Zhou (MS, Notre Dame, spring 2006)
Title: *Fabrication of AlGaN/GaN high electron mobility transistors*

3. David Deen (MS, Notre Dame, spring 2007)
Title: *Fabrication of ultra-shallow AlN/GaN high electron mobility transistors*
Master's thesis work has resulted in two second-author publications and two conference presentations.

4. Tian Fang (MS, Notre Dame, spring 2009, co-directed with Dr. Debdeep Jena)
Title: *Electronic properties of graphene and graphene nanoribbons*
This work has resulted in one first-author publication, two second-author publications and

two conference presentations.

5. Ms. Rachel Rasmussen (Sept. 2006-, M.S., Notre Dame, July 2009, co-directed with Dr. Masaru Kuno)
Title: *Laser assisted dielectrophoretic alignment and optoelectronic properties of solution-grown CdS and CdSe semiconductor nanowires*
This work has resulted in one first-author publication (in preparation) and 4 conference presentations.

Undergraduate Students (14)

Jon Valenzuela (B.S. UND, EE'2005, later graduate student in UTEP)

Jason Kulick (B.S. UND, EE'2008, currently co-founder of Indiana Integrated Circuits)

Ian Evans (B.S. UND, EE'2009)

Ms. Jane Fleming (B.S. Chemistry'2011, Dual Degree Program at St. Mary's College and University of Notre Dame)

Ms. Barbara Raynal (B.S. EE'2011, University of Notre Dame; later graduate student at Duke University)

Ms. Nicole Whener (B.S. EE'2011, University of Notre Dame)

Kevin Burke (NURF-REU, Civil Engineering'2012, University of Notre Dame)

Haojun Zhang (iSURE-REU, Electrical Engineering, Tsinghua University, China; later graduate student at U of California, Santa Barbara)

Ms. Qinglan Huang (iSURE-REU, Electrical Engineering, Fudan University, China; later graduate student at UIUC)

Ruijie Luo (iSURE-REU, Electrical Engineering, Tsinghua University, China; later graduate student at Tsinghua U.)

John Weissenberger (NURF-REU, EE'2015, University of Notre Dame)

Wenshen Li (REU, Electrical Engineering, Tsinghua University, China)

Ms. Bihan Zhu (Physics'2014, University of Notre Dame)

Ms. Katrina Magno (NURF-REU, Physics'2015, Notre Dame)

High School Teachers (3)

Mr. Ian Lightcap (Clay High School, South Bend, IN; now Research Scientist at UND)
Research Experience for Teachers (RET) program
Summer 2005, co-advised with D. Jena
Project: Nanoscale imaging of semiconductors

Mr. Phil Cook (Culver Academy, Indiana)
Research Experience for Teachers (RET) program
Summer 2008
Project: Semiconductor ion sensitive field-effect transistors
Summer 2009
Project: Graphene preparation and characterization
Summer 2010
Project: Comparative study on CVD and epi graphene using scanning Kelvin probe measurements
Summer 2011
Project: Growth and Raman characterization of CVD graphene

Mr. Mark Prochaska (Culver Academy, Indiana)
Research Experience for Teachers (RET) program
Summer 2010
Project: ICP-Reactive Ion Etching of Al2O3

Current Research Assistants:

Associated Research Assistant Professors (1):

Dr. Vladimir Protasenko (October 15, 2008-) jointly with Prof. D. Jena

Postdoctoral scholars (2+1):

Dr. Kazuki Nomoto (April 2012 -)
Dr. Shudong Xiao (April 2013 -)
Dr. Zongyang Hu (Jan. 2015 -)

Graduate Students (7)

Mr. Rusen Yan
(June 2010 - Aug. 2014, MS, Notre Dame; Aug. 2014 -, Cornell, expected Ph.D., May 2017)
Thesis title: Optoelectronic and electronic properties of layered materials

Mr. Bo Song
(June 2011 - Aug. 2014, MS, Notre Dame; Aug. 2014 -, Cornell, expected Ph.D. May 2017)
Thesis title: GaN power devices

Mr. Suresh Vishwanath
(Sept. 2011 - Dec. 2014, MS, Notre Dame; Jan. 2015-, Cornell, Expected Ph.D. May 2017)
Thesis title: Epitaxy of layered materials and their heterostructures

Mr. Mingda Li
(July 2012 - Dec. 2014, MS. Notre Dame; Jan. 2015-, Cornell, expected Ph.D. May 2018)
Thesis title: Two-dimensional Heterojunction INterlayer Tunnel FETs (Thin-TFETs)

Mr. Mingda Zhu
(January 2012 - Aug. 2015, Notre Dame; Aug. 2015 -, Cornell, expected Ph.D. May 2017)
Thesis title: GaN power devices built on Si and bulk GaN substrates

Mr. Jimy Encomendero
(January 2013 - Aug. 2015, Notre Dame; Aug. 2015 -, Cornell, expected Ph.D. May 2018)
Thesis title: THz devices based on 2-dimensional electron systems

Mr. Wenshen Li
(August 2015 - , Cornell)
Thesis title: THz devices

Undergraduate Students (2)

Qixi Chen (MSE'2018, Cornell University)
Jerry Xia ('2018, Cornell University)

Courses

Taught at UND:

EE 60598 – Wide Bandgap Semiconductors
Fall 2004

SC190 – Nanotechnology: Shaping the world atom by atom
Fall 2004, Guest Lecturer

EE 60548 – Electromagnetic Theory
Spring 2005

EE 60556 – Fundamentals of Semiconductors
Fall 2005, Fall 2006, Fall 2007, Fall 2008, Fall 2009, Fall 2010, Fall'11

ESTS/STV 40403 – Nanotechnology: opportunities and challenges
Spring 2006, Guest Lecturer

EE 30357 – Semiconductors II: Devices
Spring 2006, Spring 2007, Spring 2009, Spring 2011, SP'12

EE 67051 – Optoelectronic Devices
Spring 2013

EE 67051 – Electronic and Photonic Materials
Fall 2013, Fall 2014

EE 30342 – Microelectronic Circuits
Spring 2014

Organized at UND:

EE 63520 – Solid State Seminar Series
Spring 2005, 2006, 2009

Developed at UND:

EE 60598 – Wide Bandgap Semiconductors
EE 67051 – Optoelectronic Devices

Pedagogical method initiated at UND:

Cinematic presentations for education: Einstein's Big Idea and the Forgotten Genius
Fall 2006, Spring 2007, and Fall 2007, 2008, 2009

University Service:

School of Electrical and Computer Engineering at Cornell:

- General Recruiting Committee of ECE (2015 -)
- Award Committee of MSE (2015 -)
- CNF Executive Committee (2015 -)
- SWE Committee (2015 -)

University at UND:

- Mentor in the Building Bridges Mentoring Program (Fall 2005 -) and the last mentee was a female in Biochemistry class of 2010.
- Committee member of the Expand Your Horizon (EYH) -ND aiming at increasing young women's interests in math and science. (2006-2011, 2013)
- CAREER proposal writing panel (2011)
- Steering Committee Member of AD&T (2012-2014)
- University Committee on Women Faculty and Students (2012-2014)

College of Engineering at UND:

- Funding Chair of IEEE EDS/Photonics Chapter at Notre Dame (Fall 2009 - 2014).
- Faculty Advisor of the EE honorary society Eta Kappa Nu (Fall 2005 - 2012).
- Proposal writing workshop (organized by the Dean, 2010)
- Seminar (first-year UG course) on Gender Issues in Engineering (2011)

Department of Electrical Engineering at UND:

- Graduate Admission Committee (2005, 2008)
- Graduate Student Qualify Exam Committee (Spring 2005 - 2013)
- Undergraduate Committee (Fall 2006 - present)
- Undergraduate Curriculum Committee (2012 - 2014)
- Undergraduate Mentor (Fall 2005 - 2008, 2011- 2014)

Other outreach activities at UND:

- Presentation and demonstration on Nano Materials and Nanoscale Imagining, at the Culver Military Academy (high school) (2009 -2012)
- Presentation and demonstration on Nano Materials and Nanoscale Imagining, at the EYH workshop (6-8th grade girls) (Spring 2010)
- Faculty representative at Society of Women Engineers (SWE) discernment dinner at UND (2013 - 2014)
- Talk at Association of Women in Science (AWIS) and SWE-Grad at UND (2014)

Journal Articles (154 total, in Science, Nature Comm, Proceedings of IEEE, EDL, PRL, Nano Lett, APL etc.):
(Underlined personnel: advised; *personnel in italic*: co-advised)

Non-peer-reviewed Manuscripts:

[NM-1] Rusen Yan, *Tian Fang,* Simone Bertolazzi, Jacopo Brivio, Aniruddha Konar, Michelle Kelly, Debdeep Jena, Andras Kis, and **Huili Grace Xing**
Raman and photoluminescence study of dielectric and thermal effects on atomically thin MoS2.
Uploaded in 2012. arXiv:1211.4136

2015 (12):
[J-?] Mingda (Oscar) Li, Debdeep Jena and **Huili Grace Xing**
Mitigating Miller effect in tunnel field effect transistors: a tale of Thin-TFET and pin-TFET
Submitted, (2015).

[J-?] (Invited) Suresh Vishwanath, Xinyu Liu, Sergei Rouvimov, Leonardo Basile, Ning Lu, Moon Kim, Juan-Carlos Idrobo, Jacek K. Furdyna, Debdeep Jena and **Huili Grace Xing**
Controllable growth of layered selenide and telluride heterostructures and superlattices using molecular beam epitaxy
J. of Material Research, 2015

[J-?] Rusen Yan, Berardi Sensale-Rodriguez and **Huili Grace Xing**
Exceptional terahertz wave modulation in graphene enhanced by frequency selective surfaces
Submitted, (2015).

[J-?] Shubhendu Bhardwaj, Berardi Sensale-Rodriguez, **Huili Grace Xing**, Siddharth Rajan and John L. Volakis
Low-loss propagation and amplification of RTD-assisted plasmons in HEMTs
Submitted, (2015).

[J-?] Erich W. Kinder, Rusen Yan, Suresh Vishwanath, **Huili Grace Xing** and Susan K. Fullerton-Shirey
Doping MoS2 field-effect transistors using poly(ethylene oxide) and LiClO4 solid polymer electrolyte
Submitted, (2015).

[J-?] Hugo Condori Quispe, Jimy J. Encomendero-Risco, **Huili Grace Xing** and Berardi Sensale-Rodriguez
Terahertz amplification in RTD-gated HEMTs with a grating-gate wave coupling topology
Submitted, (2015).

[J-?] Jun H. Park, Suresh Vishwanath, Xinyu Liu, Jacek Furdyna, Debdeep Jena, **Huili Grace Xing** and Andrew Kummel
Step flow growth and band alignment in monolayer and bilayer MBE WSe2.
Submitted, (2015).

[J-?] Priti Gupta, A.A. Rahman, Shruti Subramanian, Shalini Gupta, Arumugam Thamizhavel, Tatyana Orlova, Sergei Rouminov, Suresh Vishwanath, *Vladimir Protasenko*, Masihhur R. Laskar, **Huili Grace Xing**, Debdeep Jena and Arnab Bhattacharya
Layered transition metal dichalcogenides: promising near lattice-matched substrates for GaN epitaxy
Submitted, (2015).

[J-159] Kazuki Nomoto, Bo Song, Mingda Zhu, Zongyang Hu, Meng Qi, Debdeep Jena and **Huili Grace Xing**
1.7 kV GaN-on-GaN p-n diodes with avalanche capability
Submitted, (2015).

[J-158] Bo Song, Mingda Zhu, Zongyang Hu, Meng Qi, Kazuki Nomoto, Xiaodong Yan, Yu Cao, Debdeep Jena and **Huili Grace Xing**
Ultralow leakage AlGaN/GaN HEMTs on Si with non-alloyed regrown ohmic contacts
Submitted, (2015).

[J-158] Zongyang Hu, Kazuki Nomoto, Bo Song, Mingda Zhu, Meng Qi, Ming Pan, Xiang Gao, Vladimir Protasenko, Debdeep Jena and **Huili Grace Xing**
Near unity ideality factor and SRH lifetime in GaN-on-GaN p-n diodes
Submitted, (2015).

[J-157] Meng Qi, Kazuki Nomoto, Mingda Zhu, Zongyang Hu, Yuning Zhao,Vladimir Protasenko, Bo Song, Xiaodong Yan, Guowang Li, Jai Verma, Samuel Bader, Patrick Fay, Debdeep Jena and **Huili Grace Xing**
High breakdown single-crystal GaN p-n diodes by molecular beam epitaxy
Submitted, (2015).

[J-156] Kazuki Nomoto, Kengo Takahashi, Oikawa Takuya, Hiroki Ogawa, Tomoaki Nishimura, Tomoyoshi Mishima, **Huili Grace Xing**, Tohru Nakamura
Ion implantation into GaN and implanted GaN power transistors
ECS Transactions, **69**, 105-112 (2015).

[J-155] Xiaodong Yan, Wenjun Li, S.M. Islam, Kasra Pourang, **Huili Grace Xing,** Patrick Fay and Debdeep Jena
Polarization-induced Zener tunnel diodes in GaN/InGaN/GaN heterojunctions
Appl. Phys. Lett., **107**, ? (2015).

