**Tomás Palacios**

**Massachusetts Institute of Technology (MIT)**

Professor,Department of Electrical Engineering and Computer Science (EECS),

School of Engineering (SOE)

1. **EDUCATION**:

School Degree Date

Polytechnic University of Madrid, Spain B.S/M.Sc. 2001

University of California, Santa Barbara M.Sc. 2004

University of California, Santa Barbara Ph.D. 2006

1. **TITLE OF THESIS FOR MOST ADVANCED DEGREE:**

Optimization of the High Frequency Performance of Nitride-based Transistors

1. **PRINCIPAL FIELDS OF INTEREST:**

Semiconductor device physics; nanotechnology; electronics

1. **NON-MIT EXPERIENCE (INCLUDING MILITARY SERVICE):**

Employer Position Beginning Ending

Polytechnic University of Madrid Underg. Research Asst. June 1997 Sept. 2001

Polytechnic University of Madrid Grad. Research Asst. Sept. 2001 July 2002

Univ. of California, Santa Barbara Grad. Research Asst. July 2002 March 2006

Univ. of California, Santa Barbara Project Scientist March 2006 June 2006

1. **HISTORY OF MIT APPOINTMENTS:**

Rank Beginning Ending

Assistant Professor Aug. 2006 June 2010

Associate Professor (without tenure) July 2010 June 2012

Associate Professor (with tenure) July 2012 June 2016

Professor (with tenure) July 2016 present

1. **GOOGLE SCHOLAR PUBLICATIONS AND CITATIONS:**

[Click here to visit Tomás Palacios Google Scholar profile](https://scholar.google.com/citations?user=ARW3LKEAAAAJ&hl=en&oi=ao)

1. **DEPARTMENT AND INSTITUTE COMMITTEES, OTHER ASSIGNED DUTIES:**

Activity Beginning Ending

Member, MIT-Spain MISTI Advisory Board Jan. 2007 July 2008

Member of the EECS Graduate Admission Committee Dec. 2007 present

Member, MTL Process Technology Committee Jan. 2008 present

Member, MIT 2020 Committee Oct. 2008 2010

Chair, MTL Seminar Series Committee Jan. 2009 Apr. 2015

MTL Faculty Liaison with Veeco Instruments March 2009 July 2012

Member, MTL Policy Board Sept. 2010 Sept. 2012

Member, MIT-Lincoln Lab Campus Interaction Committee Sept. 2010 present

Director, MIT Center for Graphene Devices and Systems Sept. 2010 present

Member, EECS Undergraduate Experience Committee Aug. 2011 July 2012

Director, MIT GaN Energy Initiative Sept. 2011 present

Chair, MIT-Lincoln Lab Campus Interaction Committee Sept. 2013 Sep. 2018

Member, MIT Campaign Launch Committee June 2014 June 2014

Member, MTL Equipment Acquisition Committee Oct. 2014 present

Faculty Lead MIT/Masdar Institute Microsystems program Feb. 2015 2017

Member, EECS Curriculum Committee (ECC) June 2015 Sep. 2016

Member, EECS Department Head Search Committee April 2016 June 2016

Member, EECS Faculty Search Committee Sep. 2015 present

Member, EE Revitalization Committee Sept. 2016 2017

Member, EECS Department Head Search Committee June 2017 Oct. 2017

Member, Committee for Prof. Dresselhaus (Memorial Workshop) Apr. 2017 Dec. 2017

Member, EE Graduate Student Admission Committee Sept. 2018 present

Chair, EE Hardware Faculty Search Sub-Committee Sept. 2018 June 2021

Member, Committee on Nominations Sept. 2018 June 2019

Chair, Committee on Nominations Sept. 2019 June 2021

Industry Officer, Department EECS 2015 present

*Designed and implementated the new EECS Alliance program*

Director, EECS 6A MEng Thesis Program. Jun. 2015 present

*This year, thanks to the new partner companies and initiatives such as 6-AX, we received a record number of applicants (~200) between the Spring and Fall application periods. We also have a record number of partner companies (~30).*

Founder, MA Microelectronics Internship Program (MMIP) 2022 present

*In 2022, designed and implemented new Massachusetts-based summer internship program for freshmen and sophomore students (*[*https://www.ma-microelectronics.org/*](https://www.ma-microelectronics.org/) *<*[*https://www.ma-microelectronics.org/*](https://www.ma-microelectronics.org/)*>). This program received more than 300 applications in 2022, half of them from MIT students interested in semiconductors and microelectronics. We have secured more than 50 internships so far (still working to connect a few more students with companies)*

Member, DMSE-SCC Joint Faculty Search Committee 2022 present

Co-Director of the SRC SUPREME Center 2022 present

*One of the 7 SRC JUMP 2.0 Centers that have been awarded in late 2022, with Director Prof. Grace Xing (Cornell Univ), Acting as Key Personnel in impacting other PIs (5 from MIT), and coordinating the proposal writing.*

Representative, MIT Massachusetts Edge Center 2022 present

Representative, MIT on the State proposal to the Microelectronics Commons program

 2022 present

Director, Microsystems Technology Laboratories(MTL) DLC Dec 2002 present

1. **PROFESSIONAL SERVICE:**

**Activity** **Beginning Ending**

General Chair of the IEEE Symposium on VLSI Technology

and Circuits June 2021 2022

Short Course organizer of the IEEE ISPSD 202 2022

Member of Executive Committee of the IEEE Symposium on

VLSI Technology and Circuits 2018 present

Chair of the International Steering Committee of the Indium

Phosphide and Related Materials Conference 2018 2020

Director of Knowledge Transfer (NSF-Science and Technology

Center of Integrated Quantum Materials 2018 present

Technical Program Chair of the VLSI Technology Symposium June 2018 2020

General Chair of the 2018 Compound Semiconductors Week 2017 2018

Conference, which combines the 45th International Symposium

on Compound Semiconductors (ISCS), and the 30th International

Conference on Indium Phosphide and Related Materials (IPRM)

Secretary of the VLSI Technology Symposium 2016 2018

Associate Editor of the IEEE Electron Device Letters 2016 present

Chair of the International Steering Committee of the Indium

Phosphide and Related Materials Conference 2015 2016

General Co-chair of the 2016 International Workshop on

Compound Semiconductors 2015 2016

Technical Program Chair, 2015 Compound Semiconductor Week

Conference, which combines the 42nd International Symposium

on Compound Semiconductors (ISCS), and the 27th International

Conference on Indium Phosphide and Related Materials (IPRM) 2014 2015

Co-Organizer, Symposium CC in the Spring 2015 Materials

Research Society Meeting 2014 2015

Guest Editor of the March 2014 Issue of the IEEE Transactions

on Electron Devices 2012 2014

Referee: *Proceedings of the IEEE* 2011 present

Referee: *Nano Letters* 2011 present

Referee: *Nature Materials* 2011 present

Referee: *Nature Communications* 2011 present

Guest Editor, April 2013 Issue of the Proceedings of IEEE on

Emerging Graphene-Based Electronic and Photonic Devices,

Circuits and Systems 2011 2013

Reviewer of projects for the Japan Society for Promotion of Science 2010 present

Reviewer of projects for the Agency for Innovation, Belgium 2010 present

Reviewer of projects for the Defense Threat Reduction Agency 2010 present

Referee: *Science* 2010 present

Referee: *Nature* 2010 present

Member, Awards Committee of the International Symposium on

Compound Semiconductors (ISCS) 2010 2014

Member, Program Committee and Chair of the High Frequency,

High Power Subcommittee of the International Symposium on

Compound Semiconductors (ISCS) 2010 2010

Founding-member, IEEE MTT Technical Committee on

Nanoelectronics (MTT-25) 2009 present

Reviewer of projects for the European Science Foundation 2009 present

Reviewer of projects for the National Science Foundation (NSF) 2009 present

Member, Program Committee of the International Workshop on

Nitride Semiconductors 2009 present

Advisory Chair, International Conference on Advances in

Electronics and Micro-Electronics 2009 2012

Solid-State Device Research Conference (ESSDERC) 2008 present

Member, Technical Program Committee of the European 2008 present

Reviewer of projects for Spanish Ministry of Science 2008 present

Referee: *Applied Surface Science* 2008 present

Member, Program Committee of the International Conference

On Advances in Electronics and Micro-Electronics 2008 2012

Member, Program Committee of the International Electron Device

Meeting (IEDM) 2008 2009

Referee: *Journal of Crystal Growth* 2007 present

Referee: *Journal of Electronic Materials* 2007 present

Referee: *IEEE* *Solid State Electronics* 2007 present

Member, Technical Program Committee of the International

Conference for Nitride Semiconductors (ICNS) 2007 present

For Nitride Semiconductors (ICNS-7), Las Vegas, NV

Member, Program Committee of the Device Research

Conference (DRC) 2007 2009

Publication co-Chair and Guest Editor, International Conference 2007 2008

Referee: *Applied Physics Letters* 2006 present

Referee: *Journal of Applied Physics* 2006 present

Referee: *IEEE Electron Device Letters* 2006 present

Referee: *IEEE Transactions on Electron Devices* 2006 present

Referee: *IEEE Electronic Letters* 2006 present

Session chair in numerous semiconductor conferences 2006 present

Referee: *Physica Status Solidi (a, b, c)* 2005 present

Chair of the Electron Beam Lithography Committee of MIT.nano Dec. 2019 present

Chair of the Fab.nano Faculty Advocates Group Dec. 2019 present

Director of the MTL Center for Graphene Devices and Systems. Dec. 2019 present

Member of the MTL Policy Board Dec. 2019 present

Member of the MTL Grand Challenge Committee Dec. 2019 present

Director of MTL Dec 2022 present

Chair of the MIT Committee on the Undergraduate Program (CUP)

Chair of the Blue Sky Research Committee within the School of Engineering

Member, MIT-Spain MISTI Advisory Board

General Chair, VLSI Symposium on Technology and Circuits 2022 present

Member of the Steering Committee for the Indium Phosphide and Related Materials Conference, an annual international conference with ~400 attendees. As the previous conference chair, I was tasked to help and supervised the organization of the 2022 Compound Semiconductor Conference (CSW). 2022 present

Member of the IEEE Education Award Committee in the Electron Device Society

 2022 present

Guest editor of a special issue of Applied Physics Letters on power electronics

 2022 present

Director of Knowledge Transfer (NSF-Science and Technology Center of Integrated Quantum Materials) 2022 present

Associate Editor of the IEEE Electron Device Letters (top journal in my research field of semiconductor devices) 2022 present

Short course organizer for the 2022 International Symposium on Power Semiconductor Devices and IC 2022 present

Chair of the GaN Technical Program Committee of the 2022 and 2023 International Symposium on Power Semiconductor Devices and IC&#39;s 2022 present

Member of the Technical Program Committee of several international conferences, including the International Workshop on Compound Semiconductors, the International Electron Device Meeting, the International Symposium on Power Semiconductor Devices and IC&#39;s, and the International Conference on Nitride Semiconductors. 2022 present

Founding member of the Nanotechnology Subcommittee of the IEEE Microwave Theory and Techniques Society. 2022 present

Reviewer for several research proposals from the AFOSR and ARO. 2022 present

Member of the SRC Microelectronic and Advanced Packaging Technologies

(MAPT) Roadmap 2022 present

Member of the International Advisory Committee of the 12th International Conference on Electrical and Computer Engineering ICECE 2022 Dhaka, Bangladesh 2022 present

Member of the Editorial Board of the physica status solidi journal 2022 present

1. **AWARDS RECEIVED:**

Award Date

First Award in the “Madrid Science Museum Competition” 1995

International award: “Prämienprogramm zur Forderung der Ausbildung 1995

ausländischer Schüler in der deutschen Sprache. Internationales Preisträgerprogramm,” awarded by the German Ministry of Education

High School Extraordinary Award awarded by the Spanish Education 1996

Ministry to the best students in Spain

Gold Medal at the Spanish Mathematical Olympiad 1996

Representative of Spain in the 37th International Mathematical Olympiad 1996

held in Mumbai, India

Representative of Spain in the International Summer Fellowship at the 2000

European Organization for Nuclear Research (CERN)

Best Undergraduate EECS Student Award from the Polytechnic University 2000

of Madrid

Best Master’s Thesis Award from the Spanish Association of 2002

Telecommunication Engineers: “Nanotechnology for High Frequency Devices in III-N Nitrides: Applications to MSM UV-Detectors, SAW Filters and HEMT Transistors”

Salva i Campillo, awarded by the Catalan Association of Telecommunication 2003

Engineers to the “most promising European newcomer to Engineering”

Best Student Paper Award at the 63rd IEEE Device Research Conference 2005

(Santa Barbara, USA), June 2005

Young Researcher Award at the 6th International Conference on Nitride 2005

Semiconductors (Bremen, Germany)

Nominated by the IEEE for the 2006 and 2007 “New Faces of Engineering” 2005/06

Recognition Program

UCSB Lancaster Award for “the best PhD Dissertation in Mathematics, 2006

Physical Sciences and Engineering at UCSB in the period 2004-2006”

IEEE Electron Devices Society Masters Student Fellowship for “outstanding 2007

M.Sc. work” on electric field engineering of GaN HEMTs (Xu Zhao)

DARPA Young Faculty Award 2008

Best Paper Award at the International Conference on Advances in 2008

Electronics and Microelectronics

Office of Naval Research Young Investigator Award 2009

National Science Foundation (NSF) CAREER Award 2009

Best Paper Award at the 2010 Compound Semiconductors Manufacturing 2010

Technology (CS-ManTec) Conference

Young Scientist Award at the 37th International Symposium on Compound 2010

Semiconductors (Takamatsu, Japan)

MIT Emmanuel Landsman Career Development Chair 2010

National Academy of Engineering’s Frontiers of Engineering Fellow 2010

Distinguished Microwave Lecturer of the IEEE Microwave Theory and 2011/13

Techniques (MTT) Society

Presidential Early Career Award for Scientists and Engineers (PECASE) 2011

Roger A. Haken Best Student Paper Award at the 2012 International Electron 2012

 Devices Meeting (IEDM)