[J-154] Rusen Yan, Sara Fathipour, Yimo Han, Bo Song, Shudong Xiao, Mingda Li, Nan Ma, *Vladimir Protasenko*, David A. Muller, Debdeep Jena and **Huili Grace Xing**
Esaki diodes in van der Waals heterojunctions with broken-gap energy band alignment
Nano Letters, (2015). DOI: 10.1021/acs.nanolett.5b01792

[J-153] S. Rahman, Z. Jiang, **H. G. Xing,** P. Fay, and Lei Liu,
Lens-coupled folded-dipole antennas for terahertz detection and imaging
IET Microwaves, Antennas and Propagation, May 20, (2015).

[J-152] M. I. B. Shams, Z. Jiang, S. Rahman, J. Qayyum, **H. G. Xing**, P. Fay, and Lei Liu,
Characterization of THz Antennas using Photo-Induced Coded Aperture Imaging
Microwave and Optical Technology Letters, vol. 57, no. 5, pp. 1180-1184 (2015).

[J-151] Faiza Afroz Faria, Kazuki Nomoto, Zongyang Hu, Sergei Rouvimov, **Huili Grace Xing** and Debdeep Jena
Low temperature AlN growth by MBE and its application in HEMTs.
J. Crystal Growth, **425**, 133-137, (2015).

[J-150] Suresh Vishwanath, Xinyu Liu, Sergei Rouvimov, Patrick C. Mende, Angelica Azcatl, Stephen McDonnell, Robert M. Wallace, Randall M. Feenstra, Jacek K. Furdyna, Debdeep Jena and **Huili Grace Xing**
Molecular beam epitaxial growth of MoSe2 on graphite, CaF2 and graphene
J. of 2D materials, **2**, 024007 (2015). doi:10.1088/2053-1583/2/2/024007

[J-149] Meng Qi, Guowang Li, *Vladimir Protasenko*, Pei Zhao, Jai Verma, Bo Song, Satyaki Ganguly, Mingda Zhu, Zongyang Hu, Xiaodong Yan, Alexander Mintairov, **Huili Grace Xing** and Debdeep Jena
Dual optical marker Raman characterization of strained GaN-channels on AlN using AlN/GaN/AlN quantum wells and 15N isotopes.
Appl. Phys. Lett, **106**, 041906 (2015).

[J-148] Mingda Zhu, Bo Song, Meng Qi, Zongyang Hu, Kazuki Nomoto, Xiaodong Yan, Yu Cao, Wayne Johnson, Erhard Kohn, Debdeep Jena, and **Huili Grace Xing**
1.9 kV AlGaN/GaN lateral Schottky barrier diodes on silicon.
IEEE Electron Dev. Lett. **36** (4), 375-377 (2015). DOI:10.1109/LED.2015.2404309
Featured by Semiconductor-Today

[J-147] William A. O'Brien, Meng Qi, Lifan Yan, Chad A. Stephenson, *Vladimir Protasenko*, **Huili Grace Xing**, Joanna M. Millunchick and Debdeep Jena
Self-assembled Ge QDs formed by high-temperature annealing on Al(Ga)As (001).
J. of Electronic Materials, **44**(5), 1338 (2015).
Best Paper Award of JEM and EMC 2014

[J-146] Mingda (Oscar) Li, David Esseni, Gregory Snider, Debdeep Jena and **Huili Grace Xing**
Two-dimensional heterojunction interlayer tunneling field effect transistors (Thin-TFET)
IEEE J-EDS, **3**(3), 200-207 (2015). DOI:10.1109/JEDS.2015.2390643

[J-145] Sara Fathipour, M. Remskar, A. Varlec, A. Ajoy, R. Yan, S. Vishwanath, S. Rouvimov, Wan Sik Hwang, **Huili Grace Xing,** Debdeep Jena, and Alan Seabaugh
Synthesized multiwall MoS2 nanotube and nanoribbon field effect transistors.
Appl. Phys. Lett. **106**, 022114 (2015).

[J-144] Wan Sik Hwang, Pei Zhao, Kristof Tahy, Luke Nyakiti, Virgina Wheeler, Rachael Myers-Ward, Charles Eddy, D. Kurt Gaskill, Joshua Robinson, Wilfried Haench, **Huili Grace Xing,** Alan Seabaugh and Debdeep Jena
Graphene nano ribbon field-effect transistors on wafer-scale epitaxial graphene on SiC substrates.
Appl. Phys. Lett. Mat., 3, 011101 (2015).

2014 (24):

[J-143] Sara Fathipour, Nan Ma, Wan Sik Hwang, Vladimir Protasenko, Suresh Vishwanath, **Huili Grace Xing,** Huilong Xu, Debdeep Jena, Joerg Appenzeller, and Alan Seabaugh
Exfoliated multilayer $MoTe_2$ field effect transistors.
Appl. Phys. Lett. **105**, 192101 (2014).

[J-142] Francesca Cavallo, Richard Rojas Delgado, Michelle M. Kelly, Jose R. Sanchez Perez, Daniel P. Schroeder, **Huili Grace Xing,** Mark A. Eriksson, and Max G. Lagally
Exceptional charge transport properties of graphene on germanium
ACS Nano **8**(10), 10237 (2014).

[J-141] Y. Zhao, W. Chen, W. Li, M. Zhu, Y. Yue, B. Song, J. Encomendero, B. Sensale-Rodriguez, **H. Xing,** and P. Fay
Direct electrical observation of plasma waves in GaN-based 2DEGs
Appl. Phys. Lett. **105**, 173508 (2014).

[J-140] David Esseni, Mingda (Oscar) Li, Gregory Snider, Debdeep Jena and **Huili Grace Xing**
Challenges and opportunities in the design of Tunnel FETs: materials, device architectures, and defects
ECS Transaction, (2014).

[J-139] Debdeep Jena, Kaustav Banerjee, and **Grace Huili Xing**
Intimate contacts.
Nature Materials, **13**, 1076 (Dec. 2014).

[J-138] *Yuanzheng Yue*, Xiaodong Yan, Wenjun Li, **Huili Grace Xing,** Debdeep Jena and Patrick

Fay
Faceted sidewall etching of n-GaN on sapphire by photoelectrochemical wet processing.
J. Vac. Sci. Tech. B, **32**, 061201 (Sept. 2014).

[J-137] Satyaki Ganguly, *Jai Verma*, **Huili Grace Xing,** and Debdeep Jena
Plasma MBE growth conditions of AlGaN/GaN high-electron-mobility transistors on silicon and their device characteristics with epitaxially regrown ohmic contacts.
Appl. Phys. Exp., **7**, 105501 (Sept. 2014).

[J-136] Andrew Ritchie, Shaylin Eger, Chelsey Wright, Daniel Chelladurai, Cuyler Borrowman, Weine Olovsson, Martin Magnuson, *Jai Verma*, Debdeep Jena, **Huili Grace Xing,** Christian Dubuc, and Stephen Urquhart
Strain sensitivity in the nitrogen 1s NEXAFS spectra of gallium nitride.
Appl. Surface Science, **316**, 232-236, (August 2014).

[J-135] Pei Zhao, Amit Verma, *Jai Verma*, **Huili Grace Xing,** Patrick Fay and Debdeep Jena
Heterostructure barrier diodes exploiting polarization-induced delta-doping.
IEEE Electron Dev. Lett., **35(6)**, 615, (June 2014).

[J-134] Wan Sik Hwang, Amit Verma, Hartwin Peelaers, *Vladimir Protasenko,* Sergei Rouvimov, **Huili Grace Xing,** Alan Seabaugh, Wilfried Haensch, Chris Van de Walle, Zbigniew Galazka, Martin Albrecht, Roberto Fornari, and Debdeep Jena
High-voltage field effect transistors with wide-bandgap b-Ga2O3 nanomembranes.
Appl. Phys. Lett., **104**, 203111 (May 2014).

[J-133] Guowang Li, Bo Song, Satyaki Ganguly, Mingda Zhu, Ronghua Wang, Xiaodong Yan, *Jai Verma, Vladimir Protasenko*, **Huili Grace Xing** and Debdeep Jena
Two-dimensional electron gases in strained quantum wells for AlN/GaN/AlN double heterostructure field effect transistors on AlN.
Appl. Phys. Lett., **104**, 193506, (May 2014).

[J-132] M.I.B. Shams, Z. Jiang, S. M. Rahman, J. Qayyum, L.-J. Cheng, **H. G. Xing,** P. Fay, and L. Liu
Approaching real-time terahertz imaging with photo-induced coded apertures and compressed sensing.
Electronic Lett., **50**(11), 801-803 (May 2014)
Cover Story of Electronic Letters

[J-131] A. Kannegulla, Z. Jiang, S. M. Rahman, M.I.B. Shams, P. Fay, **H. G. Xing,** L.-J. Cheng, and L. Liu
Coded-aperture imaging using photo-induced reconfigurable aperture arrays for mapping terahertz beams.
IEEE Trans. on Terahertz Sci. and Tech., **4**(3), 321, (May 2014)

[J-130] Meng Qi, Chad A. Stephenson, *Vladimir Protasenko*, William A. O'Brien, Alexander Mintairov, **Huili Grace Xing**, Mark A. Wistey.
Ge quantum dots encapsulated by AlAs grown by molecular beam epitaxy on GaAs without extended defects.
Appl. Phys. Lett. **104**, 073113 (2014). arXiv:1311.1448

[J-129] Satyaki Ganguly, Bo Song, Wan Sik Hwang, Zongyang Hu, Mingda Zhu, *Jai Verma,* **Huili Grace Xing** and Debdeep Jena.
AlGaN/GaN HEMTs on Si by MBE with regrown contacts and ft = 153 GHz.
Phys. Status Solidi C **11**(3-4), 887 (2014).

[J-128] Satyaki Ganguly, Jai Verma, Zongyang Hu, **Huili Grace Xing** and Debdeep Jena.
Performance enhancement of InAlN/GaN HEMTs by KOH surface treatment.
Appl. Phys. Express **7**, 034102 (2014).

[J-127] Zongyang Hu, Yuanzheng Yue, Mingda Zhu, Bo Song, Satyaki Ganguly, Josh Bergman, Debdeep Jena, **Huili Grace Xing**
Impact of CF4 plasma treatment on threshold voltage and mobility in Al2O3/InAlN/GaN MOSHEMTs.
Appl. Phys. Express **7**, 031002 (2014).

[J-126] Mingda (Oscar) Li, David Esseni, Gregory Snider, Debdeep Jena and **Huili Grace Xing**
Single particle transport in two-dimensional heterojunction interlayer tunneling field effect transistor
J. Appl. Phys. **115**, 074508 (2014). doi:10.1063/1.4866076, arXiv:1312.2557

[J-125] Golnaz Karbasian, Patrick J. Fay, **Huili Grace Xing**, Alexei O. Orlov and Gregory L. Snider.
Chemical mechanical planarization of gold
J. Vac. Sci. Tech. A **32**, 021402 (2014)

[J-124] Bo Song, Berardi Sensale-Rodriguez, Ronghua Wang, Jia Guo, Zongyang Hu, Yuanzheng Yue, Faiza Faria, Michael Schuette, Andrew Ketterson, Edward Beam, Paul Saunier, Xiang Gao, Shiping Guo, Patrick Fay, Debdeep Jena and **Huili Grace Xing**.
Effect of fringing capacitances on the RF performance of GaN HEMTs with T-gates.
IEEE Trans. Electron Devices **61**(3), 747-754 (2014)

[J-123] W.A. O'Brien, B. Wu, C. Stephenson, V. Protasenko, C. Arisio, M. Lieberman, H.G. Xing, and M.A. Wistey.
Optimal Oxide passivation of Ge for optoelectronics
ECS J. of Solid State Sci. & Tech., **3(8)**, P273 (2014).

[J-122] Wan Sik Hwang, Kristof Tahy, Pei Zhao, Luke O. Nyakiti, Virginia D. Wheeler, Rachel L. Myers-Ward, Charles R. Eddy Jr., D. Kurt Gaskill, **Huili Grace Xing,** Alan Seabaugh, and Debdeep Jena
Electronic transport properties of top-gated epitaxial graphene nano ribbon field-effect transistors on SiC wafers.
J. of Vac. Sci. & Tech. B, **32**, 012202 (Jan. 2014).

[J-121] *Jai Verm*a, Prem Kumar Kandaswamy, *Vladimir Protasenko*, S.M. Islam, **Huili Grace Xing**, Debdeep Jena
Tunnel-injection quantum dot deep-ultraviolet light-emitting diodes with polarization-induced doping in III-nitride heterostructures.
Appl. Phys. Lett. **104**, 021105 (Jan. 2014)
Featured by Semiconductor-Today

[J-120] Rusen Yan, Jeffrey R. Simpson, Simone Bertolazzi, Jacopo Brivio, Michael Watson, Xufei Wu, Andras Kis, Tengfei Luo, Angela R. Hight Walker and **Huili Grace Xing**
Thermal conductivity of monolayer MoS2 obtained from temperature-dependent Raman spectroscopy.
ACS Nano, **8**(1), pp. 986-993 (2014).

2013 (17):

[J-119] H. Ghassemi, A. Lang, C. Johnson, R. Wang, B. Song, **H. G. Xing,** and M. L. Taheri
Evolution of strain in AlGaN/GaN HEMTs under on state bias.
J. Appl. Phys. **114**, 064507 (2013).

[J-118] *Guowang Li,* Ronghua Wang, Bo Song, Jai Verma, Yu Cao, Satyaki Ganguly, Amit Verma, Jia Guo, **Huili Grace Xing** and Debdeep Jena
Polarization-induced GaN-on-insulator E/D mode p-channel heterojunction FETs.
IEEE Electron Dev. Lett., **34**(7), 852-854 (July 2013).

[J-117] Michael Schuette, Andrew Ketterson, Bo Song, Edward Beam, Tso-Min Chou, Manyam Pilla, Hua-Quen Tserng, Xiang Gao, Shiping Guo, Patrick Fay, **Huili Grace Xing**, and Paul Saunier.
Gate-recessed integrated E/D GaN HEMT technology with fT/fmax > 300 GHz.
IEEE Electron Dev. Lett., **34**(6), 741, (June 2013).

[J-116] Yuanzheng Yue, Zongyang Hu, Jia Guo, Berardi Sensale-Rodriguez, *Guowang Li,* Ronghua Wang, Faiza Faria, Bo Song, Xiang Gao, Shiping Guo, Thomas Kosel, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili Grace Xing.**
Ultrascaled InAlN/GaN HEMTs with fT of 400 GHz.
J. J. Appl. Phys., **52**, 08JN14 (March 2013).

[J-115] Hongyan Shi, Rusen Yan, Simon Bertolazzi, Jacopo Brivio, Bo Gao, Andras Kis, Debdeep Jena, **Huili Grace Xing** and Libai Huang.
Exciton dynamics in suspended monolayer and few-layer MoS2 2D crystals
ACS Nano, **7**(2), 1072-1080 (Feb. 2013)

[J-114] Nan Sun, Kristof Tahy, **Huili Grace Xing**, Debdeep Jena, Gerald Arnold and Steven T. Ruggiero.
Electrical noise and transport properties of graphene
J. of Low Temp. Phys., **172**, 202, (Feb. 2013). DOI 10.1007/s10909-013-0866-x

[J-113] Berardi Sensale-Rodriguez, Rusen Yan, Lei Liu, Debdeep Jena, and **Huili (Grace) Xing**
Graphene reconfigurable THz optoelectronics.
Proceedings of IEEE, **101**(7), 1705 (July 2013). DOI:10.1109/JPROC.2013.2250471

[J-112] Ronghua Wang, *Guowang Li,* Golnaz Karbasian, Jia Guo, Bo Song, Yuanzheng Yue, Zongyang Hu, Oleg Laboutin, Yu Cao, Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
Quaternary barrier InAlGaN HEMTs with fT/fmax of 230/300 GHz.
IEEE Electron Dev. Lett., **34**(3), 378-380 (March 2013).
Featured by Semiconductor-Today

[J-111] *Rusen Yan,* Qin Zhang, Oleg A. Kirillov, Wei Li, James Basham, Alex Boosalis, Xuelei Liang, Debdeep Jena, Curt A. Richter, Alan Seabaugh, David J. Gundlach, **Huili (Grace) Xing and N. V. Nguyen** (both corresponding authors)
Graphene as transparent electrode for direct observation of hole photoemission from silicon to oxide.
Appl. Phys. Lett. **102**, 123106 (March 2013). DOI: 10.1063/1.4796169
Featured by Advances in Engineering

[J-110] Berardi Sensale-Rodriguez, Patrick Fay, Debdeep Jena, Lei Liu, and **Huili (Grace) Xing**
Power amplification at THz via plasma wave excitation in RTD-gated HEMTs.
IEEE Trans. THz Sci. Tech., **3**(2), 200-206 (March 2013).

[J-109] Wan Sik Hwang, Maja Remskar, Rusen Yan, Tom Kosel, Jong Kyung Park, Byung Jin Cho, Wilfried Haensch, **Huili Grace Xing,** Alan Seabaugh and Debdeep Jena
Comparative study of chemically synthesized and exfoliated multilayer MoS_2 field effect transistors.
Appl. Phys. Lett., **102**, 043116 (Jan. 2013).

[J-108] Jai Verma, Prem Kumar Kandaswamy, Vladimir Protasenko, Amit Verma, **Huili Grace Xing**, Debdeep Jena
Tunnel-injection GaN quantum dot ultraviolet light-emitting diodes

Appl. Phys. Lett. **102**, 041103 (Jan. 2013).

[J-107] Berardi Sensale-Rodriguez, Subrina Rafique, *Vladimir Protasenko*, Rusen Yan, Mingda Zhu, Debdeep Jena, Lei Liu and **Huili Grace Xing.**
THz imaging employing graphene modulator arrays.
Optics Express, **21**(2), 2325-2330 (Feb. 2013). http://dx.doi.org/10.1364/OE.21.002324

[J-106] Berardi Sensale-Rodriguez, Jia Guo, Ronghua Wang, Jai Verma, *Guowang Li, Tian Fang*, Edward Beam, Andrew Ketterson, Michael Schuette, Paul Saunier, Xiang Gao, Shipping Guo, Patrick Fay, Debdeep Jena, **Huili (Grace) Xing**
Delay analysis in Enhancement-mode InAlN/AlN/GaN HEMTs with ft/fmax of 191/240 GHz.
Solid State Electronics, **80**, 67 (Feb. 2013).

[J-105] Qin Zhang, Rui Li, *Rusen Yan*, Thomas Kosel, **Huili (Grace) Xing**, Alan Seabaugh, Kun Xu, O. A. Kirillov, David J. Gundlach, Curt A. Richter, and N. V. Nguyen
A unique photoemission method to measure semiconductor heterojunction band offsets.
Appl. Phys. Lett., **102**, 012101 (2013).

[J-104] Kun Xu, Caifu Zeng, Qin Zhang, *Rusen Yan*, Peide Ye, Kang Wang, Alan Seabaugh, **Huili Grace Xing**, John S. Suehle, Curt A. Richter, David J. Gundlach and N. V. Nguyen
Direct measurement of intrinsic Dirac point of graphene by cavity enhanced internal photoemission.
Nano Letters **13**(1), 131-136 (2013). DOI: 10.1021/nl303669w

[J-103] Ronghua Wang, *Guowang Li,* Golnaz Karbasian, Jia Guo, Faiza Faria, Zongyang Hu, Yuanzheng Yue, Jai Verma, Oleg Laboutin, Yu Cao, Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
InGaN channel high electron mobility transistors with InAlGaN barrier and ft/fmax of 260/220 GHz.
Appl. Phys. Exp., **6**, 016503 (2013).
Featured by Semiconductor-Today
Featured by APEX SPOTLIGHTs

2012 (24):

[J-102] Berardi Sensale-Rodriguez, Rusen Yan, Mingda Zhu, Debdeep Jena, Lei Liu and **Huili Grace Xing.**
Efficient terahertz electro-absorption modulation employing graphene plasmonic structures.
Appl. Phys. Lett., **101**, 261115, Dec. 28, (2012). DOI: 10.1063/1.4773374

[J-101] Satyaki Ganguly, Aniruddha Konar, Zongyang Hu, Debdeep Jena, Huili Xing and **Debdeep Jena**
Polarization effects on gate leakage in InAlN/AlN/GaN high-electron mobility transistors.

Appl. Phys. Lett., **101**, 253519, (2012).

[J-100] Rusen Yan, Berardi Sensale-Rodriguez, Lei Liu, Debdeep Jena, and **Huili (Grace) Xing**
A new class of electrically tunable metamaterial terahertz modulators.
Optics Express, **20**(27), pp. 28664-71, (2012).

[J-99] Carsten Pietzka, *Guowang Li,* M. Alomari, **Huili Xing**, Debdeep Jena and Erhard Kohn.
Surface potential analysis of AlN/GaN heterostructures by electrochemical capacitance-voltage measurements.
J. Appl. Phys. **112**, 074508 (2012).

[J-98] Golnaz Karbasian, Patrick Fay, **Huili (Grace) Xing,** Debdeep Jena, Alexei Orlov, and Gregory Snider
High aspect ratio features in PMGI using electron beam lithography and solvent developers.
J. Vac. Sci. Technol. B, **30**, 06FI01(2012).

[J-97] Berardi Sensale-Rodriguez, Patrick Fay, Lei Liu, Debdeep Jena, Lei Liu, and **Huili (Grace) Xing**
Enhanced terahertz detection in resonant tunnel diode-gated HEMTs.
ECS Transactions, **49**, 93-102(2012).

[J-96] Berardi Sensale-Rodriguez, Rusen Yan, Subrina Rafique, Mingda Zhu, Wei Li, Xuelei Liang, David Gundlach, Vladimir Protasenko, Debdeep Jena, Lei Liu, and **Huili (Grace) Xing**
Extraordinary control of terahertz beam reflectance in graphene electro-absorption modulators.
Nano Letters, **12**, 4518 (2012). DOI: 10.1021/nl3016329

[J-95] *Rusen Yan*, Qin Zhang, Wei Li, Irene Calizo, Tian Shen, Curt Richter, Angela R. Hight-Walker, Xuelei Liang, Alan Seabaugh, Debdeep Jena, **Huili (Grace) Xing**, David J. Gundlach and N. V. Nguyen
Determination of graphene work function and graphene-insulator-graphene band alignment by internal photoemission spectroscopy.
Appl. Phys. Lett., **101**, 022105, (2012). DOI: 10.1063/1.4734955
Featured by IEEE Spectrum

[J-94] Faiza Faria, Jia Guo, Pei Zhao, Guowang Li, Prem Kumar Kandaswamy, Mark Wistey, **Huili (Grace) Xing**, and Debdeep Jena,
Low resistance ohmic contacts to GaN with high Si doping concentrations grown by molecular beam epitaxy.
Appl. Phys. Lett., **101**, 032109, (2012).

[J-93] Wan-Sik Hwang, Maja Remskar, Rusen Yan, Vladimir Protasenko, Kristof Tahy, Soo

Doo Chae, Pei Zhao, Aniruddha Konar, **Huili (Grace) Xing**, Alan C. Seabaugh, and Debdeep Jena
Transistors with chemically synthesized layered semiconductor WS2 exhibiting 10^5 room temperature modulation and ambipolar behavior.
Appl. Phys. Lett., **101**, 013107, (2012).

[J-92] Wan-Sik Hwang, Kristof Tahy, Xuesong Li, **Huili (Grace) Xing**, Alan C. Seabaugh, Chun Yung Sung, and Debdeep Jena
Transport properties of graphene nanoribbon transistors on chemical-vapor-deposition grown wafer-scale graphene.
Appl. Phys. Lett., **100**, 203107, (2012).

[J-91] Yuanzheng Yue, Zongyang Hu, Jia Guo, *Berardi Sensale-Rodriguez, Guowang Li,* Ronghua Wang, Faiza Faria, *Tian Fang,* Bo Song, Xiang Gao, Shiping Guo, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
InAlN/AlN/GaN HEMTs with regrown ohmics and ft of 370 GHz.
IEEE Electron Dev. Lett., **33**(7), 988, (2012).
Featured by Semiconductor-Today

[J-90] O. Laboutin, Y. Cao, R. Wang, G. Li, D. Jena, **H. Xing**, C.-F. Lo, L. Liu, S. J. Pearton, F. Ren, and W. Johnson.
InGaN channel high electron mobility transistor structures grown by metal organic chemical vapor deposition
Appl. Phys. Lett., **100**, 121909, (2012).
Featured by Semiconductor-Today

[J-89] Qin Zhang, Guangle Zhou, **Huili G. Xing**, Alan C. Seabaugh, Kun Xu, Sio Hong, Leg A. Kirilov, Curt A. Richter, N. V. Nguyen
Tunnel field-effect transistor heterojuction band alignment by internal photoemission spectroscopy
Appl. Phys. Lett., **100**, 102104-7, (2012).

[J-88] Wan-Sik Hwang, K. Tahy, R. L. Myers-Ward, P. M. Campbell, C. R. Eddy, Jr., D. K. Gaskill, **H. Xing**, A.C. Seabaugh and D. Jena
Fabrication of top-gated epitaxial graphene nano-ribbon FETs using hydrogen-silsesquioxane (HSQ).
J. of Vac. Sci. and Technol. B (JVST-B), **30**(3), 03D104, 2012.

[J-87] *Berardi Sensale-Rodriguez, Rusen Yan*, Michelle Kelly, *Tian Fang, Kristof Tahy*, Wan Sik Hwang, Debdeep Jena, Lei Liu and **Huili (Grace) Xing**
Broadband graphene THz modulators enabled by intraband transitions.
Nature Communications, **3**, 780, (2012). doi:10.1038/ncomms1787
Featured by NSF at LiveScience

[J-86] T. Fang, R. Wang, H. Xing, S. Rajan, and **D. Jena**,
Effect of Optical Phonon Scattering on the Performance of GaN Transistors
IEEE Electron Dev. Lett., **33**(5), 709-711, (2012).

[J-85] Guowang Li, Ronghua Wang, Jia Guo, Jai Verma, Zongyang Hu, Yuanzheng Yue, Faiza Faria, Yu Cao, Michelle Kelly, Thomas Kosel, **Huili (Grace) Xing**, Debdeep Jena
Ultra-thin body GaN-on-insulaor quantum well FETs with regrown ohmic contacts.
IEEE Electron Dev. Lett., **33**(5), 661-663, (2012).
Featured by Semiconductor-Today

[J-84] Y. Lu, Guangle Zhou, Rui Li, Wan Sik Hwang, Qin Zhang, Tim Vasen, Tom Kosel, Mark Wistey, **Huili (Grace) Xing**, Alan C. Seabaugh, Patrick Fay
Performance of AlGaSb/InAs TFETs with gate electric field and tunneling direction aligned
IEEE Electron Dev. Lett., **33**(5), 655-657, (2012).