IEEE Electron Devices Society George Smith Award for “The best paper 2013

appearing in a fast turnaround archival publication of the IEEE Electron

Devices Society, targeted to IEEE Electron Devices Letters"

Distinguished Citizen of Jaen (my hometown in Spain, one awardee per year) 2013

“Agustin de Betancourt” Award from the Spanish Royal Academy of 2013

Engineering, the most prestigious award given in Spain to an engineer less

than 36 years old

PhD Advisor of Dr. Han Wang, who received the Jin-Au Kong Doctoral Thesis 2013

Prize for the best EE-related PhD thesis in the EECS Department at MIT

PhD Advisor of Dr. Bin Lu, who received the MTL Doctoral Dissertation 2013

Award at MIT

Fellow of the Frontiers of Engineering Program (US-EU) of the National 2014

Academy of Engineering

PhD advisor of Sameer Joglekar, who received the 2014 Best Poster Award 2014

at the International Workshop on Nitride Semiconductors

Young Scientist Best Presentation Award from the Japan Society of Applied 2014

Physics

PhD advisor of Allen Hsu, who received the 2014 MTL Doctoral Dissertation 2014

Award at MIT

Ruth and Joel Spira Teaching Award 2015

Elevation of IEEE Fellow 2016

Appointment as Editor of IEEE Electron Device Letters 2016

Choiseul Ranking of top 100 “Economic Leaders for Tomorrow” in Spain 2017

PhD advisor of Sameer Joglekar, who received Best Student Paper 2017

Award: 2016 International Conference on Compound

Semiconductor Manufacturing

Manufacturing (CS-MANTECH)  2016

Thompson Reuters Highly Cited Researcher 2017

Selected for the Choiseul 2017 Ranking of top 100 2017

“Economic Leaders for Tomorrow”

NASA Group Achievement Award for the “Nanotechnology Incubator Team” 2017

Advisor to Ahmad Zubair, who received a 2018 Runner-up Best Student Paper 2018

Award at the 2018 Compound Semiconductor Week (CSW 2018)

Selection as a Clarivate/Thompson Reuters Highly Cited Researcher 2018

Plenary speaker at the 2018 International Workshop on Nitride 2018

Semiconductors (IWN)

Co-author in best student paper Award at the 2018 IEEE International 2018

Reliability Physics Symposium (IRPS)

The olderst High School in Spain, IES Cardenal Cisneros, named 2018

its Technology Laboratory after me.

Selection as a Clarivate/Thompson Reuters Highly Cited Researcher 2019

2020 Faculty Research Innovation Fellowship 2020

2019 Electron Devices Society George E. Smith Award 2020

Honorable Mention Award (ACM Conference) on Human Factors in Computing 2021

Systems (CHI) for the paper: “KnitUI: Fabricating Textile Sensor and User

Interface with Machine Knitting”

Recognition Award for Outstanding Service to IEEE Community during 2021

the organization of the 2020 IEEE Symposia on VLSI Technology and

Circuits

Highly Cited Researchers awarded by Clarivate 2021

“The Highly Cited 2021 Researchers list identifies researchers who produced

multiple papers ranking in the top 1% by citations for their chosen field or fields

and year of publication, demonstrating significant influence among their peers

Intel’s Outstanding Researcher Award 2021

Fellow of the Fundacion Gadea, which recognizes some of the most important Spanish scientists and engineers 2022

Clarivate Highly Cited Researchers 2022

IEDM 2022 paper on &#8220;Highly-Scaled GaN Complementary Technology on GaN-on-Si Platform&#8221; has one of the ~10 papers (out of more than 200) selected for publication in IEEE Trans. of Electron Devices. 2022

1. **CURRENT ORGANIZATION MEMBERSHIP:**

Organization Offices Held

American Physical Society (APS) Member

Institute of Electrical and Electronics Engineers (IEEE) Fellow

IEEE Electron Device Society (IEEE - EDS) Fellow, Member

IEEE Microwave Theory and Techniques Society (IEEE – MTT) Member, Nanotech.

 Subcommittee

1. **PATENTS AND PATENT APPLICATIONS PENDING:**
	1. T. Palacios, L. Shen and U. K. Mishra, “Methods to Shape the Electric Field in Electron Devices, Passivate Dislocations and Point Defects, and Enhanced the Luminescence Efficiency of Optical Devices,” Application No. PCT/US2006/044362, May 2007.
	2. L. S. McCarthy, U. K. Mishra, F. Recht, and T. Palacios, “Method to fabricate III-N field effect transistors using ion implantation with reduced dopant activation and damage recovering temperature,” Application No. PCT/US2008/003139, September 2008.
	3. T. Palacios and J. W. Chung, “HEMTs Based On Si/Nitride Structures,” Application No. PCT/US2008/060200, October 2008.
	4. T. Palacios, M. H. Wong, S. Rajan and U. K. Mishra, “Polarization-induced barriers for N-face nitride-based electronics,” Application No. PCT/US2008/064906, December 2008.
	5. T. Palacios, “Improving the Performance of Nitride Semiconductors Devices,” Application No. 2014-535875, June 2011.
	6. J.W. Chung and T. Palacios, “Devices Based on SI/Nitride Structures,” Patent No. 8188459, May 29, 2012.
	7. Y. Zhang, T. Palacios, “Structure and Process Technology for High Linearity in GaN Transistors,” Application No. 14/284135, February 2013.
	8. B. Lu and T. Palacios, “Dual Gate Normally-Off Nitride Transistors,” Patent No. 8587031, November 19, 2013.
	9. Wang, Han, Yu, Lili, and T. Palacios, “Process and Apparatus for Fabrication of Layer Materials and Devices,” Application No. P201331701, November 2013.
	10. J. W. Chung, H. Wang, and T. Palacios “Fabrication Technique For Gallium Nitride Substrates,” Patent No. 8703623, April, 22, 2014.
	11. D. Chen, F. Gao, B. Lu and T. Palacios, “Vertical Nitride Semiconductor Device with Conductive Buffer Layers,” Application No. 14/396507, May 2014.
	12. B. Lu and T. Palacios, “Enhancement-Mode Nitride Transistor,” Patent No. 8759876, June 24, 2014.
	13. T. Fujishima and T. Palacios, “Aluminum Nitride Based Semiconductor Devices,” Application No. 14/367385, June 2014.
	14. T. A. B. Mojena, F.C. Gomez, J.M. Rodrigo, T. Palacios and J.P. Ayala, “New Structures for GaN Vertical Transistors,” Application No. PCT/ES2014/070859, June 2014.
	15. Y. Zhang and T. Palacios, “Dielectric Technology for Nitride Semiconductor Devices,” Application No. 62/056724, September 2014.
	16. D. Chen, F. Gao, B. Lu and T. Palacios, “Passivation Technique for Wide Bandgap Semiconductor Devices,” Application No. 14/396507, October 2014.
	17. L. Yu, H. Wang, T. Palacios, “Graphene-MOS2 Hybrid Technology for Large-Scale Two Dimensional Electronics,” Application No. PCT/US2014/063903, November 2014.
	18. T. Palacios, “Process and Apparatus for Fabrication of Layer Materials and Devices,” Application No. PCT/ES2014/070859, November 2014.
	19. J.W. Chung and T. Palacios, “High-performance Nitride Semiconductor
	Devices,” Patent No. 8921892, December 30, 2014.
	20. B. Lu, M. Sun, and T. Palacios, “Vertical Nitride Semiconductor Device,” Application No. 14/662837, March 2015.
	21. B. Lu, E. Matioli and T. Palacios, “Semiconductor Devices Having a Recessed Electrode Structure,” Patent No. 9041003, May 26, 2015.
	22. B. Lu, M. Sun, and T. Palacios, “Semiconductor Structure and Recess Formation Etch Technique,” Application No. 14/442546, May 2015.
	23. Bin Lu, Elison Matioli, and Tomas Palacios, “Diode Having Trenches in a Semiconductor Region” Patent # 9393538, March 2016.
	24. Tatsuya Fujishima, and Tomas Palacios, “Aluminum Nitride Based Semiconductor Devices” Patent# 9337301, May 2016.
	25. T. Palacios, H. Wang, L. Yu, “Electronics Including Graphene-Based Hybrid Structures,” Application No. 16686, Serial#15/034051, Patent Cooperation Treaty, Patent Application Pending filed, May 2016.
	26. U. Radhakrishna, S. Joglekar, and T. Palacios, “New Technology to Increase Transistor Linearity” Patent Application Pending, December 2016.
	27. D. S. Lee, T. Palacios, “Improving Linearity in Semiconductor Devices,” Application No. PCT/US2014/019520, February 2014. US Patent No: 97/11594, 7/18/2017.
	28. M. Dresselhaus, J.Kong, Y. Lin, X. Ling, T. Palacios, “Universal Methodology to Synthesize Diverse Two-Dimensional Heterostructures,” Application No. 18252, Serial#15/373687, Utility Patent 9812525 B2.
	29. F Gao, D Chen, B Lu, TA Palacios - , “Passivation technique for wide bandgap semiconductor devices,” US Patent 9,634,111, 2017
	30. Yuhao Zhang, and T. Palacios, “Enhancement-Mode Transistors with Increased Threshold Voltage,” US 9704959, 2017.
	31. B Lu, M. Sun, TA Palacios, “Structures for nitride vertical transistors,“ U.S. Patent Application No.: 15/388,963, 2017
	32. E de Nazareth Matioli, TA Palacios, “Reducing leakage current in semiconductor devices,” US Patent 9,911,813, 2018
	33. TA Palacios, S Jayanta-Joglekar, U Radhakrishna, “High-linearity transistors,” US Patent App. 15/849,219, 2018, *Pending*
	34. RM Radway, TA Palacios, “GaN devices fabricated via wafer bonding,” US Patent App. 15/489,083, *Pending*
	35. GaN-based CMOS Logic on a Si Substrate - by Elaine McVay, and Tomas Palacios - Patent disclosure submitted to TLO on 3/4/2019
	36. Efficient Charge Transfer Doping Technology for P-Type GaN - by Nadim Chowdhury and Tomas Palacios - Patent disclosure submitted to TLO on 4/4/2019
	37. CE Mackin, TA Palacios, “Sensor systems and related fabrication techniques,” US Patent App. 15/773,247, 2018, US Patent No: 15/773247, 11/8/2018
	38. M. Sun, TA Palacios, “Structures for nitride vertical transistors,“ U.S. Patent Application No.: 15/388,963, US Patent No: 10/256352, 4/9/2019.
	39. Tomas Apostol Palacios, Sameer Jayanta-Joglekar, Ujwal Radhakrishna, “High-linearity transistors,” US Patent office no. 10/439059, Application number15849219, 8/10/2019.
	40. Y. Lin, X. Ji, J. Kong, T. Palacios, “Ultrasensitive thermo-mechanical bolometer,” US Patent office no. 16/449410, 12/16/2019
	41. W. Gallagher, Hpstaken, M., Lee, K-T, Palacios, T. Piedra, D. Sadana, D., “Control of Current Collapse in Thin Pattern GaN,” US Patent office No. 16/219300, 1/23/2020.
	42. Bin Lu, Tomas Palacios, Ling Xia, Mohamed Azize, “Transistor structure having buried island regions,” Patent office no. 10566192, 2/18/2020.
	43. SEMICONDUCTOR DEVICE WITH ELECTRIC FIELD MANAGEMENT STRUCTURES Invention disclosure: FinFETs with Inter-Fin Ion Implantation Invention disclosure: Improved Contacts in Vertical Transistors Invention disclosure: Low-temperature synthesis of two dimensional materials Invention disclosure: High Aspect Ratio Fin/Trench Technology (2022)
2. **PROFESSIONAL REGISTRATION:**

None

1. **MAJOR NEW PRODUCTS, PROCESSES, DESIGNS, OR SYSTEMS:**

Most of the patents in section 11 have been licensed to semiconductor companies and they are being used in commercial products. For example, Finwave Semiconductor has recently announced commercial GaN-based RF and power transistors based on some of the technologies originally developed at MIT by Palacios’s group. More information can be found in Finwave's website: <http://finwavesemi.com>