[J-83] Jia Guo, Guowang Li, Faiza Faria, Yu Cao, Ronghua Wang, Jai Verma, Xiang Gao, Shipping Guo, Edward Beam, Andrew Ketterson, Michael Schuette, Paul Saunier, Mark Wistey, Debdeep Jena, **Huili (Grace) Xing**
MBE regrown ohmics in InAlN HEMTs with a regrowth interface resistance of 0.05 ohm-mm
IEEE Electron Dev. Lett., **33**(4), 525-7, (2012).

[J-82] Guangle Zhou, Yeqing Lu, Rui Li, Wan Sik Hwang, Qingmin Liu, Qin Zhang, Tim Vasen, Chen Chen, H. Zhu, J. Kuo, Tom Kosel, Mark Wistey, Patrick Fay, Alan Seabaugh, and **Huili (Grace) Xing**
InGaAs/InP tunnel FETs with a subthreshold swing of 93 mV/dec and 10^6 on/off current ratio.
IEEE Electron Dev. Lett., **33**(6),782, (2012).

[J-81] Rui Li, Guangle Zhou, Qingmin Liu, Soo Doo Chae, Tim Vasen, Wan Sik Hwang, Qin Zhang, Patrick Fay, Tom Kosel, Mark Wistey, **Huili (Grace) Xing**, Alan Seabaugh
AlGaSb/InAs tunnel field-effect transistor with on-current of 78 uA/um at 0.5V
IEEE Electron Dev. Lett., **33**(3), 363-5, (2012).

[J-80] 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 tunneling in-line with gate field
Physica Status Solidi (c), **9**(2), 389-392, (2012). DOI 10.1002/pssc.201100241.

[J-79] Prasanna Sivasubramani, Tae Joo Park, Bran E. Coss, Antonio Lucero, Jie Huang, Barry Brennan, *Yu Cao*, Debdeep Jena, **Huili (Grace) Xing**, Robert M. Wallace, Jiyoung Kim

In-situ X-ray photoelectron spectroscopy of trimethyl aluminum and water half-cycle treatments on HF-treated and O3-oxidized GaN substrates
Phys. Status Solidi RRL, **6**(1), 22-24, (2012).

2011

[J-78] O. Laboutin, Y. Cao, R. Wang, G. Li, D. Jena, **H. Xing**, C.-F. Lo, L. Liu, S. J. Pearton, F. Ren, and W. Johnson.
The resurgence of III-N materials development: AlInN HEMTs and GaN-on-Si
ECS Transactions, **41**(8), 301-311, (2011).

[J-77] Kevin Goodman, *Vladimir Protasenko*, Jai Verma, Tom Kosel, **Grace Xing**, Debdeep Jena
Molecular beam epitaxial growth of gallium nitride nanowires on atomic-layer deposited aluminum oxide.
J. Crystal Growth, **334**(1), 113-117, 2011.

[J-76] Satyaki Ganguly, Jai Verma, Guowang Li, Tom Zimmermann, **Huili Xing**, Debdeep Jena
Presence and origin of interface charges at atomic-layer deposited Al_2O_3/III-nitride heterojunctions
Appl. Phys. Lett., **99**, 193504, 2011.

[J-75] Jai Verma, *John Simon*, Vladamir Protasenko, Tom Kosel, **Huili Xing** and Debdeep Jena
N-Polar III-nitride quantum well light emitting diodes with polarization-induced doping
Appl. Phys. Lett., **99**, 171104, 2011.

[J-74] Berardi Sensale-Rodriguez, *Tian Fang*, Rusen Yan, *Michelle M. Kelly,* Debdeep Jena, Lei Liu, and **Huili (Grace) Xing**
Unique prospects for graphene-based THz modulators
Appl. Phys. Lett., **99**, 113104, (2011).
Most Downloaded of the Month
Special Edition (the 50th Anniversary) of Appl. Phys. Lett. - Editor' Picks, 2012

[J-73] Ronghua Wang, Guowang Li, Jai Verma, Tom Zimmermann, Zongyang Hu, Oleg Laboutin, *Yu Cao*, Wayne Johnson, Xiang Gao, Shiping Guo, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
Si-containing recessed ohmic contacts and 210-GHz quaternary barrier InAlGaN HEMTs
Appl. Phys. Express, **4**, 096502, (2011).
Elevated to Open Access, nominated for the Outstanding Paper Award of JSAP 2012 (Japan Society of Applied Physics).

[J-72] Guangle Zhou, Yeqing Lu, Rui Li Wan Sik Hwang, Qingmin Liu, Qin Zhang, Tim Vasen, C. Chen, H. Zhu, J. Kuo, S. Koswatta, Tom Kosel, Mark Wistey, Alan Seabaugh and **Huili (Grace) Xing**

Vertical InGaAs/InP tunnel FETs with tunneling normal to the gate.
IEEE Electronic Device Letters, **32**(11), 1516-1518, (2011).

[J-71] Bo Gao, Gregory Hartland, *Tian Fang*, Michelle Kelly, Debdeep Jena, **Huili (Grace) Xing** and Libai Huang
Studies of intrinsic hot phonon dynamics in suspended graphene by transient absorption microscope.
Nano Letters, **11**(8), 3184-3189, (2011).

[J-70] *Tian Fang*, Aniruddha Konar, **Huili Xing** and Debdeep Jena
High field transport and current saturation in 2D graphene.
Phys. Rev. B, **84**(12), 125450, (2011).

[J-69] Ronghua Wang, Guowang Li, Oleg Laboutin, Yu Cao, Jerry Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
220 GHz Quaternary Barrier InAlGaN/AlN/GaN HEMTs.
IEEE Electron Dev. Lett., **32**(9), 1215-1217, (2011).
Featured by Semiconductor-Today

[J-68] Ronghua Wang, Guowang Li, Oleg Laboutin, Yu Cao, Jerry Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
210 GHz InAlN barrier HEMTs with dielectric-free passivation.
IEEE Electron Dev. Lett., **32**(7), 892-894, (2011). DOI 10.1109/LED.2011.2147753

[J-67] *Lei Liu*, Jeffrey L. Hesler, Robert M. Weikle, II, Tao Wang, Patrick Fay and **Huili (Grace) Xing**
A 570-630 GHz frequency domain terahertz spectroscopy system based on a broadband quasi-optical zero bias Schottky diode detector.
International Journal of High Speed Electronics and Systems, **20**(3), 629-638, (2011).

[J-66] Berardi Sensale-Rodriguez, *Lei Liu*, Ronghua Wang, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing.**
FET THz detectors operating in the quantum capacitance limited region.
International Journal of High Speed Electronics and Systems, **20**(3), 597-609, (2011).

[J-65] Tom Zimmermann, *Yu Cao, Guowang Li*, Gregory Snider, Debdeep Jena and **Huili (Grace) Xing**
Subcritical barrier AlN/GaN E/D-mode HFETs and inverters.
Physica Status Solidi.(a), **208**(7), 1620-1622, (2011).

[J-64] Jia Guo, *Yu Cao*, Chuanxin Lian, Tom Zimmermann, Guowang Li, Jai Verma, Xiang Gao, Shiping Guo, 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.
Physica Status Solidi (a), **208**(7), 1617-1619, (2011).

[J-63] Libai Huang, Bo Gao, Gregory Hartland, *Michelle Kelly*, **Huili Xing**
Ultrafast relaxation of hot optical phonons in monolayer and multilayer graphene on different substrates.
Journal of Surface Science, **605**(17-18), 1657-1661, 2011.

[J-62] Debdeep Jena, *John Simon*, Kejia Wang, *Yu Cao*, Kevin Goodman, Jai Verma, Satyaki Ganguly, *Guowang Li*, K. Karda, *Vladimir Protasenko*, C. Lian, Tom Kosel, Patrick Fay, and **Huili Xing**
Polarization engineering in group-III nitride heterostructures: New opportunities for device design.
Phys. Stat. Solidi., **208**(7), 1511-1516, (2011).

[J-61] Kevin Goodman, *Vladimir Protasenko*, Jai Verma, Thomas H. Kosel, **Huili G. Xing** and Debdeep Jena
Green luminescence of InGaN nanowires grown on silicon substrates by MBE.
J. of Appl. Phys., **109**(8), 084336, (2011).

[J-60] *Yu Cao*, Kejia Wang, *Guowang Li*, Tom Kosel, **Huili Xing**, and Debdeep Jena
MBE growth of high conductivity single and multiple AlN/GaN heterojunctions.
J. Cryst. Growth, **323**(1), 529-533, (2011).

[J-59] Ronghua Wang, Paul Saunier, Yong Tang, Xiang Gao, Shipping Guo, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
Enhancement-mode InAlN/AlN/GaN HEMTs with 10^{-12} A/mm leakage current and 10^{12} ON/OFF current ratio.
IEEE Electron Dev. Lett., **32**(3), 309 (2011).

2010:

[J-58] *Guowang Li, Yu Cao*, **Huili Xing**, and Debdeep Jena
High mobility two-dimensional electron gases in nitride heterostructures with high Al composition AlGaN alloy barriers.
Appl. Phys. Lett., **97**, 222110 (2010).

[J-57] *Yu Cao*, **Huili Xing**, and Debdeep Jena
Polarization-mediated remote surface roughness scattering in ultrathin barrier GaN high-electron mobility transistors.
Appl. Phys. Lett., **97**, 222116 (2010).

[J-56] Ronghua Wang, Paul Saunier, Xiu Xing, Chuanxin Lian, Xiang Gao, Shiping Guo, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
Gate-recessed enhancement-mode InAlN/AlN/GaN HEMTs with 1.9 A/mm output current and 800 mS/mm transconductance.
IEEE Electron Dev. Lett., 31(12), 1383, (2010).

[J-55] *Guowang Li*, Tom Zimmermann, *Yu Cao*, Chuanxin Lian, Xiu Xing, Ronghua Wang, Patrick Fay, **Huili (Grace) Xing** and Debdeep Jena
Threshold voltage control in $Al_{0.72}Ga_{0.28}N$/AlN/GaN HEMTs by work function engineering.
IEEE Electron Dev. Lett., 31(9), 954, (2010).

[J-54] Qin Zhang, Yeqing Lu, **Huili Grace Xing,** Steve J. Koester and Siyuranga O. Koswatta
Scalability of atomic-thin-body (ATB) transistors based on graphene nanoribbons.
IEEE Electron Dev. Lett., 31(6), 531, (2010).

[J-53] Libai Huang, Gregory Hartland, Li-Qiang Chu, Luxmi, Randall Feenstra*, Chuanxin Lian, Kristof Tahy,* and **Huili Grace Xing**
Ultrafast transient absorption microscopy studies of carrier dynamics in epitaxial graphene.
Nano Letter, 10, 1308, (2010).

[J-52] *Yu Cao, Tom Zimmermann*, **Huili Grace Xing** and Debdeep Jena
Polarization-engineered removal of buffer leakage for GaN HEMTs.
Appl. Phys. Lett., 96(4), 042102 (2010).

[J-51] *Chuanxin Lian, Kristof Tahy, Tian Fang*, Guowang Li, **Huili Grace Xing** and Debdeep Jena
Quantum transport in graphene nanoribbons patterned by metal etching mask.
Appl. Phys. Lett., 96(10), 103109, (2010).

[J-50] *John Simon*, *Vladimir Protasenko*, Chuanxin Lian, **Huili Xing** and Debdeep Jena
Polarization-induced hole doping in wide-band-gap uniaxial semiconductor heterostructures.
Science, 327, 60 (2010).

2009:

[J-49] *John Simon*, Ze Zhang, Kevin Goodman, **Huili Xing**, Tom Kosel, Patrick Fay and Debdeep Jena
Polarization induced Zener tunnel junctions in wide-band-gap heterostructures.
Phys. Rev. Lett., 103(2), 026801 (2009).

[J-48] *Tom Zimmermann, Yu Cao*, Paul Saunier, Debdeep Jena and **Huili Grace Xing**
4-nm AlN barrier all binary HFET with SiNx gate dielectric.

International Journal of High Speed Electronics and Systems, **19**, 153 (2009).

2008:

[J-47] Debdeep Jena, *Tian Fang*, Qin Zhang and **Huili Grace Xing**
Zener tunneling in semiconducting nanotube and graphene nanoribbon p-n junctions.
Appl. Phys. Lett., 93(11), 112106 (2008).

[J-46] *Tian Fang*, Aniruddha Konar, **Huili Xing** and Debdeep Jena
Mobility in semiconducting graphene nanoribbons: Phonon, impurity, and edge roughness scattering.
Physical Review B, 78(20), 205403 (2008).

[J-45] Qin Zhang, *Tian Fang*, **Huili Xing**, Alan Seabaugh and Debdeep Jena
Graphene nanoribbon tunnel transistors.
IEEE Electron Dev. Lett., 29(12), 1344 (2008). DOI:10.1109/LED.2008.2005650.

[J-44] *Chuanxin Lian*, **Huili Grace Xing**, Yu-Chia Chang and Nick Fichtenbaum
Electrical transport properties of wafer fused p-GaAs/n-GaN heterojunctions.
Appl. Phys. Lett., 91(11), (2008).

[J-43] *Yanghai Yu*, Vladimir Protasenko, Debdeep Jena, **Huili (Grace) Xing** and Masaru Kuno
Photocurrent polarization anisotropy of randomly oriented nanowire networks.
Nano Lett., 8(5), 1352-1357 (2008).