1. **BOOKS**
2. **PAPERS IN REFEREED JOURNALS**
3. Palacios, T., F. Calle, E. Monroy, F. Naranjo, M.A. Sánchez-García, E. Calleja and E. Muñoz, “Wet Etching of GaN grown by molecular beam epitaxy on Si(111),” Semic. Sci. and Tech., vol. 15, pp. 996-1000, 2000.
4. Monroy, E., F. Calle, T. Palacios, J. Sánchez-Osorio, M. Verdú, F.J. Sánchez, M.T. Montojo, F. Omnès, Z. Bougrioua, and I. Moerman, “Reliability of Schottky contacts on AlGaN,” Phys. Stat. Sol. (a), 188, no. 1, pp. 367-370, 2001.
5. Jiménez Riboo, R. J., E. Rodríguez-Cañas, M. Vila, C. Prieto, F. Calle, T. Palacios, M.A. Sánchez, F. Omnès, O. Ambacher, B. Assouar and O. Elmazria, “Hypersonic characterization of sound propagation velocity in AlGaN thin films,” J. Appl. Phys., vol. 92, pp. 6868-6874, 2002.
6. Sánchez, A. M., F.J. Pacheco, S.I. Molina, P. Ruterana, F. Calle, T. Palacios, M.A. Sánchez-García, E. Calleja and R. García, “AlN Buffer Layer Thickness Influence on Inversion Domains in GaN/AlN/Si (111),” Mat. Sci. Eng. B., vol. 93, 1-3, pp. 181-184, 2002.
7. Monroy, E., F. Calle, R. Ranchal, T. Palacios, M. Verdú, F.J. Sánchez, M.T. Montojo, M. Eickhoff, F. Omnès, Z. Bougrioua and I. Moerman, “Reliability of Pt and Ni based Schottky contacts on AlGaN,” Semic. Sci. and Tech., vol. 17, no. 9, L47-L54, 2002.
8. Rubio-Zuazo, J., R.J. Jiménez-Rioboó, E. Rodríguez-Cañas, C. Prieto, T. Palacios, F. Calle, E. Monroy and M.A. Sánchez-García, “Brillouin Characterization of the Acoustic waves Phase-Velocity in AlxGa1-xN Epilayers,” Mat. Sci. Eng. B., vol. 93, 1-3, pp. 168-171, 2002.
9. Snoeys, W., T. Palacios and G. Anelli, “New NMOS Layout Structure for Radiation Tolerance,” IEEE Trans. Nuc. Sci., vol. 49, 4, pp. 1829-1833, 2002.
10. Monroy, E., T. Palacios, O. Hainaut, F. Omnès, F. Calle, and J.F. Hochedez, “Assessment of GaN metal-semiconductor-metal photodiodes for high-energy ultraviolet photodetection,” Appl. Phys. Lett., vol. 80, 17, pp. 3198-3200, 2002.
11. Palacios, T., F. Calle, E. Monroy, and E. Muñoz, “Submicron Technology for III-Nitride Semiconductors,” J. Vac. Sci. & Tech. B, vol. 20, pp. 2071-2074, 2002.
12. Palacios, T., E. Monroy, F. Calle, and F. Omnès, “High-responsivity submicron MSM UV detectors,” Appl. Phys. Lett, vol. 81, pp. 1902-1904, 2002.
13. Palacios, T., F. Calle, E. Monroy, J. Grajal, M. Eickhoff, O. Ambacher and C. Prieto, “Nanotechnology for SAW devices on AlN Epilayers,” Mat. Sci. Eng. B., vol. 93, 1-3, pp. 154-158, 2002.
14. Palacios, T., F. Calle, E. Monroy, and F. Omnès, “Novel approaches for metal-semiconductor-metal GaN UV photodetectors,” Phys. Stat. Sol., no. 1, pp. 476-479, 2002.
15. Bougrioua, Z., I. Moerman, L. Nistor, B. van Daele, E. Monroy, T. Palacios, F. Calle and M. Leroux, “Engineering of an Insulating Buffer and Use of AlN Interlayers: Two Optimisations for AlGaN/GaN HEMT-Like Structures,” Phys. Stat. Sol. (a), no. 3, pp. 93-100, 2003. [[1]](#footnote-1)\*\*
16. Buttari, D., 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 Cl2 dry etching of AlGaN/GaN structures,” Appl. Phys. Lett., vol. 83, 23, pp. 4779-4781, 2003.
17. F. Calle, T. Palacios, E. Monroy, J. Grajal, M. Verdú, Z. Bougrioua and I. Moerman, “AlGaN/GaN HEMTs: Material, Processing and Characterization,” Journal of Mat. Science: Material in Electronics, vol. 14, pp. 271-277, 2003.
18. Sanabria, C., H. Xu, T. Palacios, A. Chakraborty, S. Heikman, U.K. Mishra, and R.A. York, “Influence of Epitaxial Structure in the Noise Figure of AlGaN/GaN HEMTs,” IEEE Trans. Microwave Theory Tech., vol. 53, pp. 762-769, 2004.
19. Calle, F., T. Palacios, J. Pedros, and J. Grajal, “Surface-acoustic-wave-controlled photodetectors,” Proceedings of SPIE - the International Society for Optical Engineering, vol. 5502, no.1, pp. 439-42, 2004.
20. Palacios, T., F. Calle, and J. Grajal, “Remote Collection and Measurement of Photogenerated Carriers Swept by Surface Acoustic Waves in GaN,” Appl. Phys. Lett., vol. 84, pp. 3166-3168, 2004.
21. Calle, F., J. Pedrós, T. Palacios, and J. Grajal, “Nitride-bases Surface Acoustic Wave Devices and Applications,” Phys. Stat. Sol. (c), vol. 2, 3, pp. 976-983, 2005.
22. Palacios, T., S. Rajan, A. Chakraborty, S. Heikman, S. Keller, S.P. DenBaars, and U.K. Mishra, “Influence of the Dynamic Access Resistance in the gm and fT Linearity of AlGaN/GaN HEMTs,” IEEE Trans. On Electron Devices, vol. 52, pp. 2117-2123, 2005.
23. Palacios, T., L. Shen, S. Keller, A. Chakraborty, S. Heikman, D. Buttari, S.P. DenBaars, and U.K. Mishra, “Demonstration of a GaN-spacer High Electron Mobility Transistor with Low Alloy Scattering,” Phys. Stat. Sol. (a), vol. 202, no. 5, pp. 837-840, 2005.
24. Palacios, T., A. Chakraborty, S. Rajan, C. Poblenz, S. Keller, S.P. DenBaars, J.S. Speck, and U.K. Mishra, “High Power AlGaN/GaN HEMTs for Ka-band Applications,” Elect. Dev. Lett., vol. 26, pp. 781-783, 2005.
25. Palacios, T., L. Shen, L. Ardaravicius, S. Keller, A. Chakraborty, S. Heikman, A. Matulionis, and U.K. Mishra, “Nitride-based High Electron Mobility Transistors with a GaN Spacer,” Appl. Phys. Lett., 89, 073508, 3 pages, 2006.
26. Palacios, T., C. Suh, A. Chakraborty, S. Keller, S.P. DenBaars, and U. K. Mishra, “AlGaN/GaN Enhancement-Mode HEMT for mm-wave Applications,” Elect. Dev. Lett., vol. 27, pp. 428-430, 2006.
27. Palacios, T., Y. Dora, A. Chakraborty, C. Sanabria, S. Keller, S.P. DenBaars, and U.K. Mishra, “Optimization of AlGaN/GaN HEMTs for High Frequency Operation,” Phys. Stat. Sol. (a), vol. 203, no. 7, pp. 1845-1850 (Editor´s choice), 2006.
28. Palacios, T., A. Chakraborty, S. Heikman, S. Keller, S.P. DenBaars, and U.K. Mishra, “AlGaN/GaN High Electron Mobility Transistors with InGaN Back-barrier,” Elect. Dev. Letts., vol. 27, pp. 13-15, 2006.
29. Palacios, T., A. Chini, D. Buttari, S. Heikman, A. Chakraborty, S. Keller, S.P. DenBaars, and U.K. Mishra, “Use of Multichannel Heterostructures to Improve the Access Resistance and Linearity in GaN-Based HEMTs,” IEEE Trans. On Electron Devices, vol. 53, pp. 562-565, 2006.
30. Nidhi, T. Palacios, A. Chakraborty, S. Keller, and U.K. Mishra, “Impact of Access resistance on High Frequency Performance AlGaN/GaN HEMTs by Measurements at Low Temperatures,” Elect. Dev. Letts., vol. 27, no. 11, pp. 877-880, 2006.
31. Shen, L., T. Palacios, C. Poblenz, A. Corrion, A. Chakraborty, S. Keller, J.S. Speck, and U.K. Mishra, “Unpassivated High Power Deeply-Recessed GaN HEMTs with Fluorine Plasma Surface Treatment,” Electron Dev. Letts., vol. 27, 4, pp. 214-216, 2006.
32. Corrion, A., C. Poblenz, T. Palacios, S. Rajan, U.K. Mishra, and S.J. Speck, “Review of recent developments in growth of AlGaN/GaN high-electron mobility transistors on 4H-SiC by plasma-assisted molecular beam epitaxy,” IEICE Trans. on Electronics Special Section on Heterostructure Microelectronics, vol. E89-C, no. 7, pp. 906-912, 2006.
33. Wong, M. H., S. Rajan, R.M. Chu, T. Palacios, C.S. Suh, L.S. McCarthy, S. Keller, J.S. Speck, and U.K. Mishra, “N-face high electron mobility transistors with a GaN-spacer,” Phys. Stat. Sol. (a), 204, no. 6, pp. 2049-2053, 2007.
34. Wong, M. H., Y. Pei, T. Palacios, L. Shen, A. Chakraborty, L.S. McCarthy, S. Keller, S. P. DenBaars, J.S. Speck, and U.K. Mishra, “Low non-alloyed ohmic contact resistance to nitride HEMTs using N-face growth,” Appl. Phys. Letts., 91, 232103, 3 pages, 2007.
35. Pei, Y., L. Shen, T. Palacios, N.A. Fichtenbaum, L.S. McCarthy, S. Keller, S.P. DenBaars, and U.K. Mishra, “Study of the n+ GaN cap in AlGaN/GaN High Electron Mobility Transistors with Reduced Source-Drain Resistance,” Jap. J. of Appl. Phys., vol. 46, L842, 3 pages, 2007. [[2]](#footnote-2)\*\*
36. Rajan, S., U.K. Mishra, and T. Palacios, “AlGaN/GaN HEMTs: Recent Developments and Future Directions,” International Journal of High Speed Electronics and Systems, vol. 18, pp. 913-922, 2008.
37. Chung, J.W., E.L. Piner, and T. Palacios, “Effect of Gate Leakage on the Subthreshold Characteristics of AlGaN/GaN HEMTs,” Electron Dev. Letts., vol. 29, pp. 1196-1198, 2008.\*\*
38. Chung, J.W., X. Zhao, Y. Wu, J. Singh and T. Palacios, “Effect of image charges in the drain delay of AlGaN/GaN high electron mobility transistors,” Appl. Phys. Letts., vol. 92, 093502, 3 pages, 2008.\*\*
39. Palacios, T., “Beyond the AlGaN/GaN HEMT: New Concepts for High-Speed Transistors,” Phys. Stat. Sol. (a), vol. 206, pp. 1145-1148, 2009. (Invited)\*\*[[3]](#footnote-3)
40. Palacios, T., J.W. Chung, O. Saadat, and F. Mieville, “GaN and Digital Electronics: A Way out of Moore’s Law?” Phys. Stat. Sol. (c), vol. 6, pp. 1361-1364, 2009. (Invited)\*\*
41. Chung, J.W., Edwin L. Piner, and T. Palacios, “N-face GaN/AlGaN HEMTs Fabricated through Layer Transfer Technology,” Electron Dev. Letts., vol. 30, pp. 113-116, 2009.\*\*
42. Wang, H., D. Nezich, J. Kong, and T. Palacios, “Graphene Frequency Multipliers,” Electron Dev. Letts., vol. 30, pp. 547-549, 2009.\*\* [[4]](#footnote-4)\*\*
43. Marino, F. A., N. Faralli, D. Guerra, T. Palacios, D.K. Ferry, S.M. Goodnick, and M. Saraniti, “Effects of Threading Dislocations on AlGaN/GaN High Electron Mobility Transistors,” IEEE Trans. On Electron Devices, vol. 57, pp. 353-360, 2010. \*\*
44. Chung, J. W., Saadat, O. I., Guo, S., and T. Palacios, “Gate-Recessed InAlN/GaN HEMTs on SiC Substrate with Al2O3 Passivation,” Electron Dev. Letts., vol. 30, pp. 904-906, 2009. \*\*
45. Chung, J. W., Lee, J.-K., Piner, E. L., and T. Palacios, “Seamless On-Wafer Integration of Si (100) MOSFETs and GaN HEMTs,” Electron Dev. Letts., vol. 30, pp. 1015-1017, 2009.[[5]](#footnote-5)\*\*
46. Saadat, O. I., Chung, J. W., Piner, E., and T. Palacios, “Gate-First AlGaN/GaN HEMT Technology for High Frequency Applications,” Electron Dev. Letts, vol. 30, pp. 1254-1256, 2009.\*\*
47. Chung, J.W., W. E. Hoke, E. M. Chumbes, and T. Palacios, “AlGaN/GaN HEMT with 300-GHz fmax,” Electron Dev. Letts., vol. 31, pp. 195-197, 2010.\*\*
48. Lu, B., E. L. Piner, and T. Palacios, “Schottky Drain Technology for High Voltage AlGaN/GaN HEMTs on Si Substrates,” Electron Dev. Letts., vol. 31, pp. 302-304, 2010.\*\*
49. Wang, H., J. W. Chung, X. Gao, S. Guo, and T. Palacios, “Al2O3 Passivated InAlN/GaN HEMTs on SiC Substrate with Record Current Density and Transconductance,” Physica Status Solidi (c), vol. 7, pp. 2440-2444, 2010.\*\*