[J-42] *Yu Cao*, Kejia Wang, Alexei Orlov, **Huili Xing** and Debdeep Jena
Very low sheet resistance and Shubnikov-de-Haas oscillations in two dimensional electron gases at ultrathin binary AlN/GaN heterojunctions.
Appl. Phys. Lett., 92(15), 152112, (2008).

[J-41] *David Deen, Tom Zimmermann*, *Yu Cao*, Debdeep Jena and **Huili Xing**
2.3nm barrier AlN/GaN HEMTs with insulated gates.
Physica Status Solidi (c), 5(6), 2047 (2008).

[J-40] *Tom Zimmermann, David Deen*, *Yu Cao, John Simon*, Patrick Fay, Debdeep Jena and **Huili Xing**
AlN/GaN insulated gate HEMTs with 2.3 A/mm output current and 480 mS/mm transconductance.
IEEE Electron Device Lett., 29(7), 661, (2008).

[J-39] *Chuanxin Lian*, **Huili Grace Xing**, Yu-Chia Chang and Nick Fichtenbaum
The role of doping type in setback layers on wafer fused AlGaAs/GaAs/GaN HBTs.
Physica Status Solidi (c), 5(9) 2960, (2008).

[J-38] *Tom Zimmermann, David Deen, Yu Cao*, Debdeep Jena and **Huili Grace Xing**
Formation of ohmic contacts to ultrathin AlN/GaN HEMTs.
Physica Status Solidi (c), 5(6), 2030 (2008).

[J-37] *Chuanxin Lian* and **Huili Grace Xing**
The role of setback layers on the breakdown characteristics of AlGaAs/GaAs/GaN HBTs.
Physica Status Solidi (c), 5(6), 1989 (2008).

2007:

[J-36] *Amol Singh, Xiangyang Li*, Vladimir Protasenko, Gabor Galantai, Masaru Kuno, **Huili (Grace) Xing** and Debdeep Jena
Polarization sensitive photodetectors based on solution-synthesized semiconductor nanowire based quantum-wire solids.
Nano. Lett., 7(10), 2999, (2007).

[J-35] **Huili Xing**, David Deen, Yu Cao, Tom Zimmermann, Patrick Fay and Debdeep Jena
MBE-grown ultra-shallow AlN/GaN HFET technology.
ECS Transactions, Vol. 11(5), 233, (2007).

[J-34] Tian Fang, Aniruddha Konar, **Huili Xing** and Debdeep Jena
Carrier statistics and quantum capacitance of graphene sheets and ribbons.
Appl. Phys. Lett., 91(9), 092109, (2007).

[J-33] *Chuanxin Lian*, **Huili Grace Xing,** Chad S. Wang, David Brown and Lee McCarthy
Gain degradation mechanism in wafer fused AlGaAs/GaAs/GaN heterojunction bipolar transistors.
Appl. Phys. Lett., 91(6), 063502 (2007).

[J-32] Ronghui Zhou, Hsueh-Chia Chang, Vladimir Protasenko, Masaru Kuno, *Amol Kumar Singh*, Debdeep Jena and **Huili Xing**
CdSe nanowires with illumination-enhanced conductivity: Induced dipoles, dielectrophoretic assembly, and field-sensitive emission.
J. of Appl. Phys., 101(7), 073704 (2007).

[J-31] Chuanxin Lian, **Huili (Grace) Xing,** Chad S. Wang, Lee McCarthy and Dave Brown
DC characteristics of AlGaAs/GaAs/GaN HBTs formed by direct wafer fusion.
IEEE Electron Device Lett., 28(1), 8 (2007).

2006:

[J-30] J. Liberis, M. Ramonas, O. Kiprijanovic, A. Matulionis, N. Goel, *J. Simon*, K. Wang, **H.**

Xing and D. Jena
Hot phonons in Si-doped GaN.
Appl. Phys. Lett., 89(20), 202117 (2006).

[J-29] *Johm Simon*, Albert Wang, **Huili Xing**, Debdeep Jena and Siddharth Rajan
Polarization-induced 3-dimensional electron slabs in graded AlGaN layers.
MRS Symposium Proceedings, 0892 (2006).

[J-28] Siddharth Rajan, Steven DenBaars, Umesh K. Mishra, **Huili Xing** and Debdeep Jena
Electron mobility in graded AlGaN alloys.
Appl. Phys. Lett., 88(4), 042103 (2006).

[J-27] *John Simon*, Albert (Kejia) Wang, **Huili Xing**, Siddharth Rajan and Debdeep Jena
Carrier transport and confinement in polarization-induced three-dimensional electron slabs: Importance of alloy scattering of AlGaN.
Appl. Phys. Lett., 88(4), 042109 (2006).

[J-26] *Chuanxin Lian* and **Huili Grace Xing**
Surface potential measurements on Ni-(Al)GaN lateral Schottky junction using scanning Kelvin probe microscopy.
Appl. Phys. Lett., 88(2), 022112 (2006).

2005:

[J-25] **Huili Xing,** Steven P. DenBaars and Umesh K. Mishra
Characterization of AlGaN/GaN p-n diodes with selectively regrown n-AlGaN by metal-organic chemical-vapor deposition and its application to GaN-based bipolar transistors.
J. Appl. Phys. 97(11), 113703 (2005).

2004:

[J-24] **Huili (Grace) Xing** and Umesh K. Mishra
Temperature dependent I-V characteristics of AlGaN/GaN HBTs and GaN BJTs.
International Journal of High Speed Electronics, 14 (3), 819-824 (2004).

[J-23] D. Buttari, A. Chini, A. Chakraborty, L. McCarthy, **H. Xing**, T. Palacios, L. Shen, S. Keller and U.K. Mishra
Selective dry etching of GaN over AlGaN in BCl3/SF6 mixtures.
International Journal of High Speed Electronics, 14(3), 132-137 (2004).

[J-22] L. S McCarthy, N. Q. Zhang, **H. Xing,** B. Moran, S. DenBaars and U. K. Mishra
High voltage AlGaN/GaN heterojunction transistors.
International Journal of High Speed Electronics and Systems, **14**(1), 225-243 (2004).

[J-21] Haijiang Yu, L. McCarthy, **H. Xing** P. Waltereit, L. Shen, S. Keller, S. P. Denbaars, J. S. Speck and U. K. Mishra
Dopant activation and ultralow resistance ohmic contacts to Si-ion-implanted GaN using pressurized rapid thermal annealing.
Appl. Phys. Lett., 85(22), 5254 (2004).

[J-20] Arpan Chakraborty, **H. Xing,** M. D. Craven, S. Keller, T. Mates, J. S. Speck, S. P. DenBaars and U. K. Mishra
Nonpolar a-plane p-type GaN and p-n junction diodes.
J. Appl. Phys., 96(8), 4494-4499 (2004).

[J-19] Siddharth Rajan, **Huili Xing**, Steve DenBaars, Umesh K. Mishra, and Debdeep Jena
AlGaN/GaN polarization-doped field-effect transistor for microwave power applications.
Appl. Phys. Lett., 84(9), 1591-1593 (2004).

[J-18] **Huili Xing,** Y. Dora, A. Chini, S. Heikman, S. Keller and U.K. Mishra
High breakdown voltage AlGaN/GaN HEMTs achieved by multiple field plates.
IEEE Elect. Dev. Lett., 25(4), 161-163 (2004).

2003:

[J-17] D. Buttari, A. Chini, T. Palacios, R. Coffie, L. Shen, **H. Xing**, S. Heikman, L. McCarthy, A. Chakraborty, S. Keller and U. K. Mishra
Origin of etch delay time in Cl_2 dry etching of AlGaN/GaN structures.
Appl. Phys. Lett., 83(23), 4779-4781 (2003).

[J-16] **H. Xing,** P. Chavarkar, S. Keller, S. P. DenBaars and U. K. Mishra
Very high voltage operation (> 330V) with high current gain of AlGaN/GaN HBTs.
IEEE Electron Device Lett., 24(3), 141-143 (2003).

[J-15] Sarah Estrada, Andrew Huntington, Andreas Stonas, **Huili Xing,** Umesh Mishra, Steven DenBaars, Larry Coldren and Evelyn Hu
n-AlGaAs/p-GaAs/n-GaN heterojunction bipolar transistor wafer-fused at 550-750 C.
Appl. Phys. Lett., 83(3), 560-562 (2003).

[J-14] Sarah Estrada, **Huili Xing**, Andreas Stonas, Andrew Huntington, Umesh Mishra, Steven DenBaars, Larry Coldren and Evelyn Hu
Wafer-fused AlGaAs/GaAs/GaN heterojunction bipolar transistor.
Appl. Phys. Lett., 82(5), 820-822 (2003).

[J-13] **H. Xing**, D. Jena, M. J. W Rodwell and U. K. Mishra
Explanation of anomalously high current gain observed in GaN based bipolar transistors.

IEEE Electron Device Lett., 24(1), 4-6 (2003).

[J-12] **Huili Xing,** Daniel S. Green, Haijiang J. Yu, Tom Mates, Peter Kozodoy, Stacia Keller, Steven P. DenBaars and Umesh K. Mishra
Memory effect and redistribution of Mg in regrown GaN layers by metalorganic chemical vapor deposition.
Jpn. J. of Appl. Phys., 42(1), 50-53 (2003).

2002:

[J-11] Debdeep Jena, Sten Heikman, Daniel Green, Dario Buttari, Robert Coffie, **Huili Xing**, Stacia Keller, Steven DenBaars, James S. Speck, Umesh K. Mishra and Ioulia Smorchkova
Realization of wide electron slabs by polarization bulk doping in graded III-V nitride semiconductor alloys.
Appl. Phys. Lett., 81(23), 4395-4397, (2002).

[J-10] Kung-Hsuan Lin, Gia-Wei Chern, Shi-Wei Chu, Chi-Kuang Sun, **Huili Xing**, Yulia Smorchkova, Stacia Keller, Umesh Mishra and Steven DenBaars
Ultrashort hole capture time in Mg-doped GaN thin films.
Appl. Phys. Lett., 81(21), 3975-3977 (2002).

[J-9] D. Buttari, A. Chini, G. Meneghesso, E. Zanoni, P. Chavarkar, R. Coffie, N.Q. Zhang, S. Heikman, L. Shen, **H. Xing**, C. Zheng and U. K. Mishra
Systematic characterization of Cl_2 reactive ion etching for gate recessing in AlGaN/GaN HEMTs.
IEEE Electron Device Lett., 23(3), 118-120 (2002).

2001:

[J-8] **H. Xing,** S. Keller, Y. F. Wu, L. McCarthy, I. P. Smorchkova, D. Buttari, R. Coffie, D. S. Green, G. Parish, S. Heikman, L. Shen, N. Zhang, J. J. Xu, B. P. Keller, S. P. DenBaars and U. K. Mishra
Gallium nitride based transistors.
J. Phys., Condens. Matter., 13(32), 7139-7157 (2001).

[J-7] L. McCarthy, I. Smorchkova, **H. Xing**, P. Fini, S. Keller, J. Speck, S. P. DenBaars, M. J. W. Rodwell and U. K. Mishra
Effect of threading dislocations on AlGaN/GaN heterojunction bipolar transistors.
Appl. Phys. Lett., 78(15), 2235-2237 (2001).

[J-6] L. S. McCarthy, I. P. Smorchkova, **H. Xing,** P. Kozodoy, P. Fini, J. Limb, D. L. Pulfrey, J. S. Speck, M. J. W. Rodwell, S. P. DenBaars and U. K. Mishra
GaN HBT: toward an RF device,

IEEE Trans. Electron Devices, 48(3), 543-551 (2001).

2000:

[J-5] J. B. Limb, **H. Xing**, B. Moran, L. McCarthy, S. P. DenBaars and U. K. Mishra
High voltage operation (>80 V) of GaN bipolar junction transistors with low leakage.
Appl. Phys. Lett., 76(17), 2457-2459 (2000).

[J-4] Peter Kozodoy, **Huili Xing**, Steven P. DenBaars, Umesh K. Mishra, A. Saxler, R. Perrin, S. Elhamri and W. C. Mitchel
Heavy doping effects in Mg-doped GaN.
J. Appl. Phys., 87(4), 1832-1835 (2000).

1999:

[J-3] Peter Kozodoy, Yulia P. Smorchkova, Monica Hansen, **Huili Xing**, Steven P. DenBaars and Umesh K. Mishra
Polarization-enhanced Mg doping of AlGaN/GaN superlattices.
Appl. Phys. Lett., 75(16), 2444-2446 (1999).

[J-2] J. B. Limb, L. McCarthy, P. Kozodoy, **H. Xing**, J. Ibbetson, Y. Smorchkova, S. P. DenBaars and U. K. Mishra
AlGaN/GaN HBTs using regrown emitter.
Electron. Lett., 35(19), 1671-1673 (1999).

[J-1] L. Zeng, S. P. Guo, Y. Y. Luo, W. Lin, M. C. Tamargo, **H. Xing** and G. S Cargill III,
Defect reduction of ZnxCdyMg1-x-ySe based structures grown on InP by using Zn irradiation of the III-V surface,
J. Vac. Sci. Technol. B, 17(3), 1255 (1999).