50. Simms, R. J. T., F. Gao, Y. Pei, T. Palacios, U. K. Mishra, and M. Kuball, “Electric Field Distribution in AlGaN/GaN HEMTs Investigated by Electroluminescence,” Appl. Phys. Letts., vol. 97, 033502, 3 pages, 2010.\*\*
51. Joh, J., F. Gao, T. Palacios, and J. A. del Alamo, “A model for the critical voltage for electrical degradation of GaN high electron mobility transistors,” Microelectronics Reliability, vol. 50, pp. 676-773, 2010.\*\*
52. Wang, H., A. Hsu, J. Wu, J. Kong, and T. Palacios, “Graphene-based Ambipolar RF Mixers,” Electron Dev. Letts., vol. 31, pp. 906-908, 2010. \*\*
53. Azize, M., and T. Palacios, “Effect of substrate-induced strain in the transport properties of AlGaN/GaN heterostructures,” J. of Appl. Phys., vol. 108, 023707, 4 pages, 2010.\*\*
54. Guo, S., X. Gao, D. Gorka, J. W. Chung, H. Wang, T. Palacios, A. Crespo, J. K. Gillespie, K. Chabak, M. Trejo, V. Miller, M. Bellot, G. Via, M. Kossler, H. Smith, and D. Tomich, “AlInN HEMT grown on SiC by metalorganic vapor phase epitaxy for millimeter-wave applications,” physica status solidi (a), vol. 207, pp. 1348-1352, 2010.\*\*
55. Makaram, P., J. Joh, J. del Alamo, T. Palacios, and C. V. Thompson, “Evolution of Structural Defects Associated with Electrical Degradation in AlGaN/GaN HEMTs,” Appl. Phys. Letts, vol. 96, 233509, 3 pages, 2010.\*\*
56. Lu, B. and T. Palacios, “High Breakdown (>1500 V) AlGaN/GaN HEMTs by Substrate-Transfer Technology,” Electron Dev. Letts., vol. 31, pp. 951-953, 2010.\*\*
57. Lu, B., O. I. Saadat and T. Palacios, “High-Performance Integrated Dual-Gate AlGaN/GaN Enhancement-Mode Transistor,” Electron Dev. Letts., vol. 31, pp. 990-992, 2010.\*\*
58. Tirado, J. M., D. Nezich, X. Zhao, J. W. Chung, J. Kong, and T. Palacios, “Study of Transport Properties in Graphene Monolayer Flakes on SiO2 Substrates,” J. Vac. Sci. Technol. B, vol. 28 (6), pp. C6D11-14, 2010.\*\*
59. Azize, M., and T. Palacios, “Top-down Fabrication of AlGaN/GaN Nanoribbons,” Appl. Phys. Letts., vol. 98 (4), pp. 042103, 3 pages, 2011.[[6]](#footnote-6)\*\*
60. Wang, H., A. Hsu, J. Kong, D. Antoniadis, and T. Palacios, “A Compact Virtual Source Current-Voltage Model for Top and Back-Gated Graphene Field Effect Transistors,” IEEE Trans. Of Electron Dev., vol. 58 (5), pp. 1523-1533, 11 pages, 2011.\*\*
61. Lee, D. S., X. Gao, S. Guo, and T. Palacios, “InAlN/GaN HEMTs with AlGaN Back-Barriers,” Electron Dev. Letts., vol. 32 (5), pp. 617-619, 3 pages, 2011.\*\*
62. Lee, D. S., J. Chung, H. Wang, X. Gao, S. Guo, P. Fay, and T. Palacios, “245 GHz InAlN/GaN HEMTs with Oxygen Plasma Treatment,” Electron Dev. Letts., vol. 32 (6), pp. 755-757, 3 pages, 2011.\*\*
63. Lee, H.-S., D. S. Lee, and T. Palacios, “AlGaN/GaN High Electron Mobility Transistors Fabricated Through a Au-free Technology,” Electron Dev. Letts., vol. 32 (5), pp. 623-625, 3 pages, 2011.\*\*
64. Killat, N., M. Tapajna, M. Faqir, T. Palacios, and M. Kuball, “Evidence for Impact Ionization in AlGaN/GaN HEMTs with InGaN back-barrier,” Electronic Letters, vol. 47 (6), pp. 405-406, 2 pages, 2011.\*\*
65. Ryu, K. K., J. Roberts, E. Piner, and T. Palacios, “Thin-body N-face GaN Transistor Fabricated by Direct Wafer Bonding,” Electron Dev. Letts., vol. 32 (7), pp. 895-897, 3 pages, 2011.\*\*
66. Hsu, A., H. Wang, K. K. Kim, J. Kong, and T. Palacios, “High Frequency Performance of Graphene Transistors Grown by Chemical Vapor Deposition for Mixed Signal Applications,” Jap. J. of Appl. Phys., vol. 50(7), pp. 070114, 4 pages, 2011.\*\*
67. Azize, M., O. Saadat, A. Hsu, M. Smith, S. Guo, S. Gradecak, and T. Palacios, “High Electron Mobility Transistors Based on InAlN/GaN Nano-Ribbons,” IEEE Electron Device Letters, vol. 32(12), pp. 1680-1682, Dec. 2011.\*\*
68. Hsu, A., H. Wang, K. K. Kim, J. Kong, and T. Palacios, “Impact of Graphene Interface Quality on Contact Resistances and RF Device Performance,” Electron Device Letters, vol. 32(8), pp. 1008-1010, 3 pages, 2011.\*\*
69. Xiong C., W. Pernice, K. K. Ryu, C. Schuck, K. Y. Fong, T. Palacios, and H. X. Tang, “Integrated GaN photonic circuits on silicon (100) for second harmonic generation,” Optics Express, vol. 19 (11), pp. 10462-10470, 9 pages, 2011.[[7]](#footnote-7)\*\*
70. Wang, H., T. Taychatanapat, A. Hsu, P. Jarillo-Herrero, and T. Palacios, “BN/Graphene/BN Transistors for RF Applications,” Electron Device Letters, vol. 32(9), pp. 1209-1211, 3 pages, 2011.\*\*
71. Lee, D. S., X. Gao, S. Gao, D. Kopp, P. Fay, and T. Palacios, “300-GHz InAlN/GaN HEMTs With InGaN Back-Barrier,” IEEE Electron Device Letters, vol. 32(11), pp. 1525-1527, Nov. 2011.\*\*
72. Palacios, T., “Graphene Electronics: Thinking Outside the Si Box,” Nature Nanotechnology, vol. 6, pp. 464-465, 2 pages, 2011. (Invited)\*\*
73. Lu, B., E. Matioli, and T. Palacios, “Tri-Gate Normally-off GaN Power MISFET,”
Electron Dev. Letts. Vol. 33, pp. 360-362, 2 pages, 2012.\*\*
74. Lee, H. S., K. Ryu, M. Sun, and T. Palacios, “Wafer-level Heterogeneous Integration of GaN HEMTs and Si (100) MOSFETs,” Electron Dev. Letts., vol. 33, pp. 200-202, 3 pages, 2012.\*\*
75. Tapajna, M., S. W. Kaun, M. H. Wong, F. Gao, T. Palacios, U. K. Mishra, J. S. Speck, M. Kuball, “Influence of Threading Dislocations Density on Early Degradation in AlGaN/GaN HEMTs,” Appl. Phys. Letts., vol. 99, pp. 223501, 3 pages, 2011.\*\*
76. Gao, F., B. Lu, L. Li, S. Kaun, J. S. Speck, C.V. Thompson, and T. Palacios, “Role of Oxygen in the OFF-State Degradation of AlGaN/GaN HEMTs,” Appl. Phys. Letts., vol. 99, pp. 223506, 2012.\*\*
77. Palacios, T., “The coming of age of nanowire electronics,” Nature, vol. 481, pp. 152-153, Jan. 2012. (Invited)\*\*
78. DasGupta, S., L. B. Biedermann, M. Sun, R. Kaplan, M. Marinella, K. R. Zavadil, S. Atcitty, and T. Palacios, “Role of Barrier Structure in Current Collapse of AlGaN/GaN High Electron Mobility Transistors,” Appl. Phys. Letts., vol. 101, pp. 243506, 2012.\*\*
79. Wang, X. W., O. I. Saadat, B. Xi, X. B. Lou, R. J. Molnar, T. Palacios, and R. G. Gordon, “Atomic layer deposition of Sc2O3 for passivating AlGaN/GaN high electron mobility transistor devices,” Appl. Phys. Letts., vol. 101, pp. 232109, 2012.\*\*[[8]](#footnote-8)\*\*
80. Kim, K. K., A. Hsu, X. T. Jia, S. M. Kim, Y. M. Shi, M. Dresselhaus, T. Palacios, and J. Kong, “Synthesis and Characterization of Hexagonal Boron Nitride Film as a Dielectric Layer for Graphene Devices,” ACS Nano, vol. 6, pp. 8583-8590, 2012.\*\*
81. Gao, F., D. Chen, B. Lu, H. L. Tuller, C. V. Thompson, S. Keller, U. K. Mishra, and T. Palacios, “Impact of Moisture and Fluorocarbon Passivation on the Current Collapse of AlGaN/GaN HEMTs,” IEEE Electron Dev. Letts., vol. 33, pp. 1378-1380, 2012.\*\*
82. Jones, E. J., M. Azize, M. J. Smith, T Palacios and S. Gradecak, “Correlating stress generation and sheet resistance in InAlN/GaN nanoribbon high electron mobility transistors,” Appl. Phys. Letts., vol. 101, pp. 113101, 2012.\*\*
83. Wang, H., L. L. Yu, Y. H. Lee, Y. M. Shi, A. Hsu, M. L. Chin, L. J. Li, M. Dubey, J. Kong, and T. Palacios, “Integrated Circuits Based on Bilayer MoS2 Transistors,” Nano Letters, vol. 12, pp. 4674-4680, 2012.\*\*
84. DasGupta, S., M. Sun, A. Armstrong, R. J. Kaplar, M. J. Marinella, J. B. Stanley, S. Atcitty, and T. Palacios, “Slow Detrapping Transients due to Gate and Drain Bias Stress in High Breakdown Voltage AlGaN/GaN HEMTs,” IEEE Trans. on Elect. Dev., vol. 59, pp. 2115-2122, 2012.\*\*
85. Sun, M.,H.-S. Lee, B. Lu, D. Piedra, and T. Palacios, “Comparative Breakdown Analysis of Mesa and Ion Implantation Isolated AlGaN/GaN HEMTs on Si Substrate,” Appl. Phys. Express, vol. 5, pp. 074202, 2012.[[9]](#footnote-9)\*\*
86. Lee, D. S., O. Laboutin, Y. Cao, W. Johnson, E. Beam, A. Ketterson, M. Schuette, P. Saunier, and T. Palacios, “Impact of Al2O3 Passivation Thickness in Highly Scaled GaN HEMTs,” IEEE Electron Dev. Letts., vol. 33, pp. 976-978, 2012.\*\*
87. Lee, H. S., D. Piedra, M. Sun, X. Gao, S. P. Guo, T. Palacios, “3000 V 4.3 cm2 InAlN/GaN MOSHEMTs with AlGaN Back Barrier,” IEEE Electron Dev. Letts., vol. 33, pp. 982-984, 2012.\*\*
88. Wang, H., A. L. Hsu, and T. Palacios, “Graphene Electronics for RF Applications,” IEEE Microwave Magazine, vol. 13, pp. 114-125, 2012. (Invited)\*\*
89. Ervin, M. H., B. S. Miller, B. Hanrahan, B. Mailly, and T. Palacios, “A comparison of single-wall carbon nanotube electrochemical capacitor electrode fabrication methods,” Electrochimica Acta, vol 65, pp. 37-43, 2012.\*\*
90. Gwynne, P., and T. Palacios, “Q&A Tomás Palacios Taking Charge,” Nature, vol. 483, pp. S40-S41, 2012.\*\*
91. Hodges, C.,N. Killal, S. W. Kaun, M. H. Wong, F. Gao, T. Palacios, U. K. Mishra, J. S. Speck, D. Wolverson, and M. Kuball, “Optical investigation of degradation mechanisms in AlGaN/GaN high electron mobility transistors: Generation of non-radiative recombination centers,” Appl. Phys. Letts., vol. 100, pp. 112106, 2012.\*\*
92. Hoke, W. E., R. V. Chelakara, J. P. Bettencourt, T. E. Kazior, J. R. LaRoche, T. D. Kennedy, J. J. Mosca, A. Torabi, A. J. Kerr, H.-S. Lee, and T. Palacios, “Monolithic Integration of Silicon CMOS and GaN Transistors in a Current Mirror Circuit,” J. of Vac. Science and Tech. B, vol. 30, pp. 02B101, 2012.\*\*
93. Wang, H., A. Hsu, D. S. Lee, K. K. Kim, J. Kong, and T. Palacios, “Delay Analysis of Graphene Field-Effect Transistors,” IEEE Electron Dev. Letts., vol. 33, pp. 324-326, 2012.\*\*
94. Kim, K. K., A. Hsu, X. T. Jia, S. M. Kim, Y. S. Shi, M. Hofmann, D. Nezich, J. F. Rodriguez-Nieva, M. Dresselhaus, T. Palacios, and J. Kong, “Synthesis of Monolayer Hexagonal Boron Nitride on Cu Foil Using Chemical Vapor Deposition,” Nano Letters, vol. 12, pp. 161-166, 2012.\*\*[[10]](#footnote-10)\*\*
95. Araghchini, M., J. Chen, …, T. Palacios (authors in alphabetical order), “A Technology Overview of the PowerChip Development Program,” IEEE Trans. On Power Electronics, vol. 28, pp. 4182-4201, 2013.\*\*
96. Lu, B., M. Sun, and T. Palacios, “An Etch-Stop Barrier Structure for GaN High Electron Mobility Transistors,” IEEE Electron Dev. Letts., vol. 34, pp. 369-371, 2013.\*\*