Conference papers (79 total):
(Underlined personnel: advised; *personnel in italic*: co-advised)

2015:

[CP-79] Kazuki Nomoto, Zongyang Hu, Bo Song, Mingda Zhu, Meng Qi, Rusen Yan, *Vladimir Protasenko*, Eugene Imhoff, Jeff Kuo, N. Kaneda, T. Mishima, T. Nakamura, Debdeep Jena and **Huili Grace Xing**
GaN-on-GaN p-n power diodes with 3.48 kV and 0.95 mohm-cm2: a record high figure-of-merit of 12.8 GW/cm2
IEEE International Electron Device Meeting, (2015).

[CP-78] Shubhendu Bhardwaj, Berardi Sensale-Rodriguez, **Huili Grace Xing**, John Volakis,
Full-wave hydrodynamic model for predicting THz emission from grating-gate RTD-gated plasma wave HEMTs
IEEE Device Research Conference, Ohio State University, June 2015.

[CP-77] S.M. Islam, *Vladimir Protasenko*, Sergei Rouvimov, Jai Verma, **Huili Grace Xing** and Debdeep Jena,
Deep-UV LEDs using polarization-induced doping: electroluminescence at cryogenic temperatures
IEEE Device Research Conference, Ohio State University, June 2015.

[CP-76] Meng Qi, Kazuki Nomoto, Mingda Zhu, Zongyang Hu, Yuning Zhao, Bo Song, Guowang Li, Patrick Fay, **Huili Grace Xing**, and Debdeep Jena,
High-voltage polarization-induced vertical heterostructure p-n junction diodes on bulk GaN substrates
IEEE Device Research Conference, Ohio State University, June 2015.

[CP-75] (Invited) **Huili Grace Xing**, Bo Song, Mingda Zhu, Zongyang Hu, Meng Qi, Kazuki Nomoto and Debdeep Jena,
Unique opportunity to harness polarization in GaN to override the conventional power electronics figure-of-merits
IEEE Device Research Conference, Ohio State University, June 2015.

[CP-74] Bo Song, Mingda Zhu, Zongyang Hu, Kazuki Nomoto, Debdeep Jena, **Huili Grace Xing**.
Design and optimization of GaN lateral Polarization-doped super junctions (PolarSJs): an analytical study.
The 27th Symposium on Power Semiconductor Devices and ICs, HongKong, June 2015.

[CP-73] (Invited) **Huili Grace Xing**, Rusen Yan, Bo Song, Jimy Encomendero, Debdeep Jena.
THz devices based on 2D electron systems
Proceedings of SPIE, Baltimore, April 2015.

2014:

[CP-72] Jun Ren, Bo Song, **Huili Grace Xing**, Shuoqi Chen, Andrew Ketterson, Edward Beam, Tso-Min Chou, Manyam Pilla, Hua-Quen Tserng, Xiang Gao, Paul Saunier, Patrick Fay
Model development for monolithically-integrated E/D-mode millimeter-wave InAlN/AlN/GaN HEMTs.
IEEE Compound Semiconductor Integrated Circuit Symposium (CSICs), La Jolla, Oct. 2014.
DOI:10.1109/CSICS.2014.6978570

[CP-71] (Invited) Patrick Fay, Y. Xie, Y. Zhao, Z. Jiang, S. Rahman, **Huili Grace Xing**, B. Sensale-Rodriguez, and L. Liu.

Emerging electronic devices for THz sensing and imaging.
Proceedings of SPIE, San Diego, Sept. 2014.

[CP-70] Bo Song, Mingda Zhu, Zongyang Hu, Erhard Kohn, Debdeep Jena, **Huili Grace Xing**.
GaN lateral PolarSJs: polarization-doped super junctions.
IEEE Device Research Conference, University of Notre Dame, June 2014.

[CP-69] Shudong Xiao, Mingda Li, Alan Seabaugh, Debdeep Jena, **Huili Grace Xing**.
Vertical heterojunction of MoS2 and WSe2.
IEEE Device Research Conference, University of California, Santa Barbara, June 2014.

[CP-68] Mingda (Oscar) Li, David Esseni, Debdeep Jena and **Huili Grace Xing**.
Lateral transport in two-dimensional heterostructure interlayer tunneling field effect transistor (Thin-TFET).
IEEE Device Research Conference, University of California, Santa Barbara, June 2014.

[CP-67] Zongyang Hu, Raj Jana, Meng Qi, Satyaki Ganguly, Bo Song, Erhard Kohn, Debdeep Jena, **Huili Grace Xing**.
Characteristics of In0.17Al0.83GaN/AlN/GaN MOS-HEMTs with steeper than 60 mV/dec sub-threshold slopes in deep sub-threshold regions.
IEEE Device Research Conference, University of California, Santa Barbara, June 2014.

[CP-66] Bo Song, Mingda Zhu, Zongyang Hu, Meng Qi, X. Yan, Yu Cao, Erhard Kohn, Debdeep Jena, **Huili Grace Xing**.
AlGaN/GaN MIS-HEMT on silicon with steep sub-threshold swing < 60 mV/dec over 6 orders of drain current swing and relation to traps.
IEEE Silicon Nanoelectronics Workshop, Hawaii, June 2014.

[CP-65] (Invited) Debdeep Jena, Mingda Li, Nan Ma, Wan Sik Hwang, David Esseni, Alan Seabaugh, and **Huili Grace Xing**.
Electron transport in 2D crystal semiconductors and their device applications.
IEEE Silicon Nanoelectronics Workshop, Hawaii, June 2014.

2013:

[CP-64] (Invited) Patrick Fay, Yeqing Lu, Guangle Zhou, Yi Xie, Md. Itrat Bin Shams, Ze Zhang, **Huili (Grace) Xing**, and Alan C. Seabaugh
Interband tunneling in InAs/AlGaSb heterostructures: devices for low-power logic and THz applications.
ISDRS 2013, Bethesda, MD, December 11-13, 2013.

[CP-63] Bo Song, Berardi Sensale-Rodriguez, Ronghua Wang, Andrew Ketterson, Michael Schuette, Edward Beam, Paul Saunier, Xiang Gao, Shiping Guo, Patrick Fay, Debdeep Jena

and **Huili G. Xing**
Source-drain scaling and its effect on the fringing capacitance for ultra-high speed GaN HEMT.
ISDRS 2013, Bethesda, MD, December 11-13, 2013.

[CP-62] Mingda Zhu, Xiaodong Yan, Bo Song, Zongyang Hu, Yuning Zhao, Debdeep Jena and **Huili Grace Xing**
Off-state drain leakage reduction for InAlN/GaN HEMTs using a HCl and O2-plasma two-step treatment.
ISDRS 2013, Bethesda, MD, December 11-13, 2013.

[CP-61] Zongyang Hu, Yuanzheng Yue, Mingda Zhu, Bo Song, Satyaki Ganguly, Josh Bergman, Debdeep Jena and **Huili Grace Xing**
Impact of CF4 plasma treatment on DC performance of Al2O3/InAlN/GaN MOS-HEMTs.
ISDRS 2013, Bethesda, MD, December 11-13, 2013.

[CP-60] (Invited) Pei Zhao, W.-S. Hwang, E. Kim, R. Feenstra, G. Gu, J. Kang, K. Banerjee, A. Seabaugh, **G. H. Xing** and D. Jena
Novel logic devices based on 2D crystal semiconductors: opportunities and challenges.
IEEE International Electron Device Meeting (IEDM), Washington DC, December 2013.

[CP-59] Ronghua Wang, *Guowang Li*, Jia Guo, Bo Song, J. Verma, Zongyang Hu, Yuanzheng Yue, *Kazuki Nomoto*, Satyaki Ganguly, Sergei Rouvimov, Xiang Gao, Oleg Laboutin, Yu Cao, Wayne Johnson, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
Dispersion-free operation in InAlN-based HEMTs with ultra thin or no passivation.
IEEE International Electron Device Meeting (IEDM), Washington DC, December 2013.
Featured by Semiconductor-Today

[CP-58] (Invited) **Huili G. Xing**, Guangle Zhou, Mingda Li, Yiqing Lu, Rui Li, Mark Wistey, Patrick Fay, Debdeep Jena and Alan C. Seabaugh
Tunnel FETs with tunneling normal to the gate.
Berkeley Symposium on Energy Efficient Electronics Systems, University of California, Berkeley, CA, October 28-29, 2013.

[CP-57] (Invited student presentation) Rusen Yan, Subrina Rafique, Lei Liu, Berardi Sensale-Rodriguez, and **Huili Grace Xing**
IRMMW-THz, Mainz, Germany, September 2013.
Near-field enhanced graphene terahertz modulator.
Runner up for the Best Student Presentation Award.

[CP-56] (Invited) Berardi Sensale-Rodriguez, and **Huili Grace Xing**
Terahertz reconfigurable devices using graphene.
Proceedings of SPIE, San Diego, August 2013.

[CP-55] Pei Zhao, Amit Verma, Jai Verma, **Huili Grace Xing**, Patrick Fay and Debdeep Jena.
GaN heterostructure barrier diodes (HBD) with polarization-induced Delta-doping.
IEEE Device Research Conference, University of Notre Dame, June 2013.

[CP-54] WanSik Hwang, Amit Verma, *Vladimir Protasenko*, Sergei Rouvimov, **Huili Grace Xing**, Alan Seabaugh, Wilfred Haensch, Chris Van de Walle, Zbigniew Galazka, Martin Albrecht, Roberto Fornari and Debdeep Jena.
Nanomembrane b-Ga2O3 high-voltage field effect transistors.
IEEE Device Research Conference, University of Notre Dame, June 2013.

[CP-53] Zhengping Jiang, Yu He, Guangle Zhou, Tillmann Kubis, **Huili Grace Xing**, and Gerhard Klimeck.
Atomistic simulation on gate-recessed InAs/GaSb TFETs and performance benchmark.
IEEE Device Research Conference, University of Notre Dame, June 2013.

[CP-52] S. M. Rahman, Zhenguo Jiang, Yi Xie, **Huili Xing,** Patrick Fay and Lei Liu
Terahertz focal plane arrays employing heterostructure backward diodes integrated with folded dipole antennas.
IEEE MTT-S International Microwave Symposium Digest (IMS), Seattle, June 2013.

[CP-51] Pei Zhao, Amit Verma, Jai Verma, **Huili Xing** and Debdeep Jena
Comparison of Schottky Diodes on Bulk GaN substrates & GaN-on-Sapphire
CSManTech, New Orleans, Louisiana, May 2013.

[CP-50] Haojun Zhang, Mingda Zhu, Berardi Sensale-Rodriguez, and **Huili Grace Xing**
THz plasmonic absorption in periodically patterned semiconductor ribbons.
IEEE International Wireless Symposium (IWS), Beijing, March 2013.

[CP-49] Michael Schuette, Andrew Ketterson, Edward Beam, Tso-Min Chou, Hua-Quen Tserng, Shiping Guo, Xiang Gao, Patrick Fay, **Huili Grace Xing**, and Paul Saunier.
State-of-the-art E/D InAlN/AlN/GaN GaN HEMT technology.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), 2013.

2012:

[CP-48] Guangle Zhou, Rui Li, Tim Vasen, Meng Qi, SooDoo Chae, Yeqing Lu, Qin Zhang, H. Zhu, J. Kuo, Tom Kosel, Mark Wistey, Patrick Fay, Alan Seabaugh, **Huili (Grace) Xing**
Novel gate-recessed vertical InAs/GaAs TFETs with record high Ion of 180 uA/um at VDS = 0.5V.
IEEE International Electron Device Meeting (IEDM), San Francisco, December, 2012.

[CP-47] Berardi Sensale-Rodriguez, Yeqing Lu, L. Barboni, F. Silverira, Patrick Fay, Debdeep

Jena, Alan Seabaugh, and **Huili Grace Xing**
IEEE Subthreshold Microelectronics Conference, Waltham, MA, October 2012.
Perspectives of TFETs for low power analog ICs.

[CP-46] (invited) Berardi Sensale-Rodriguez, Rusen Yan, Subrina Rafique, Mingda Zhu, *Vladimir Protasenko*, Debdeep Jena, Lei Liu, and **Huili Grace Xing**
IRMMW-THz, Wollongong, Australia, September 2012.
Exceptional tenability of THz reflection in graphene structures.
The Best Student Presentation Award.

[CP-45] Bo Song, Berardi Sensale-Rodriguez, Ronghua Wang, Michael Schuette, Andrew Ketterson, Edward Beam, Paul Saunier, Shiping Guo, Xiang Gao. Patrick Fay, Debdeep Jena, and **Huili Grace Xing**.
Monolithically integrated E/D-mode InAlN HEMTs with ft/fmax > 200/220 GHz.
Device Research Conference, Penn State University, June 2012.

[CP-44] *Guowang Li*, Ronghua Wang, Jai Verma, **Huili Grace Xing**, and Debdeep Jena.
Ultra-thin body GaN-on-Insulator nFETs and pFETs: towards III-nitride complementary logic.
Device Research Conference, Penn State University, June 2012.

[CP-43] Jai Verma, Prem Kumar, Amit Verma, *Vladimir Protasenko*, **Huili Grace Xing**, and Debdeep Jena
Tunnel injection GaN/AlN quantum dot UV LED.
Device Research Conference, Penn State University, June 2012.

[CP-42] Wan Sik Hwang, Maja Remskar, Rusen Yan, *Vladimir Protasenko*, Kristof Tahy, Soo Doo Chae, Alan C. Seabaugh, **Huili Grace Xing**, and Debdeep Jena
First demonstration of two-dimensional WS2 transistors exhibiting 10^5 room temperature modulation and ambipolar bahavior.
Device Research Conference, Penn State Univeristy, June 2012.