97. Kim, S. M., A. Hsu, P. T. Araujo, Y. H. Lee, T. Palacios, M. Dresselhaus, J. C. Idrobo, K. K. Kim, and J. Kong, “Synthesis of Patched or Stacked Graphene and hBN Flakes: A Route to Hybrid Structure Discovery,” Nano Letters, vol. 13, pp. 933-941, 2013.\*\*
98. Hsu, A., H. Wang, Y. C. Shin, B. Mailly, X. Zhang, L .Yu, Y. Shi, Y. H. Lee, M. Dubey, K. K. Kim, J. Kong, and T. Palacios, “Large-Area 2D Electronics: Materials, Technology, and Devices,” Proceedings of the IEEE, vol. 101, pp. 1638-1652, 2013. (Invited)\*\*
99. Lee, D. S., O. Laboutin, Y. Cao, W. Johnson, E. Beam, A. Ketterson, M. Schuette, P. Saunier, D. Kopp, P. Fay, and T. Palacios, “317 GHz InAlGaN/GaN HEMTs with extremely low on-resistance,” in Physica Status Solidi C: Current Topics in Solid State Physics, Vol 10,, vol. 10, S. Krishna and E. Plis, Eds. Weinheim: Wiley-V C H Verlag Gmbh, pp. 827–830, 2013,. \*\*
100. Shin, S. R., S. M. Jung, M. Zalabany, K. Kim, P. Zorlutuna, S. B. Kim, M. Nikkhah, M. Khabiry, M. Azize, J. Kong, K. Wan, T. Palacios, M. R. Dokmeci, H. Bae, X. Tang, and A. Khademhosseini, “Carbon-Nanotube-Embedded Hydrogel Sheets for Engineering Cardiac Constructs and Bioactuators,” ACS Nano, vol. 7, no. 3, pp. 2369–2380, Mar. 2013.\*\*
101. Sun, X., O. I. Saadat, K. S. Chang-Liao, T. Palacios, S. Cui, and T. P. Ma, “Study of gate oxide traps in HfO2/AlGaN/GaN metal-oxide-semiconductor high-electron-mobility transistors by use of ac transconductance method,” Appl. Phys. Letts., vol. 102, no. 10, Mar. 2013.\*\*
102. Lu, B., M. Sun, and T. Palacios, “An Etch-Stop Barrier Structure for GaN High-Electron-Mobility Transistors,” IEEE Elec. Dev. Lett., vol. 34, no. 3, pp. 369–371, Mar. 2013. \*\*
103. Kim, S. M., A. Hsu, P. T. Araujo, Y.-H. Lee, T. Palacios, M. Dresselhaus, J.-C. Idrobo, K. K. Kim, and J. Kong, “Synthesis of Patched or Stacked Graphene and hBN Flakes: A Route to Hybrid Structure Discovery,” Nano Letters, vol. 13, no. 3, pp. 933–941, Mar. 2013. \*\*
104. Lee, Y.-H., L. Yu, H. Wang, W. Fang, X. Ling, Y. Shi, C.-T. Lin, J.-K. Huang, M.-T. Chang, C.-S. Chang, M. Dresselhaus, T. Palacios, L.-J. Li, and J. Kong, “Synthesis and Transfer of Single-Layer Transition Metal Disulfides on Diverse Surfaces,” Nano Letters, vol. 13, no. 4, pp. 1852–1857, Apr. 2013.\*\*
105. Fang, W., A. L. Hsu, R. Caudillo, Y. Song, A. G. Birdwell, E. Zakar, M. Kalbac, M. Dubey, T. Palacios, M. S. Dresselhaus, P. T. Araujo, and J. Kong, “Rapid Identification of Stacking Orientation in Isotopically Labeled Chemical-Vapor Grown Bilayer Graphene by Raman Spectroscopy,” Nano Letters, vol. 13, no. 4, pp. 1541–1548, Apr. 2013. [[11]](#footnote-11)\*\*
106. Zhang, Y., M. Sun, S. J. Joglekar, T. Fujishima, and T. Palacios, “Threshold voltage control by gate oxide thickness in fluorinated GaN metal-oxide-semiconductor high-electron-mobility transistors,” Appl. Phys. Letts., vol. 103, no. 3, Jul. 2013. \*\*
107. Zhang, Y., M. Sun, Z. Liu, D. Piedra, H.-S. Lee, F. Gao, T. Fujishima, and T. Palacios, “Electrothermal Simulation and Thermal Performance Study of GaN Vertical and Lateral Power Transistors,” IEEE Trans, on Elec. Dev., vol. 60, no. 7, pp. 2224–2230, Jul. 2013.\*\*
108. Lee, D. S., O. Laboutin, Y. Cao, J. W. Johnson, E. Beam, A. Ketterson, M. L. Schuette, P. Saunier, and T. Palacios, “Device Delay in GaN Transistors Under High Drain Bias Conditions,” IEEE Elec. Dev. Lett., vol. 34, no. 7, pp. 849–851, Jul. 2013.\*\*
109. Towe, E., T. Palacios, and M. Suemitsu, “Emerging Graphene-Based Electronic & Photonic Devices, Circuits, and Systems,” Proc. of the IEEE, vol. 101, no. 7, SI, pp. 1518–1521, Jul. 2013. \*\*[[12]](#footnote-12)\*\*
110. Gonzalez-Posada, F., M. Azize, X. Gao, S. Guo, E. Monroy, and T. Palacios, “Photocurrent Phenomena in Nanoribbon InAlN/GaN High Electron Mobility Transistors,” Jap. J. of Appl. Phys., vol. 52, no. 8, 2, SI, Aug. 2013.\*\*
111. Mailly-Giacchetti, B., A. Hsu, H. Wang, V. Vinciguerra, F. Pappalardo, L. Occhipinti, E. Guidetti, S. Coffa, J. Kong, and T. Palacios, “pH sensing properties of graphene solution-gated field-effect transistors,” J. Appl. Phys, vol. 114, no. 8, Aug. 2013.\*\*
112. Lee, D. S., H. Wang, A. Hsu, M. Azize, O. Laboutin, Y. Cao, J. W. Johnson, E. Beam, A. Ketterson, M. L. Schuette, P. Saunier, and T. Palacios, “Nanowire Channel InAlN/GaN HEMTs With High Linearity of g(m) and f(T),” IEEE Elect. Dev. Lett., vol. 34, no. 8, pp. 969–971, Aug. 2013. \*\*
113. Zhang, X., A. Hsu, H. Wang, Y. Song, J. Kong, M. S. Dresselhaus, and T. Palacios, “Impact of Chlorine Functionalization on High-Mobility Chemical Vapor Deposition Grown Graphene,” ACS NANO, vol. 7, no. 8, pp. 7262–7270, Aug. 2013.\*\*
114. Fujishima, T., S. Joglekar, D. Piedra, H.-S. Lee, Y. Zhang, A. Uedono, and T. Palacios, “Formation of low resistance ohmic contacts in GaN-based high electron mobility transistors with BCl3 surface plasma treatment,” Appl. Phys. Letts., vol. 103, no. 8, Aug. 2013.\*\*
115. Sakaguchi, J., T. Araki, T. Fujishima, E. Matioli, T. Palacios, and Y. Nanishi, “Thickness Dependence of Structural and Electrical Properties of Thin InN Grown by Radio-Frequency Plasma-Assisted Molecular Beam Epitaxy,” Jap. J. of Appl. Phys., vol. 52, no. 8, 2, SI, Aug. 2013. [[13]](#footnote-13)\*\*
116. Liu, Z., M. Sun, H.-S. Lee, M. Heuken, and T. Palacios, “AlGaN/AlN/GaN High-Electron-Mobility Transistors Fabricated with Au-Free Technology,” Appl. Phys. Exp., vol. 6, no. 9, Sep. 2013. \*\*
117. Kim, S. M., A. Hsu, Y.-H. Lee, M. Dresselhaus, T. Palacios, K. K. Kim, and J. Kong, “The effect of copper pre-cleaning on graphene synthesis,” Nanotechnology, vol. 24, no. 36, Sep. 2013.\*\*
118. Ghione, G., K. J. Chen, T. Egawa, G. Meneghesso, T. Palacios, and R. Quay, “Special Issue on GaN Electronic Devices,” IEEE Trans. on Elec. Dev., vol. 60, no. 10, SI, pp. 2975–2981, Oct. 2013.\*\*
119. Matioli, E.,B. Lu, and T. Palacios, “Ultralow Leakage Current AlGaN/GaN Schottky Diodes With 3-D Anode Structure,” IEEE Trans. on Elec. Dev., vol. 60, no. 10, SI, pp. 3365–3370, Oct. 2013.\*\*
120. Jones, E., D. Cooper, J.-L. Rouviere, A. Beche, M. Azize, T. Palacios, and S. Gradecak, “Towards rapid nanoscale measurement of strain in III-nitride heterostructures,” Appl. Phys. Lett., vol. 103, no. 23, p. 231904, Dec. 2013.\*\*
121. Samsel, I. K., E. X. Zhang, N. C. Hooten, E. D. Funkhouser, W. G. Bennett, R. A. Reed, R. D. Schrimpf, M. W. McCurdy, D. M. Fleetwood, R. A. Weller, G. Vizkelethy, X. Sun, T.-P. Ma, O. I. Saadat, and T. Palacios, “Charge Collection Mechanisms in AlGaN/GaN MOS High Electron Mobility Transistors,” IEEE Trans. Nucl. Sci., vol. 60, no. 6, pp. 4439–4445, Dec. 2013. [[14]](#footnote-14)\*\*
122. Sun, X., O. I. Saadat, J. Chen, E. X. Zhang, S. Cui, T. Palacios, D. M. Fleetwood, and T. P. Ma, “Total-Ionizing-Dose Radiation Effects in AlGaN/GaN HEMTs and MOS-HEMTs,” IEEE Trans. Nucl. Sci., vol. 60, no. 6, pp. 4074–4079, Dec. 2013. \*\*
123. Gao, F., S. C. Tan, J. A. del Alamo, C. V. Thompson, and T. Palacios, “Impact of Water-Assisted Electrochemical Reactions on the OFF-State Degradation of AlGaN/GaN HEMTs,” IEEE Trans. Electron Devices, vol. 61, no. 2, pp. 437–444, Feb. 2014.\*\*
124. Wong, J. I., L. Wang, Y. Shi, T. Palacios, J. Kong, X. Dong, and H. Y. Yang, “Real-time, sensitive electrical detection of Cryptosporidium parvum oocysts based on chemical vapor deposition-grown graphene,” Appl. Phys. Lett., vol. 104, no. 6, p. 063705, Feb. 2014.\*\*
125. Uedono, A., T. Fujishima, Y. Cao, Y. Zhang, N. Yoshihara, S. Ishibashi, M. Sumiya, O. Laboutin, W. Johnson, and T. Palacios, “Optically active vacancies in GaN grown on Si substrates probed using a monoenergetic positron beam,” Appl. Phys. Lett., vol. 104, no. 8, p. 082110, Feb. 2014.\*\*
126. Gao, F., S. C. Tan, J. A. del Alamo, C. V. Thompson, and T. Palacios, “Impact of Water-Assisted Electrochemical Reactions on the OFF-State Degradation of AlGaN/GaN HEMTs,” IEEE Trans. Electron Devices, vol. 61, no. 2, pp. 437–444, Feb. 2014.\*\*
127. Herring, P. K., A. L. Hsu, N. M. Gabor, Y. C. Shin, J. Kong, T. Palacios, and P. Jarillo-Herrero, “Photoresponse of an Electrically Tunable Ambipolar Graphene Infrared Thermocouple,” Nano Lett., vol. 14, no. 2, pp. 901–907, Feb. 2014.\*\*
128. Gao, F., D. Chen, H. L. Tuller, C. V. Thompson, and T. Palacios, “On the redox origin of surface trapping in AlGaN/GaN high electron mobility transistors,” J. Appl. Phys., vol. 115, no. 12, p. 124506, Mar. 2014.\*\*
129. Wang, L., Y. Wang, J. I. Wong, T. Palacios, J. Kong, and H. Y. Yang, “Functionalized MoS2 Nanosheet-Based Field-Effect Biosensor for Label-Free Sensitive Detection of Cancer Marker Proteins in Solution,” Small, vol. 10, no. 6, pp. 1101–1105, Mar. 2014.\*\*
130. Imada, T., D. Piedra, T. Kikkawa, and T. Palacios, “Correlation of on-wafer 400 V dynamic behavior and trap characteristics of GaN-HEMTs,” Phys. Status Solidi A-Appl. Mat., vol. 211, no. 4, pp. 779–783, Apr. 2014.\*\*
131. Fang, W., A. L. Hsu, Y. Song, A. G. Birdwell, M. Amani, M. Dubey, M. S. Dresselhaus, T. Palacios, and J. Kong, “Asymmetric Growth of Bilayer Graphene on Copper Enclosures Using Low-Pressure Chemical Vapor Deposition,” ACS Nano, vol. 8, no. 6, pp. 6491–6499, Jun. 2014.\*\*
132. Yu, L., Y.-H. Lee, X. Ling, E. J. G. Santos, Y. C. Shin, Y. Lin, M. Dubey, E. Kaxiras, J. Kong, H. Wang, and T. Palacios, “Graphene/MoS2 Hybrid Technology for Large-Scale Two-Dimensional Electronics,” Nano Lett., vol. 14, no. 6, pp. 3055–3063, Jun. 2014.\*\*
133. Zhang, Y., M. Sun, D. Piedra, M. Azize, X. Zhang, T. Fujishima, and T. Palacios, “GaN-on-Si Vertical Schottky and p-n Diodes,” IEEE Electron Device Lett., vol. 35, no. 6, pp. 618–620, Jun. 2014. \*\*
134. Araki, T., S. Uchimura, J. Sakaguchi, Y. Nanishi, T. Fujishima, A. Hsu, K. K. Kim, T. Palacios, A. Pesquera, A. Centeno, and A. Zurutuza, “Radio-frequency plasma-excited molecular beam epitaxy growth of GaN on graphene/Si(100) substrates,” Appl. Phys. Express, vol. 7, no. 7, p. 071001, Jul. 2014.\*\*
135. Hsu, A. L., R. J. Koch, M. T. Ong, W. Fang, M. Hofmann, K. K. Kim, T. Seyller, M. S. Dresselhaus, E. J. Reed, J. Kong, and T. Palacios, “Surface-Induced Hybridization between Graphene and Titanium,” ACS Nano, vol. 8, no. 8, pp. 7704–7713, Aug. 2014.\*\*
136. Lemme, M. C., L.-J. Li, T. Palacios, and F. Schwierz, “Two-dimensional materials for electronic applications,” MRS Bull., vol. 39, no. 8, pp. 711–718, Aug. 2014. \*\*
137. Uedono, A., T. Fujishima, D. Piedra, N. Yoshihara, S. Ishibashi, M. Sumiya, O. Laboutin, W. Johnson, and T. Palacios, “Annealing behaviors of vacancy-type defects near interfaces between metal contacts and GaN probed using a monoenergetic positron beam,” Appl. Phys. Lett., vol. 105, no. 5, p. 052108, Aug. 2014.\*\*
138. Park, H., S. Chang, X. Zhou, J. Kong, T. Palacios, and S. Gradecak, “Flexible Graphene Electrode-Based Organic Photovoltaics with Record-High Efficiency,” Nano Lett., vol. 14, no. 9, pp. 5148–5154, Sep. 2014.\*\*[[15]](#footnote-15)\*\*
139. Rakheja, S., Y. Wu, H. Wang, T. Palacios, P. Avouris, and D. A. Antoniadis, “An Ambipolar Virtual-Source-Based Charge-Current Compact Model for Nanoscale Graphene Transistors,” IEEE Trans. Nanotechnology., vol. 13, no. 5, pp. 1005–1013, Sep. 2014.\*\*
140. Kobayashi, K., S. Hatakeyama, T. Yoshida, Y. Yabe, D. Piedra, T. Palacios, T. Otsuji, and T. Suemitsu, “Improved breakdown voltage and RF characteristics in AlGaN/GaN high-electron-mobility transistors achieved by slant field plates,” Appl. Phys. Express, vol. 7, no. 9, p. 096501, Sep. 2014.\*\*
141. Lin, Y., X. Ling, L. Yu, S. Huang, A. L. Hsu, Y.-H. Lee, J. Kong, M. S. Dresselhaus, and T. Palacios, “Dielectric Screening of Excitons and Trions in Single-Layer MoS2,” Nano Lett., vol. 14, no. 10, pp. 5569–5576, Oct. 2014. \*\*
142. Fiori, G., F. Bonaccorso, G. Iannaccone, T. Palacios, D. Neumaier, A. Seabaugh, S. K. Banerjee, and L. Colombo, “Electronics based on two-dimensional materials,” Nat. Nanotechnol., vol. 9, no. 10, pp. 768–779, Oct. 2014.\*\*
143. Lee, D. S., Z. Liu, and T. Palacios, “GaN high electron mobility transistors for sub-millimeter wave applications,” Jpn. J. Appl. Phys., vol. 53, no. 10, p. 100212, Oct. 2014.\*\*
144. Kobayashi, K., S. Hatakeyama, T. Yoshida, D. Piedra, T. Palacios, T. Otsuji, and T. Suemitsu, “Current collapse suppression in AlGaN/GaN HEMTs by means of slant field plates fabricated by multi-layer SiCN,” Solid-State Electron., vol. 101, pp. 63–69, Nov. 2014.\*\*
145. Fang, W., A. Hsu, Y.C. Shin, A. Liao, S. Huang, Y. Song, M. Dresselhaus, T. Palacios, J. Kong, “Application of tungsten as a carbon sink for synthesis of large-domain uniform monolayer graphene free of bilayers/multilayers,” Nanoscale, vol. 7, pp. 4929-4934, Feb. 2015. \*\*
146. Cabellos-Aparicio, A. Nanonetworking Center in Catalonia, BarcelonaTech, Barcelona, Spain, I. Llatser, , E. Alarcon, A. Hsu, T. Palacios, “Use of Terahertz Photoconductive Sources to Characterize Tunable Graphene RF Plasmonic Antennas,” Nanotechnology, IEEE Transactions, vol. 14 , Issue 2, pp. 390 – 396, Feb. 2015. \*\*
147. Song, Y, X. Li, C. Mackin, X. Zhang, W. Fang, T. Palacios, H. Zhu, J. Kong, “Role of Interfacial Oxide in High-Efficiency Graphene–Silicon Schottky Barrier Solar Cells,” Nano Letters, vol. 5, pp. 2104-2110, Feb. 2015.\*\*
148. Zhang, Y., M. Sun, H.Y. Wong, Y. Lin, P. Srivastava, C. Hatem, M. Azize, D. Piedra, L. Yu, T. Sumitomo, N.A. de Braga, R.V. Mickevicius, R.V. ; Palacios, T., “Origin and Control of OFF-State Leakage Current in GaN-on-Si Vertical Diodes,” Electron Devices, IEEE Transactions, vol. 62, Issue 6, pp. 2155-2161, May 2015.\*\*
149. Nourbakhsh, A. , C. Adelmann, Y. Song, C. S. Lee, I. Asselberghs, C. Huyghebaert, S. Brizzi, M.Tallarida, D.Schmeißer, S.V.Elshocht , M. Heyns, J.Kong, T.Palacios and S. De Gendt, “Graphene oxide monolayers as atomically thin seeding layers for atomic layer deposition of metal oxide,” Nanoscale, vol. 7, pp.10781-10789, May 2015. [[16]](#footnote-16)\*\*
150. Zhang, X., T. Schiros, D. Nordlund, Y.C. Shin, J.Kong, M. Dresselhaus, T. Palacios, “X-Ray Spectroscopic Investigation of Chlorinated Graphene: Surface Structure and Electronic Effects,” Advanced Functional Materials, vol. 25, Issue 26, pages 4163–4169, July 2015.\*\*
151. Yu, L., A. Zubair, E.J. G. Santos, X. Zhang, Y. Lin, Y. Zhang, T. Palacios, “High-Performance WSe2 Complementary Metal Oxide Semiconductor Technology and Integrated Circuits,” Nano Lett., vol. 15 (8), pp. 4928–4934, July 2015.\*\*
152. L. Zhou, K. Xu, A. Zubair, A.D. Liao, W. Fang, F. Ouyang, Y.H. Lee, K. Ueno, R. Saito, T. Palacios, J. Kong, M.S. Dresselhaus, “Large-Area Synthesis of High-Quality Uniform Few-Layer MoTe2,” J. Am. Chem. Soc., vol. 137 (37), pp 11892–11895, Aug. 2015.\*\*
153. Hsu, A., P.K. Herring, N.M. Gabor, S. Ha, Y.C. Shin, Y. Song, M. Chin, M. Dubey, A. Chandrakasan, J. Kong, P.J. Herrero, T. Palacios, “Graphene-Based Thermopile for Thermal Imaging Applications,” Nano Lett., vol. 15 (11), pp 7211–7216, Oct. 2015.\*\*
154. Kim, S.M., A Hsu, M.H. Park, S.H. Chae,S.J. Yun,J.S. Lee, D.H. Cho, W.Fang, C. Lee, T. Palacios, M. Dresselhaus, K.K. Kim, Y.H. Lee, J. Kong, “Synthesis of large-area multilayer hexagonal boron nitride for high material performance,” Nature Communications, vol. 6, pp. 8662, Oct. 2015. \*\*
155. Parka, H., S. Changb, X. Zhoub, J. Kongb, T. Palacios, S. Gradecak, “Flexible Graphene Electrode-Based Organic Photovoltaics with Record-High Efficiency,” ECS Trans., vol.69, issue 14, 77-82, Oct. 2015. [[17]](#footnote-17)\*\*
156. Suemitsu, T., K. Kobayashi, S. Hatakeyama, N. Yasukawa, T.Yoshida, T. Otsuji, D. Piedra, T. Palacios, “A new process approach for slant field plates in GaN-based high-electron-mobility transistors,” Japanese Journal of Applied Physics, vol. 55, pp. 1S, Nov. 2015. [[18]](#footnote-18)\*\*
157. Matioli, E., and T. Palacios, "Room-Temperature ballistic transport in III-nitride heterostructures," Nano Letters, 1070-1075 (2015). [[19]](#footnote-19)\*\*
158. Y. Zhang, M. Sun, D. Piedra, M. Azize, X. Zhang, T. Fujishima, and T. Palacios, “GaN-on-Si Vertical Schottky and p-n Diodes,” IEEE Electron Device Lett., vol. 35, no. 6, pp. 618–620, Jun. 2014.
159. D. Piedra, B. Lu, M. Sun, Y. Zhang, E. Matioli, F. Gao, J. W. Chung, O. Saadat, L. Xia, M. Azize, and T. Palacios, “Advanced power electronic devices based on Gallium Nitride (GaN),” in 2015 IEEE International Electron Devices Meeting (IEDM), 2015, p. 16.6.1-16.6.4.
160. Y. Zhang, M. Sun, H. Wong, Y. Lin, P. Srivastava, C. Hatem, M. Azize, D. Piedra, L. Yu, T. Sumitomo, N. A. de Braga, R. V. Mickevicius, and T. Palacios, “Origin and Control of OFF-State Leakage Current in GaN-on-Si Vertical Diodes,” IEEE Trans. Electron Devices, vol. 62, no. 7, pp. 2155–2161, Jul. 2015.
161. Y. Zhang, H. Y. Wong, M. Sun, S. Joglekar, L. Yu, N. A. Braga, R. V. Mickevicius, and T. Palacios, “Design space and origin of off-state leakage in GaN vertical power diodes,” in 2015 IEEE International Electron Devices Meeting (IEDM), 2015, p. 35.1.1-35.1.4.
162. V. Moroz, H. Y. Wong, M. Choi, N. Braga, R. V. Mickevicius, Y. Zhang, and T. Palacios, “The Impact of Defects on GaN Device Behavior: Modeling Dislocations, Traps, and Pits,” ECS J. Solid State Sci. Technol., vol. 5, no. 4, pp. P3142–P3148, Jan. 2016.
163. Y. Zhang, K. H. Teo, and T. Palacios, “Beyond Thermal Management: Incorporating p-Diamond Back-Barriers and Cap Layers Into AlGaN/GaN HEMTs,” IEEE Trans. Electron Devices, vol. 63, no. 6, pp. 2340–2345, Jun. 2016.
164. A. L. Hsu, P. K. Herring, N. M. Gabor, S. Ha, Y. C. Shin, Y. Song, et al., "Graphene-Based Thermopile for Thermal Imaging Applications," Nano Letters, vol. 15, pp. 7211-7216, 2015/11/11 2015.
165. X. Ling, Y. Lin, Q. Ma, Z. Wang, Y. Song, L. Yu, et al., "Parallel Stitching of 2D Materials," Advanced Materials, vol. 28, pp. 2322-2329, 2016.
166. C. Mackin and T. Palacios, "Large-scale sensor systems based on graphene electrolyte-gated field-effect transistors", The Analyst, vol. 141, no. 9, pp. 2704-2711, 2016.
167. Y. Zhang, T. Palacios and K. H. Teo, "GaN HEMTs with multi-functional p-diamond back-barriers," 2016 28th International Symposium on Power Semiconductor Devices and ICs (ISPSD), Prague, Czech Republic, 2016, pp. 107-110.
168. Haowen Hou, Jinghua Teng, Tomás Palacios and Soojin Chua, “Edge plasmons and cut-off behavior of Graphene nano-ribbon waveguides,” Optics Communications, Volume 370, 1 July 2016, Pages 226–230 \*\*
169. Nourbakhsh, A; Zubair,A; Tavakkoli,A; Sajjad, R; Ling, X; Dresselhaus, M; Kong, J; Berggren, K; Antoniadis, D; and Palacios, “MoS2 Field-Effect Transistor with Sub-10-nm Channel Length”- Nano Letters (2016). \*\*
170. Nourbakhsh, A; Zubair, A; Dresselhaus, M; Palacios, T; “Transport Properties of a MoS2/WSe2 Heterojunction Transistor and Its Potential for Application” Nano Letters, (2016). [[20]](#footnote-20)\*\*
171. S. Joglekar, C. Lian, R. Baskaran, Y. Zhang, T. Palacios, and A. Hanson, “Finite Element Analysis of Fabrication-and Operation-Induced Mechanical Stress in AlGaN/GaN Transistors,” IEEE Transactions on Semiconductor Manufacturing, vol. 29, no. 4, p. 349, (2016). \*\*
172. Xing, W., Liu, Z., Ng, G. I., & Palacios, T. (2016). Temperature Dependent Characteristics of InAlN/GaN HEMTs for mm-Wave Applications. Procedia Engineering, 141, 103–107. \*\*
173. Zúñiga-Pérez, J., Consonni, V., Lymperakis, L., Kong, X., Trampert, A., Fernández-Garrido, S., Brandt, O., Renevier, H., Keller, S., Hestroffer, K., Wagner, M. R., Reparaz, J. S., Akyol, F., Rajan, S., Rennesson, S., Palacios, T., Feuillet, G. (2016). Polarity in GaN and ZnO: Theory, measurement, growth, and devices. Applied Physics Reviews, 3(4), 41303. \*\*
174. Hou, H., Teng, J., Palacios, T., & Chua, S. (2016). Edge plasmons and cut-off behavior of graphene nano-ribbon waveguides. Optics Communications, 370, 226–230. \*\*
175. Zhang, Y., Teo, K. H., & Palacios, T. (2016). Beyond Thermal Management: Incorporating p-Diamond Back-Barriers and Cap Layers Into AlGaN/GaN HEMTs. IEEE Transactions on Electron Devices. \*\*
176. Joglekar, S., Azize, M. and Palacios, T. (2016) ‘Reactive sputtering of III-N materials for applications in electronic devices’, MRS Advances, 1(2), pp. 141–146. \*\*
177. Joglekar, Sameer; Azize, Mohamed; Jones, Eric J; Piedra, Daniel; Gradečak, Silvija; Palacios, Tomás; “Impact of Al 2 O 3 Passivation on AlGaN/GaN Nanoribbon High-Electron-Mobility Transistors,” IEEE Transactions on Electron Devices 63, 318-325 (2016) \*\*