[CP-41] (Invited) Michael Schuette, Andrew Ketterson, Edward Beam, Tso-Min Chou, Hua-Quen Tserng, Shiping Guo, Xiang Gao. Patrick Fay, **Grace Xing**, Paul Saunier.
State-of-the-art E/D GaN technology based on an InAlN/AlN/GaN heterostructure.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), 2012.

2011:

[CP-40] Qin Zhang, Guangle Zhou, **Huili G. Xing**, Alan C. Seabaugh, Kun Xu, Oleg A. Kirillov, Curt A. Richter, Nhan V. Nguyen
Band alignment of TFET heterojunctions and post deposition annealing effects by internal photoemission spectroscopy.

ISDRS 2011, University of Maryland, College Park, MD, December 7-9, 2011.

[CP-39] Berardi Sensale-Rodriguez, Jia Guo, Ronghua Wang, *Guowang Li, Tian Fang,* Paul Saunier, Andrew Ketterson, Michael Schuette, Xiang Gao, Shiping Guo, Yu Cao, Oleg Laboutin, Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
Comparative study of E- and D-mode InAlN/AlN/GaN HEMTs with fT near 200 GHz
ISDRS 2011, University of Maryland, College Park, MD, December 7-9, 2011.

[CP-38] Satyaki Ganguly, Jai Verma, *Guowang Li*, Tom Zimmermann, **Huili Xing**, Debdeep Jena
Barrier height, interface charge & tunneling effective mass in ALD Al2O3/AlN/GaN HEMTs.
Device Research Conference, University of California, Santa Barbara, CA, June 20, 2011.

[CP-37] Ronghua Wang, *Guowang Li*, *Tian Fang*, Oleg Laboutin, Yu Cao, J. W. Johnson, Greg Snider, Patrick Fay, Debdeep Jena, **Huili Xing**
Improvement of fT in InAl(Ga)N Barrier HEMTs by Plasma Treatments.
Device Research Conference, University of California, Santa Barbara, CA, June 20 2011.

[CP-36] Guangle Zhou, Yeqing Lu, Rui Li, Qin Zhang, Wan Sik Hwang, Qingmin Liu, Tim Vasen, H. Zhu, J. Kuo, S. Koswatta, Tom Kosel, Mark Wistey, Patrick Fay, Alan Seabaugh, **Huili (Grace) Xing**
Self-aligned InAs/Al0.45 Ga0.55 Sb vertical tunnel FETs.
Device Research Conference, University of California, Santa Barbara, CA, June 20, 2011.

[CP-35] *Tian Fang*, Ronghua Wang, Guowang Li, **Huili Xing,** S. Rajan, Debdeep Jena
Effect of optical phonon scattering on the performance limits of ultrafast GaN transistors.
Device Research Conference, University of California, Santa Barbara, CA, June 20, 2011.

[CP-34] (Invited) Paul Saunier, Andrew Ketterson, Michael Schuette, Tso-Min Chou, Jose Jimenez, Hua-Quen Tserng, **Grace Xing**, Shiping Guo, Xiang Gao.
State-of-the-art E/D GaN technology based on an InAlN/AlN/GaN heterostructure.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), Orlando, 2011.

[CP-33] (Invited) Debdeep Jena, Kristof Tahy, Tian Fang, Pei Zhao, Wan Sik Hwang, Michelle Kelly, S. Koswatta, K. Gaskill, R. L. Myers-Ward, J. Tedesco, C. Eddy, Rui Li, **Huili Xing** and Alan Seabaugh
Graphene transistors for digital applications.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), Orlando, 2011.

[CP-32] Guangle Zhou, Yeqing Lu, Rui Li, Wan Sik Hwang, Qingmin Liu, Qin Zhang, Tim

Vasen, C. Chen, H. Zhu, J. Kuo, S. Koswatta, Tom Kosel, Mark Wistey, Alan Seabaugh, and **Huili (Grace) Xing**
Self-aligned In0.53 Ga0.47 As/InAs/InP vertical tunnel transistors.
International Conference on Compound Semiconductor Manufacturing Technology (CSManTech), Palm Springs, April 2011.

2010:

[CP-31] Yong Tang, Paul Saunier, Ronghua Wang, Andrew Ketterson, Xiang Gao, Shiping Guo, Gregory Snider, Debdeep Jena, **Huili (Grace) Xing** and Patrick Fay
High-performance monolithically-integrated E/D mode InAlN/AlN/GaN HEMTs for mixed-signal applications.
IEEE International Electron Device Meeting, San Francisco, 2010.

[CP-30] (Invited) Debdeep Jena, Kristof Tahy, David Shilling, Qin Zhang, Tom Zimmermann, Patrick Fay, **Huili Xing**, Alan Seabaugh, Luxmi, Randall Feenstra, Siyuranga Koswatta.
Graphene transistors.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), 2010.

[CP-29] (Invited) L. Liu, T. Wang, A. Biswas, Z. Cai, F. Watanabe, A. S. Biris, M. Lieberman, **H. Xing** and P. Fay
Narrow spectral features of cellulose nanocomposites characterized by a frequency domain terahertz spectroscopy.
ICCE, 2010.

[CP-28] L. Liu, B. Sensale-Rodriguez, Z. Zhang, T. Zimmermann, *Y. Cao*, D. Jena, P. Fay and **H. Xing**
Development of microwave and terahertz detectors utilizing AlN/GaN high electron mobility transistors.
The 21st International Symposium on Space Terahertz Technology, Oxford, March 2010.

[CP-27] Ronghua Wang, Xiu Xing, *Tian Fang*, Tom Zimmermann, Chuanxin Lian, *Guowang Li*, Paul Saunier, Xiang Gao, Shiping Guo, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
High performance E-mode InAlN/GaN HEMTs: interface states from subthreshold slopes.
The 68th Device Research Conference, Notre Dame, June 2010.

[CP-26] Q. Zhang, Y. Lu, **G. H. Xing,** C. A. Richter, S. J. Koester and S. O. Koswatta
Device characteristics of single-layer graphene FETs grown on copper.
The 68th Device Research Conference, Notre Dame, June 2010.

[CP-25] *Kristof Tahy*, Margaret Jane Fleming, Barbara Raynal, *Vladimir Protasenko*, Siyuranga Koswatta, Debdeep Jena, **Huili (Grace) Xing** and Michelle Kelly

Device characteristics of single-layer graphene FETs grown on copper.
The 68th Device Research Conference, Notre Dame, June 2010.

[CP-24] *Guowang Li*, Tom Zimmermann, *Yu Cao*, Chuanxin Lian, Xiu Xing, Ronghua Wang, Patrick Fay, **Huili Xing** and Debdeep Jena
Work-function engineering in novel high Al composition $Al_{0.72}Ga_{0.28}N$/AlN/GaN HEMTs.
The 68th Device Research Conference, Notre Dame, June 2010.

[CP-23] Chuanxin Lian, *Yu Cao*, Ronghua Wang, *Guowang Li*, Tom Zimmermann, Debdeep Jena and **Huili Xing**
Molecular beam epitaxy regrowth of ohmics in metal-face AlN/GaN transistors.
International Conference on Compound Semiconductor Manufacturing Technology (Portland), April 2010.

2009:

[CP-22] Jia Guo, Tom Zimmermann, Debdeep Jena and **Huili (Grace) Xing**
Ultra-scaled AlN/GaN enhancement- and depletion- mode nanoribbon HEMTs.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-21] *Yu Cao*, Tom Zimmermann, **Huili Xing** and Debdeep Jena
MBE-grown buffer with high breakdown voltage for nitride HEMTs on GaN template.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-20] Guangle Zhou, Sajid Kabeer, Dana Wheeler, Patrick Fay, Alan Seabaugh and **Huili (Grace) Xing**
Field modulation in heavily-doped thin-body p+InGaAs for tunnel FETs.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-19] Dana Wheeler, Sajid Kabeer, Yeqing Lu, Tim Vasen, Qin Zhang, Guangle Zhou, Kevin Clark, Haijun Zhu, Yung-Chung Kao, Patrick Fay, Tom Kosel, **Huili Xing** and Alan Seabaugh.
Fabrication approach for lateral InGaAs tunnel transistors.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-18] Sajid Kabeer, Tim Vasen, Dana Wheeler, Qin Zhang, Siyuranga Koswatta, Haijun Zhu, Kevin Clark, Jenn-Ming Kuo, Yung-Chung Kao, Sean Corcoran, Brian Doyle, Patrick Fay, Tom Kosel, **Huili Xing** and Alan Seabaugh
Effect of dopant profile on current-voltage characteristics of p+n+ In0.53GaAs tunnel junctions.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-17] Chuanxin Lian, Kristof Tahy, Tian Fang, Guowang Li, **Huili (Grace) Xing** and Debdeep Jena

Quantum transport in patterned graphene nanoribbons.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-16] Kristof Tahy, Chuanxin Lian, **Huili (Grace) Xing** and Debdeep Jena
Operation regimes of double gated graphene nanoribbon FETs.
International Semiconductor Device Research Symposium (ISDRS), Dec. 2009.

[CP-15] Tom Zimmermann, *Yu Cao*, Jia Guo, Xiangning Luo, Debdeep Jena and **Huili Xing**
Top-down AlN/GaN enhancement- and depletion- mode nanoribbon HEMTs.
Conference digest of 67th Device Research Conference, Penn State University, June 2009.

[CP-14] *Kristof Tahy*, David Shilling, Tom Zimmermann, **Huili Xing,** Patrick Fay, Luxmi, Randall Freenstra and Debdeep Jena
Gigahertz operation of epitaxial graphene transistors.
Conference Digest of 67th Device Research Conference, Penn State University, June 2009.

[CP-13] *Kristof Tahy*, Siyuranga Koswatta, Tian Fang, Qin Zhang, **Huili Xing** and Debdeep Jena
High field transport properties of 2D and nanoribbon Graphene FETs.
Conference Digest of 67th Device Research Conference, Penn State University, June 2009.

2008:

[CP-12] *John Simon*, **Huili Xing** and Debdeep Jena
Ultrathin AlN/GaN superlattice p-n junctions by MBE.
Conference Digest of 66th Device Research Conference, UCSB, June 2008.

[CP-11] Xiangning Luo, YenChun Lee, Anirudda Konar, Tian Fang, Gregory Snider, **Huili Xing** and Debdeep Jena
Current-carrying capacity of long & short channel 2D graphene transistors.
Conference Digest of 66th Device Research Conference, UCSB, June 2008.

[CP-10] Chuanxin Lian, Xiu Xing, Patrick Fay, Yu-Chia Chang, Zhen Chen and **Huili Xing**
Wafer fused AlGaAs/GaAs/GaN HBTs with current gain of ~ 20 and ft of ~ 2.6 GHz.
Conference Digest of 66th Device Research Conference, UCSB, June 2008.

[CP-9] Chuanxin Lian and **Huili Grace Xing**
Wafer fused AlGaAs/GaAs/GaN HBTs with current gain ~ 20 and V_{BR} > 35 V.
International Conference on Compound Semiconductor Manufacturing Technology, Chicago, (April 2008).

[CP-8] (Invited) **Huili Xing,** Tom Zimmermann, David Deen, Yu Cao, Debdeep Jena and Patrick Fay
Ultrathin AlN/GaN heterostructure based HEMTs.
International Conference on Compound Semiconductor Manufacturing Technology (CS

ManTech), Chicago, (April 2008).

2007:

[CP-7] *Yu Cao*, Tom Zimmermann, Huili (Grace) Xing and Debdeep Jena
Ultrashallow MBE-grown AlN/GaN HEMTs with record high current densities.
International Semiconductor Device Research Symposium (ISDRS), Washington D.C., (Dec. 2007) **Nominated for the Best Student Paper Award.**

2006:

[CP-6] *A. Singh*, A. Khandelwal, X. Li, **H. Xing,** M. Kuno and D. Jena
Field-effect transistors and photodetectors based on solution-synthesized nanowires.
Conference Digest of 64th Device Research Conference, Penn Sate University, June 2006.

2004-2000:

[CP-5] D. Scott, **H. Xing**, S. Krishnan, M. Urgeaga, N. Parthasarathy and M. Rodwell
InAlAs/InGaAs/InP DHBTs with polycrystalline InAs extrinsic emitter regrowth.
60th Device Research Conference, Santa Barbara, CA, USA, June 2002.

[CP-4] (Invited) **H. Xing,** D. S. Green, L. McCarthy, I. P. Smorchkova, P. Chavarkar, T. Mates, S. Keller, S. P. DenBaars, J. Speck and U. K. Mishra
Progress in gallium nitride-based bipolar transistors.
BIPOLAR/BiCMOS Circuits and Technology Meeting, Minneapolis, MN, USA, September 2001.

[CP-3] L. McCarthy, Y. Smorchkova, P. Fini, **H. Xing**, M. Rodwell, J. Speck, S. DenBaars and U. Mishra
HBT on LEO GaN.
Conference Digest of 58th Device Research Conference, Denver, CO, USA, June 2000.

[CP-2] (Invited) U. Mishra, R. Vetury, L. McCarthy, Y. Smorchkova, S. Keller, **H. Xing**, N. Zhang, J. Speck, R. York and S. DenBaars
AlGaN/GaN HEMTs and HBTs for microwave power.
Conference Digest of 58th Device Research Conference, Denver, CO, USA, June 2000.