178. Mackin, Charles; Palacios, Tomás; “Large-scale sensor systems based on graphene electrolyte-gated field-effect transistors,” Analyst, 141, 9, 2704-2711 (2016) \*\*
179. Ling, X., Lin, Y., Ma, Q., Wang, Z., Song, Y., Yu, L., Huang, S., Fang, W., Zhang, X., Hsu, A. L., Bie, Y., Lee, Y.-H., Zhu, Y., Wu, L., Li, J., Jarillo-Herrero, P., Dresselhaus, M., Palacios, T. and Kong, J. (2016), Parallel Stitching of 2D Materials. Adv. Mater., 28: 2322–2329. \*\*
180. Huang, S., Ming, T., Lin, Y., Ling, X., Ruan, Q., Palacios, T., Wang, J., Dresselhaus, M. and Kong, J. (2016), Ultrasmall Mode Volumes in Plasmonic Cavities of Nanoparticle-On-Mirror Structures. Small, 12: 5190–5199. \*\*
181. Yu, L. Dina El-Damak, Ujwal Radhakrishna, Xi Ling, Ahmad Zubair, Yuxuan Lin, Yuhao Zhang, Meng-Hsi Chuang, Yi-Hsien Lee, Dimitri Antoniadis, Jing Kong, Anantha Chandrakasan, Tomas Palacios, "Design, Modeling and Fabrication of CVD Grown MoS2 Circuits with E-Mode FETs for Large-Area Electronics" Nano Lett.,( 2016), 16 (10), pp 6349–6356 \*\*
182. Hong, JY, YC. Shin, A. Zubair, Y. Mao, T. Palacios, MS. Dresselhaus, SH. Kim, J Kong, A Rational Strategy for Graphene Transfer on Substrates with Rough Features, Adv. Materials, 28 (12), 2382-2392,(2016).\*\*
183. Zhou, L., A. Zubair, Z. Wang, X. Zhang, F. Ouyang, K. Xu, W. Fang, K. Ueno, J. Li, T. Palacios, Jing Kong, M. S. Dresselhaus, J. Kong, Synthesis of High‐Quality Large‐Area Homogenous 1T′ MoTe2 from Chemical Vapor Deposition , Adv. Materials, 28 (43), 9526-9531, (2016). \*\*
184. Zhou, L., K. Xu, A. Zubair, X. Zhang, F. Ouyang, T. Palacios, M. S Dresselhaus, Y. Li, J. Kong, Role of Molecular Sieves in the CVD Synthesis of Large-Area 2D MoTe2, Adv. Funct. Mater. (2016). \*\*
185. Soltani, M., R. Soref, T. Palacios, and D. Englund, “AlGaN/AlN integrated photonics platform for ultraviolet and visible spectral range,” Optics Express, vol. 24, Issue 22, pp. 25415-25423, (2016). [[21]](#footnote-21)\*\*
186. Boscá, Alberto; Pedrós, Jorge; Martínez, Javier; Palacios, Tomás; Calle, Fernando; “Automatic graphene transfer system for improved material quality and efficiency,” Scientific reports 6, (2016). \*\*
187. Moroz, V., Hiu Yung Wong, Munkang Choi, Nelson Braga, R. V. Mickevicius, Yuhao Zhang, and Thomas Palacios, “The Impact of Defects on GaN Device Behavior: Modeling Dislocations, Traps, and Pits”, ECS Journal of Solid State Science and Technology, 5 (4) P3142-P3148, (2016). \*\*
188. Joglekar, S., M. Azize, M. Beeler, E. Monroy, and T. Palacios, “Impact of recess etching and surface treatments on ohmic contacts regrown by molecular-beam epitaxy for AlGaN/GaN high electron mobility transistors,” Applied Physics Letters, vol. 109, no. 4, (2016). \*\*
189. Srivastava, P., S.W. Chung, D. Piedra, H.S. Lee, and T. Palacios, “GaN High Electron Mobility Transistor Track-and-Hold Sampling Circuit with over 100-dB Signal-to-Noise Ratio,” IEEE Electron Device Letters, vol. 37, issue 10, pp. 1314-1317 (2016). [[22]](#footnote-22)\*\*
190. K. R. Bagnall, O. I. Saadat, S. Joglekar, T.Palacios, E. N. Wang, “*Experimental Characterization of the Thermal Time Constants of GaN HEMTs Via Micro-Raman Thermometry”,* IEEE Transactions on Electron Devices, 64 (5), 2121-2128, 2017. \*\*
191. Nourbakhsh, A. Zubair, S. Joglekar, M. Dresselhaus, T. Palacios, *“Subthreshold swing improvement in MoS2 transistors by the negative-capacitance effect in a ferroelectric Al-doped-HfO2/HfO2 gate dielectric stack,”* Nanoscale, 2017, 9, pp. 6122-6127.
192. Q. Ma, S.-Y. Xu, C.-K. Chan, C.-L. Zhang, G. Chang, Y. Lin, W. Xie, T. Palacios, H. Lin, S. Jia, P. A. Lee, P. Jarillo-Herrero and N. Gedik. “*Direct optical detection of Weyl fermion chirality in a topological semimetal*,” Nature Physics 13, 842 (2017).
193. Berhane, A.M., Jeong, K.-Y., Bodrog, Z., Fiedler, S., Schröder, T., Vico Triviño, N., Palacios, T., Gali, A., Toth, M., Englund, D., “*Bright Room-Temperature Single-Photon Emission from Defects in Gallium Nitride*,” Adv. Mater., vol. 29, no. 12, 2017.
194. A. Zubair , A. Nourbakhsh , J.-Y. Hong , Y. Song , M.Qi , D. Jena , J. Kong , M. S. Dresselhaus , T. Palacios, “*Hot electron transistor with van der Waals base-collector heterojunction and high performance GaN emitter* ,” Nano Letters 2017, 17 (5), pp. 3089-3096.
195. W. Xing, Z. Liu, H. Qiu, G. Ing Ng, T.Palacios, “*Planar-Nanostrip-Channel InAlN/GaN HEMTs on Si With Improved gm and ftextsfT Linearity*”, IEEE Electron Device Letters, 38. 38 (5), 619-622, 2017.
196. M. Fátima Romero; Alberto Boscá; Jorge Pedrós; Javier Martínez; Rajveer Fandan; Tomás Palacios; Fernando Calle, “*Impact of 2D-Graphene on SiN Passivated AlGaN/GaN MIS-HEMTs Under Mist Exposure,*” in IEEE Electron Device Letters, 38 (10), 1441-1444, 2017.
197. W. Xing, Z. Liu, H.Qiu, K. Ranjan, Y. Gao, G. Ing Ng; T. Palacios, *“InAlN/GaN HEMTs on Si with high fT of 250 GHz*,” in IEEE Electron Device Letters, PP (99), 1-1, 2017.
198. T. Srimani, G.Hills, M.D. Bishop, U. Radhakrishna, A. Zubair, R. S. Park,Y. Stein, T. Palacios, D. Antoniadis; M.M. Shulaker, *“Negative Capacitance Carbon Nanotube FETs*,” in IEEE Electron Device Letters, 38 (4), 509-512, 2017. \*\*
199. E. Aklimi, D. Piedra, K. Tien, T. Palacios, K. L. Shepard, *“Hybrid CMOS/GaN 40-MHz Maximum 20-V Input DC–DC Multiphase Buck Converter,”* in IEEE Electron Device Letters, 38 (4), 509-512, 2017 [[23]](#footnote-23)\*\*
200. Y. Zhang, M. Sun, D. Piedra, J. Hennig, A. Dadgar, T. Palacios, “*Reduction of on-resistance and current crowding in quasi-vertical GaN power diodes*”, Applied Physics Letters 111, 163506, Oct. 2017. \*\*
201. Y. Zhang; Z. Liu; M. J. Tadjer; M. Sun; D. Piedra; C. Hatem; T. J. Anderson; L. E. Luna; A. Nath; A. D. Koehler; H. Okumura; J. Hu; X. Zhang; X. Gao; B. N. Feigelson; K. D. Hobart; T. Palacios, "*Vertical GaN Junction Barrier Schottky Rectifiers by Selective Ion Implantation*," in IEEE Electron Device Letters , vol.38, no.8, pp.1097-1100, Aug. 2017.
202. M. Sun, Y. Zhang, X. Gao, T. Palacios, *“High-Performance GaN Vertical Fin Power Transistors on Bulk GaN Substrates*,” in IEEE Electron Device Letters , 38 (4), 509-512, 2017. \*\*
203. K.T. Lee, C. Bayram, D. Piedra; E. Sprogis, H. Deligianni, B. Krishnan, G. Papasouliotis, A. Paranjpe, E. Aklimi, K. Shepard, T. Palacios, D. Sadana, “*GaN Devices on a 200 mm Si Platform Targeting Heterogeneous Integration*”, in IEEE Electron Device Letters , 38 (8), 1094-1096, 2017. \*\*
204. Y. Zhang, D. Piedra, M. Sun, J. Hennig, A. Dadgar, L. Yu, T. Palacios, "*High-Performance 500 V Quasi- and Fully-Vertical GaN-on-Si pn Diodes*," in IEEE Electron Device Letters, vol. 38, no. 2, pp.248-251, February 2017. \*\*
205. Y. Zhang, M. Sun, Z. Liu, D. Piedra, J. Hu, X. Gao, T. Palacios. “*Trench formation and corner rounding in vertical GaN power devices*,” Applied Physics Letters, Vol. 110, Issue 19, May 2017. [[24]](#footnote-24)\*\*
206. W. Xing, Z. Liu, H. Qiu, K. Ranjan, Y.Gao, G. Ing Ng, T. Palacios, “*InAlN/GaN HEMTs on Si with high fT of 250 GHz*,” in IEEE Electron Device Letters, PP (99) pp1-1, 2017
207. (Invited) Y. Zhang, M. Sun and T. Palacios, “*GaN power devices: Perfecting the vertical architecture*”, Feature Article in Compound Semiconductor Magazine, pp. 22-26, Oct. 2017.
208. W. Xing, Z. Liu, K.Ranjan, G.I.Ng, T.Palacios, “InAlN/GaN HEMTs on Si With High T of 250 GHz,” IEEE Electron Device Letters, 39,1, pp 75-78, Jan. 2018[[25]](#footnote-25)\*\*
209. T. Srimani, G. Hills, M.D. Bishop, U. Radhakrishna, A. Zubair, R.S. Park, Y. Stein , T. Palacios, D. Antoniadis, “Negative Capacitance Carbon Nanotube FETs,” IEEE Electron Device Letters, 39, 2, pp 304-307, Feb. 2018[[26]](#footnote-26)\*\*
210. Y. Zhang, M. Yuan, N. Chowdhury, K. Cheng, T. Palacios, “720-V/0.35-mΩ⋅cm2Fully Vertical GaN-on-Si Power Diodes by Selective Removal of Si Substrates and Buffer Layers,” IEEE Electron Device Letters, 39, 5, pp 715-718, Mar. 2018[[27]](#footnote-27)\*\*
211. H. Okumura, S. Suihkonen, J. Lemettinen, A.Uedono, Y. Zhang, D. Piedra and T. Palacios, “AlN metal–semiconductor field-effect transistors using Si-ion implantation,” Japanese Journal of Applied Physics, 57, pp 4s, Mar. 2018\*\*
212. Yuhao Zhang et al, “ Gallium nitride vertical power devices on foreign substrates: a review and outlook ,” 2018 J. Phys. D: Appl. Phys. 51 273001
213. W. Xing, Z. Liu, K.Ranjan, G.I.Ng, T.Palacios, “Planar Nanostrip-Channel Al2O3/InAlN/GaN MISHEMTs on Si With Improved Linearity,” IEEE Electron Device Letters, 39,7, 947-950, Jul. 2018[[28]](#footnote-28)\*\*
214. P.C. Shen, Y. Lin, H. Wang, J.H. Park, W.S. Leong, A.Y. Lu, J. Kong, T. Palacios, “CVD Technology for 2-D Materials,” IEEE Transactions on Electron Devices, 65, 10, pp 4040-4052, Aug. 2018[[29]](#footnote-29)\*\*
215. M. Ruzzarina, M. Meneghinia, D. Santia, M. Sunb, T. Palacios, G. Meneghesso, E. Zanonia, “Degradation of vertical GaN-on-GaN fin transistors: Step-stress and constant voltage experiments,” Microelectronics Reliability, 88-90, pp 620-626, Sept. 2018[[30]](#footnote-30)\*\*
216. J. Lemettinen, H. Okumura, T. Palacios and S. Suihkonen, “N-polar AlN buffer growth by metal–organic vapor phase epitaxy for transistor applications,” Applied Physics Express, 11, 10, 101002-1 101002-4, Sept. 2018[[31]](#footnote-31)\*\*
217. Xiaoxue Wang, et al, Tomás Palacios, Karen K. Gleason, “High electrical conductivity and carrier mobility in oCVD PEDOT thin films by engineered crystallization and acid treatment,” Science Advances, vol. 9, no. 9 eDOI: 10.1126/sciadv.aat5780, Sept. 2018.
218. Y. Zhang, Min Sun, J. Perozek, Z. Liu, A. Zubair, D. Piedra, N.Chowdhury, T. Palacios, “Large Area 1.2 kV GaN Vertical Power FinFETs with a Record Switching Figure-of-Merit,”IEEE Electron Device Letters, early access, 1, pp. 4, Nov. 2018[[32]](#footnote-32)\*\*
219. Chu, Yuanchen; Lu, Shang-Chun; Chowdhury, Nadim; Povolotskyi, Michael;Klimeck, Gerhard; Mohamed, Mohamed; Palacios, Tomas; “Superior Performance of 5-nm Gate Length GaN Nanowire nFET for Digital Logic Applications,” IEEE Electron Device Letters, 40, 6, 874-877 (2019).
220. Guo, Yunfan; Shen, Pin-Chun; Su, Cong; Lu, Ang-Yu; Hempel, Marek; Han,