[CP-1] **H. Xing**, L. McCarthy, S. Keller, S. P. DenBaars and U. K. Mishra
High current gain GaN homojunction bipolar transistors.
27th Int. Symp. on Compound Semi., Monterey, CA, USA, October 2000.

Conference Presentations (235 total till December 2013)

Starting from Year 2013, no more conference presentations will be archived here. But my group attends and presents regularly in international conferences and workshops as

evidenced by the past records, including IEDM, DRC, EMC, IWN, ISCS etc. For example, in 2012 we contributed 37 conference presentations, as listed below.

2012:

[C-182] Rusen Yan, Berardi Sensale-Rodriguez, Lei Liu, Debdeep Jena, and **Huili Grace Xing**.
Near-field enhanced graphene terahertz modulators.
The 3rd International Workshop on Terahertz Nanoscience (TeraNano 3), Hawaii, Dec.2012.
(Best Poster Award)

[C-181] [Invited] Berardi Sensale-Rodriguez, Rusen Yan, **Huili Grace Xing**.
Reconfigurable THz devices using graphene.
The 3rd International Workshop on Terahertz Nanoscience (TeraNano 3), Hawaii, Dec.2012.

[C-180] Guangle Zhou, Rui Li, Tim Vasen, Meng Qi, SooDoo Chae, Yeqing Lu, Qin Zhang, H. Zhu, J. Kuo, Tom Kosel, Mark Wistey, Patrick Fay, Alan Seabaugh, **Huili (Grace) Xing**
Novel gate-recessed vertical InAs/GaAs TFETs with record high Ion of 180 uA/um at VDS = 0.5V.
IEEE International Electron Device Meeting (IEDM), San Francisco, December, 2012.

[C-179] Rusen Yan, Qin Zhang, Oleg A. Kirillov, Wei Li, James Basham, Xuelei Liang, Debdeep Jena, Curt A. Richter, Alan Seabaugh, David J. Gundlach, **Huili G. Xing** and N. V.Nguyen.
Graphene as an electrode for directly observing hole injection from silicon to oxide.
Semiconductor Interface Specialist Conference, San Diego, Dec. 2012.

[C-178] Qin Zhang, Rusen Yan, Oleg A. Kirillov, Kun Xu, Curt A. Richter, Thomas Kosel, **Huili G. Xing**, Alan Seabaugh, Curt A. Richter, David J. Gundlach and N. V. Nguyen.
Band offsets of Al2O3 on an InAs/AlGaSb heterojunction measured by internal photoemission.
Semiconductor Interface Specialist Conference, San Diego, Dec. 2012.

[C-177] [Invited, keynote] **Huili (Grace) Xing**, Debdeep Jena
Ultra-scaled GaN HEMTs and their reliability challenges.
ESREF (European Symposium on Reliability of Electron Devices, Failure Physics and Analysis), Cagliari, Italy, October 2012.

[C-176] Berardi Sensale-Rodriguez, Yeqing Lu, L. Barboni, F. Silverira, Patrick Fay, Debdeep Jena, Alan Seabaugh, and **Huili Grace Xing**
Perspectives of TFETs for low power analog ICs.
IEEE Subthreshold Microelectronics Conference, Waltham, MA, October 2012.

[C-175] (Invited) **Huili (Grace) Xing**, Debdeep Jena
High speed GaN transistors.

IWN (International Workshop on Nitride Semiconductors), Sapporo, Japan, October, 2012.

[C-174] Satyaki Ganguly, Aniruddha Konar, Zongyang Hu, **Huili G. Xing** and Debdeep Jena
Reverse leakage in InAlN/AlN/GaN HEMTs: role of built-in polarization field.
IWN (International Workshop on Nitride Semiconductors), Sapporo, Japan, October, 2012.

[C-173] Yuanzheng Yue, Zongyang Hu, Jia Guo, Berardi Sensale-Rodriguez, *Guowang Li,* Ronghua Wang, Faiza Faria, Bo Song, Xiang Gao, Shipping Guo, Thomas Kosel, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
Ultrascaled InAlN/GaN HEMTs with ft of 400 GHz.
IWN (International Workshop on Nitride Semiconductors), Sapporo, Japan, October, 2012.

[C-172] Ronghua Wang, *Guowang Li,* Golnaz Karbasian, Jia Guo, Yuanzheng Yue, Zongyang Hu, Oleg Laboutin, Yu Cao, Wayne Johnson, Gregory Snider, Patrick Fay, Debdeep Jena and **Huili (Grace) Xing**
Quaternary barrier InAlGaN HEMTs with ft/fmax of 230/300 GHz.
IWN (International Workshop on Nitride Semiconductors), Sapporo, Japan, October, 2012.
Best Paper Award

[C-171] (Invited) **Huili (Grace) Xing**, Guangle Zhou, Soo Doo Chae, Y. Lu, Rui Li, Tim Vasen, Q. Zhang, J.-M. Kuo, H. Zhu, Patrick Fay, Tom Kosel, Alan Seabaugh, Mark Wistey
Surfaces and interfaces in vertical tunnel FETs,"
AVS annual meeting, Tampa FL, October 2012.

[C-170] (invited) Berardi Sensale-Rodriguez, Rusen Yan, Subrina Rafique, Mingda Zhu, *Vladimir Protasenko*, Debdeep Jena, Lei Liu, and **Huili Grace Xing**
IRMMW-THz, Wollongong, Australia, September 2012.
Exceptional tenability of THz reflection in graphene structures.
Best Student Presentation Award

[C-169] Jai Verma, Prem Kumar Kandaswamy, *Vladimir Protasenko*, Amit Verma, **Huili Grace Xing**, and Debdeep Jena
GaN/AlN quantum dot UV LEDs utilizing tunnel transport by plasma-assisted molecular beam epitaxy.
The 17th International Conference on MBEs, Nara, Japan, September 2012.

[C-168] Berardi Sensale-Rodriguez, Patrick Fay, Lei Liu, Debdeep Jena, and **Huili Grace Xing**
Enhanced terahertz detection in resonant tunnel diode-gated HEMTs.
The 27th Symposium on Microelectronics Technology and Devices, Brasilia, Brazil, August 2012.

[C-167] Rusen Yan, Qin Zhang, Wei Li, Irene Calizo, Tian Shen, Curt Richard, Angela R. Hight-Walker, Xuelei Liang, Alan Seabaugh, Debdeep Jena, and **Huili Grace Xing,** David

Gundlach, and Nhan Van Nguyen
Investigation of graphene-oxide-semiconductor band alignment by internal photoemission spectroscopy.
International Symposium on Compound Semiconductors, UCSB, August 2012.

[C-166] Berardi Sensale-Rodriguez, Rusen Yan, Mingda Zhu, Subrina Rafique, Suresh Vishwanath, Wan Sik Hwang, Kristof Tahy, *Vladimir Protasenko*, Michelle Kelly, Lei Liu, Debdeep Jena, and **Huili Grace Xing**
THz reconfigurable optoelectronic devices employing graphene.
International Symposium on Compound Semiconductors, UCSB, August 2012.

[C-165] Wan Sik Hwang, Pei Zhao, Kristof Tahy, Xuesong Li, Chun-Yung Sung, **Huili Grace Xing**, Alan C. Seabaugh, and Debdeep Jena
Ultrathin graphene nanoribbon transistors on wafer-scale chemical-vapor-deposited graphene.
International Symposium on Compound Semiconductors, UCSB, August 2012.

[C-164] Jai Verma, Prem Kumar Kandaswamy, *Vladimir Protasenko*, Amit Verma, **Huili Grace Xing**, and Debdeep Jena
GaN/AlN quantum dot UV LEDs utilizing tunnel transport by plasma-assisted molecular beam epitaxy.
International Symposium on Semiconductor LEDs, Berlin, Germany, July 2012.

[C-163] Berardi Sensale-Rodriguez, Rusen Yan, Subrina Rafique, Michelle Kelly, Lei Liu, Debdeep Jena, and **Huili Grace Xing**
Active THz metamaterials based on self-gated 2DEGs.
Lester Eastman Conference, Brown University, August 2012.

[C-162] Bo Song, *Berardi Sensale-Rodriguez,* Ronghua Wang, Edward Beam, Michael Schuette, Andrew Ketterson, Paul Saunier, Xiang Gao, Shiping Guo, Patrick Fay, Debdeep Jena, and **Huili Grace Xing**
Gate-recessed E-mode InAlN/AlN/GaN HEMTs with ft/fmax of 225/250 GHz.
Lester Eastman Conference, Brown University, August 2012.

[C-161] Yuanzheng Yue, Zongyang Hu, Jia Guo, *Berardi Sensale-Rodriguez, Guowang Li,* Ronghua Wang, Faiza Faria, *Tian Fang,* Bo Song, Xiang Gao, Shiping Guo, Gregory Snider, Patrick Fay, Debdeep Jena, and **Huili (Grace) Xing**
InAlN/AlN/GaN HEMTs with regrown ohmics and ft of 370 GHz.
Electronic Materials Conference, Penn State University, June 2012.

[C-160] *Vladimir Protasenko*, Jai Verma*,* **Huili Grace Xing**, and Debdeep Jena
Excitonic and free carrier recombination in high indium content InGaN layers grown by MBE for photovoltaics.

Electronic Materials Conference, Penn State University, June 2012.

[C-159] Faiza Faria, Jia Guo, Pei Zhao, *Guowang Li*, Prem Kandaswamy, **Huili Grace Xing**, and Debdeep Jena
Study on alloyed ohmic contacts to MBE grown n+GaN with various Si doping concentrations.
Electronic Materials Conference, Penn State University, June 2012.

[C-158] Bo Song, Berardi Sensale-Rodriguez, Ronghua Wang, Michael Schuette, Andrew Ketterson, Edward Beam, Paul Saunier, Shiping Guo, Xiang Gao. Patrick Fay, Debdeep Jena, and **Huili Grace Xing**.
Monolithically integrated E/D-mode InAlN HEMTs with ft/fmax > 200/220 GHz.
Device Research Conference, Penn State University, June 2012.

[C-157] *Guowang Li*, Ronghua Wang, Jai Verma, **Huili Grace Xing**, and Debdeep Jena.
Ultra-thin body GaN-on-Insulator nFETs and pFETs: towards III-nitride complementary logic.
Device Research Conference, Penn State University, June 2012.

[C-156] Jai Verma, Prem Kumar, Amit Verma, *Vladimir Protasenko*, **Huili Grace Xing**, and Debdeep Jena
Tunnel injection GaN/AlN quantum dot UV LED.
Device Research Conference, Penn State University, June 2012.

[C-155] Wan Sik Hwang, Maja Remskar, Rusen Yan, Vladimir Protasenko, Kristof Tahy, Soo Doo Chae, Alan C. Seabaugh, **Huili Grace Xing**, and Debdeep Jena
First demonstration of two-dimensional WS2 transistors exhibiting 10^5 room temperature modulation and ambipolar bahavior.
Device Research Conference, Penn State University, June 2012.

[C-154] (invited) Wan Sik Hwang, Kristof Tahy, Pei Zhao, R. Myers-Ward, P. Campbell, C. Eddy Jr., K. Gaskill, Alan C. Seabaugh, **Huili Grace Xing**, and Debdeep Jena
Wafer-scale graphene nanoribbon transistor technology.
The 221st ECS Meeting, Seattle, May 2012.

[C-153] Syed M. Rahman, Yi Xie, Zhenguo Jiang, **Huili Xing,** Patrick Fay and Lei Liu
The development of terahertz focal-plane array elements using Sb-based heterostructure backward diode.
The 23rd International Symposium on Space Terahertz Technology, Tokyo, April 2012.

[C-152] Nan Sun, Gerald Arnold, Kristof Tahy, Jianchun Zeng, Huili Xing, Debdeep Jena and Steven Ruggiero
Low-frequency noise in graphene FETs

APS Marching Meeting, March 2012

[C-151] Golnaz Karbasian, A. O. Orlov, P. J. Fay, **Huili Xing**, D. Jena and G. L. Snider
High aspect ratio features in PMGI using electron beam lithography and solvent developers
International Conference on electron, ion and photon beam technology and nanofabrication

[C-150] (Invited) Michael Schuette, Andrew Ketterson, Edward Beam, Tso-Min Chou, Hua-Quen Tserng, Shiping Guo, Xiang Gao. Patrick Fay, **Grace Xing**, Paul Saunier.
State-of-the-art E/D GaN technology based on an InAlN/AlN/GaN heterostructure.
The Government Microcircuit Applications and Critical Technology Conference (GOMACTech), 2012.

[C-149] (Invited) **Huili (Grace) Xing**
GaN: The 3rd electronic revolution?
CSTIC,(China Semiconductor Technology International Conference), Shanghai, March 2012.

[C-148] (Invited) **Huili (Grace) Xing**, Alan Seabaugh
Tunnel field-effect transistors for low voltage electronics.
CSTIC (China Semiconductor Technology International Conference), Shanghai, March 2012.

[C-147] (Invited) **Huili (Grace) Xing**
Graphene THz modulators.
WOCSEMMAND (Workshop on Compound Seminconductor Materials and Devices), Nappa Valley, February 2012.

[C-146] Wan-Sik Hwang, K. Tahy, P. Zhao, R.L. Myers-Ward, P.M. Campbell, C.R. Eddy, Jr., D. K. Gaskill, **H. Xing**, A.C. Seabaugh and D. Jena
Wafer-scale graphene nanoribbons for tunnel FET applications.
The 19th Korean Conference on Semiconductors (KCS), Korea, February 2012.