 Yimo; Ji, Qingqing; Lin, Yuxuan; Shi, Enzheng; McVay, Elaine; “Additive manufacturing of patterned 2D semiconductor through recyclable masked growth,” Proceedings of the National Academy of Sciences, 116, 9, 3437-3442 (2019).

1. Leong, Wei Sun; Wang, Haozhe; Yeo, Jingjie; Martin-Martinez, Francisco J; Zubair, Ahmad; Shen, Pin-Chun; Mao, Yunwei; Palacios, Tomas; Buehler, Markus J; Hong, Jin-Yong; “Paraffin-enabled graphene transfer”, Nature Communications, 10, 1, 867 (2019). \*\*
2. Zhang, X., […], T. Palacios, “Two-dimensional MoS2-enabled flexible rectenna for wireless energy har-vesting in the Wi-Fi band (Conference Presentation), SPIE Nanoscience + Engineering, vol. 11089, (2019).
3. Mao, Nannan; Wang, Xingzhi; Lin, Yuxuan; Sumpter, Bobby G; Ji, Qingqing; Palacios, Toms; Huang, Shengxi; Meunier, Vincent; Dresselhaus, Mildred S; Tisdale, William A, “Direct Observation of Symmetry-Dependent ElectronPhonon Coupling in Black Phosphorus, “Journal of the American Chemical Society, 141, 48, 18994-19001 (2019).
4. Barrutia, Laura; Lombardero, Ivn; Ochoa, Mario; Gabs, Mercedes; Garca, Ivn; Palacios, Toms; Johnson, Andrew; Rey Stolle, Ignacio; Algora, Carlos; “On the use of graphene to improve the performance of concentrator III&208V multijunction solar cells, “Progress in Photovoltaics: Research and Applications, pp. 60-70 (2020). [[33]](#footnote-33)\*\*
5. E. McVay, A.Zubair, Y. Lin, A. Nourbakhsh, T., “Impact of Al2O3 Passivation on the Photovoltaic Performance of Vertical WSe2 Schottky Junction Solar Cells,” Applied Physics, (2020).
6. M. Tavakoli, M.M., G. Azzellino, M. Hempel, A.Y. Lu,F. J. Martin‐Martinez, J. Zhao, J. Yeo, T. Palacios, M. J. Buehler, J. Kong, “Synergistic Roll‐to‐Roll Transfer and Doping of CVD‐Graphene Using Parylene for Ambient‐Stable and Ultra‐Lightweight Photovoltaics,” Adv. Funct. Mater., 2001924. https://doi.org/10.1002/adfm.202001924 (2020).
7. N. Chowdhury, Q. Xie, M. Yuan, K. Cheng, H. W. Then and T. Palacios, "Regrowth-Free GaN-Based Complementary Logic on a Si Substrate," in IEEE Electron Device Letters, vol. 41, no. 6, pp. 820-823, June 2020, doi: 10.1109/LED.2020.2987003. \*\*
8. X. Zhang, J. Grajal, M. López-Vallejo, E. McVay, T. Palacios, “Opportunities and Challenges of Ambient Radio-Frequency Energy Harvesting,” Joule, Volume 4, Issue 6, 2020, Pages 1148-1152, https://doi.org/10.1016/j.joule.2020.05.006. [[34]](#footnote-34)\*\*
9. [Sumaiya Wahid](https://aip.scitation.org/author/Wahid%2C%2BSumaiya), [Nadim Chowdhury](https://aip.scitation.org/author/Chowdhury%2C%2BNadim), [Md Kawsar Alam](https://aip.scitation.org/author/Alam%2C%2BMd%2BKawsar), [T. Palacios](https://aip.scitation.org/author/Palacios%2C%2BTom%C3%A1s), “Barrier heights and Fermi level pinning in metal contacts on p-type GaN,” Appl. Phys. Lett. 116, 213506 (2020); <https://doi.org/10.1063/5.0010699>.
10. Y. Zhang and T. Palacios, "(Ultra)Wide-Bandgap Vertical Power FinFETs," in IEEE Transactions on Electron Devices, doi: 10.1109/TED.2020.3002880.
11. C. McGahan, PC Shen, Y Lin, A Cavanagh, T Palacios… - “Comparative KPFM measurements on doped monolayer MoS 2,” Bulletin of the American Physical Society, 2020.
12. Luiz G Pimenta Martins et al., “Hard, transparent, sp3-containing 2D phase formed from few-layer graphene under compression,” Carbon, Vol. 173, pp 744-757, (2020).
13. K. H. Teo, N. Chowdhury, Y. Zhang, T. Palacios, K. Yamanaka and Y. Yamaguchi, "Recent Development in 2D and 3D GaN devices for RF and Power Electronics Applications," 2020 IEEE International Symposium on Radio-Frequency Integration Technology (RFIT), Hiroshima, Japan, 2020, pp. 22-24, doi: 10.1109/RFIT49453.2020.9226187.
14. S. J. Bader et al., "Prospects for Wide Bandgap and Ultrawide Bandgap CMOS Devices," in IEEE Transactions on Electron Devices, vol. 67, no. 10, pp. 4010-4020, Oct. 2020, doi: 10.1109/TED.2020.3010471.
15. S. Warnock et al., "InAlN/GaN-on-Si HEMT with 4.5 W/mm in a 200-mm CMOS-Compatible MMIC Process for 3D Integration," 2020 IEEE/MTT-S International Microwave Symposium (IMS), Los Angeles, CA, USA, 2020, pp. 289-292, doi: 10.1109/IMS30576.2020.9224061.
16. Han, B., et al., Palacios, T., Deep‐Learning‐Enabled Fast Optical Identification and Characterization of 2D Materials. Adv. Mater. 2020, 32, 2000953. <https://doi.org/10.1002/adma.202000953>
17. Wang, H., […], T. Palacios, “Frank-van der Merwe Growth in Bilayer Graphene” ChemRxiv, preprint (2020).
18. Meneghini, M., Fabris, E., Ruzzarin, M., De Santi, C., Nomoto, K., Hu, Z., Li, W., Gao, X., Jena, D., Xing, H.G., Sun, M., Palacios, T., Meneghesso, G. and Zanoni, E. (2020), Degradation Mechanisms of GaN‐Based Vertical Devices: A Review. Phys. Status Solidi A, 217: 1900750. doi:10.1002/pssa.201900750.
19. Mackin, C., […], T. Palacios, “Chemical sensor systems based on 2D and thin film materials,” 2D Materials, Vol 7, Number 2, (2020).
20. H. Wang, …M. Hempel… T. Palacios, “Frank-van der Merwe Growth in Bilayer Graphene” ChemRxiv, preprint (2020)
21. H. Wang, M. Xiao, K. Sheng, T. Palacios and Y. Zhang, "Switching Performance Analysis of Vertical GaN FinFETs: Impact of Inter-Fin Designs," in IEEE Journal of Emerging and Selected Topics in Power Electronics (2020)
22. C. Mackin… T. Palacios, “Chemical sensor systems based on 2D and thin film materials,”2D Materials, Vol 7, Number 2, (2020)
23. Jun Cao…. Tomás Palacios, Xi Ling, “Realization of 2D crystalline metal nitrides via selective atomic substitution,” Science Advances, vol. 6, pg.2, (2020)
24. H. Bingnan, Y. Lin, Y.Yang, N. Mao, W. Li, H. Wang, K. Yasuda, X. Wang, V. Fatemi, L. Zhou, JI. Wang, Q. Ma, Y. Cao, D.R. Legrain, Y.Q. Bie, E. Navarro‐Moratalla, D. Klein, D. MacNeill, S. Wu, H. Kitadai, X. Ling, P. Jarillo‐Herrero, J. Kong, J. Yin, T. Palacios, “Deep‐Learning‐Enabled Fast Optical Identification and Characterization of 2D Materials,” Adv. Materials, vol. 32, iss. 29, June 2020. <https://doi.org/10.1002/adma.202000953>
25. Sumaiya Wahid, Nadim Chowdhury, Md Kawsar Alam, T. Palacios, “Barrier heights and Fermi level pinning in metal contacts on p-type GaN,” Appl. Phys. Lett. 116, 213506 (2020); <https://doi.org/10.1063/5.0010699>.
26. H. Fu, K. Fu, S. Chowdhury, T. Palacios, Y. Zhao, “Vertical GaN Power Devices: Device Principles and Fabrication Technologies--Part I,”IEEE Transactions on Electron Devices, doi: 10.1109/TED.2021.3083239., 2021.
27. N. Mao, Y. Lin, Y.Q. Bie, T. Palacios, L. Liang, R. Saito, X.Ling, J. Kong, W.A. Tisdale, “Resonance-Enhanced Excitation of Interlayer Vibrations in Atomically Thin Black Phosphorus,”NanoLetters, American Chemical Society, 21, 11, 4809-4815, 2021.
28. P.C. Shih, G. Rughoobur, K.Cheng, A. I Akinwande, T. Palacios, “Self-Align-Gated GaN Field Emitter Arrays Sharpened by a Digital Etching Process,”IEEE, IEEE Electron Device Letters, 42, 3, 422-425, 2021.
29. Y. Zhang, A. Zubair, Z. Liu, M. Xiao, J. A.Perozek, Y. Ma, T. Palacios, “GaN FinFETs and trigate devices for power and RF applications: review and perspective,”IOP Publishing, Semiconductor Science and Technology, 36, 5, 54001, 2021.
30. L. Zhou, X. Zhang, X.Zhang, Y. Han, P.C.Shen, Y. Lin, Q.Ji, Y.Q.Bie, J.Shi, A. Zubair, X. Dai, N.Yao, T. Palacios, J. Kong, “Liquid-vapor Growth of Atomically Thin Metal Tellurides with Controllable Polymorphism,”Physical Sciences, Physical Sciences, pending publication, 2021.
31. L. Martins, D.L.Silva, J.S Smith, A.Y. Lu, C. Su, M. Hempel, C. Occhialini, X.Ji, R. Pablo, R.S.Alencar, A.CR Souza, A.Pinto, A.B.de Oliveira, R.JC Batista, T.Palacios, M.SC Mazzoni, M.JS Matos, R.Comin, J., L.G. Cançado, “Hard, transparent, sp3-containing 2D phase formed from few-layer graphene under compression,”Pergamon, Carbon, 173, , 744-757, 2021.
32. Y. Luo, Y.Li, P.Sharma, W. Shou, K. Wu, M.Foshey, B. Li, T. Palacios, A.Torralba, W.Matusik, “Learning human–environment interactions using conformal tactile textiles,”Nature Publishing Group, Nature Electronics, 4, 4, 314, 2021.
33. R.Li, X. Ma, J. Li, J.Cao, H. Gao, T. Li, X.Zhang, L. Wang, Q. Zhang, G. Wang, C. Hou, Y.Li, T. Palacios, Y.Lin, H. Wang, X. Ling, “Flexible and high-performance electrochromic devices enabled by self-assembled 2D TiO 2/MXene heterostructures,”Nature Publishing Group, Nature communications, 12, 1, 2021.
34. P.C.Shen, C. Su, Y.Lin, A.S. Chou, C.C. Cheng, J.H.Park, M.H.Chiu, A.Y.Lu, H.L. Tang, M.M. Tavakoli, G.Pitner, X.Ji, Z.Cai, N.Mao, J.Wang, V.Tung, J.Li, J. Bokor, A.Zettl, C.I.Wu, T. Palacios, L.J. Li, J.Kong, “Ultralow contact resistance between semimetal and monolayer semiconductors,” Nature Publishing Group, Nature, 593, 7858, 211-217, 2021.
35. M.Hempel, V.Schroeder, C.Park, V.B.Koman, M. Xue, E.McVay, S.Spector, M.Dubey, M.S.Strano, J.Park, J. Kong, T.Palacios, “SynCells: A 60 × 60 μm2 Electronic Platform with Remote Actuation for Sensing Applications in Constrained Environments,”American Chemical Society, ACS nano, 15, 5, 8803-8812, 2021.
36. Y. Sun, Y.Lin, A.Zubair, D.Xie, T.Palacios, “WSe2/graphene heterojunction synaptic phototransistor with both electrically and optically tunable plasticity,”IOP Publishing, 2D Materials, 8, 3, 35034, 2021.
37. Y. Guo, Y. Lin, K.Xie, B.Yuan, J. Zhu, P.C. Shen, A.Y.Lu, C.S.E.Shi, K.Zhang, C.H.Fu, H. Xu, Z.Cai, J.H.Park, Q. Ji, J.Wang, X.Dai, X.Tian, S.Huang, L.Dou, L.Jiao, J.Li, Y.Yu, J.C.Idrobo, T.Cao, T.Palacios, J.Kong, “Designing artificial two-dimensional landscapes via atomic-layer substitution,”National Academy of Sciences, Proceedings of the National Academy of Sciences, 118, 32, 2021.
38. M. Sun, J.Li, Q. Ji, Y. Lin, J. Wang, C. Su, M.H.Chiu, Y. Sun, H. Si, T.Palacios, J.Lu, D.Xie, J.Kong, “Anomalous heavy doping in chemical-vapor-deposited titanium trisulfide nanostructures,” American Physical Society, Physical Review Materials, 5, 9, 94002, 2021.
39. K.H. Teo, Y. Zhang, N.Chowdhury, S.Rakheja, R. Ma, Q. Xie, E. Yagyu, K. Yamanaka, K. Li, T. Palacios, “Emerging GaN technologies for power, RF, digital, and quantum computing applications: Recent advances and prospects,”AIP Publishing LLC, Journal of Applied Physics, 130, 16, 160902, 2021.
40. Kim, T., Joishi, C., Shih, P. C., Palacios, T., & Rajan, S. (2022). The impact of semiconductor surface states on vacuum field emission. Journal of Applied Physics, 132(16), 165701.
41. García, A. T. P., Sáenz, J., Renouf, V., Nicolato, T., & Chatonnet, P. (2022). Voltametría en enología; nuevas perspectivas analíticas de evaluación del potencial anti–oxidante y su relación con la capacidad de envejecimiento de vinos tintos. Enoviticultura, (77), 1.
42. Yuan, M., Xie, Q., Fu, K., Hossain, T., Niroula, J., Greer, Yuan, M., Xie, Q., Fu, K., Hossain, T., Niroula, J., Greer, J.A., Chowdhury, N., Zhao, Y. and Palacios, T. (2022). GaN ring oscillators operational at 500° C based on a GaN-on-Si platform. IEEE Electron Device Letters, 43(11), 1842-1845.
43. Xue, M., Mackin, C., Weng, W. H., Zhu, J., Luo, Y., Luo, S.X.L., Lu, A.Y., Hempel, M., McVay, E., Kong, J. and Palacios, T. (2022). Integrated biosensor platform based on graphene transistor arrays for real-time high-accuracy ion sensing. Nature Communications, 13(1), 1-11.
44. Kim, Y., Suh, J. M., Shin, J., Liu, Y., Yeon, H., Qiao, Kum, S.H., Kim, C., Lee, H.E., Choi, C., Kim, H.,Lee, D., Lee, J., Kang, J.H., Park, B.I., Kang, S., Kim, J., Kim, S., Perozek, J.A., Wang, K., Kishen, K., Kong, L., Palacios, T., Park, J., Park, M.C., Lee, Y.S., Lee, K., Bae, S.H., Kong, W., Han, J., Kim, J. (2022). Chip-less wireless electronic skins by remote epitaxial freestanding compound semiconductors. Science, 377(6608), 859-864.
45. Zaldívar Santamaría, E., Molina Dagá, D., & Palacios García, A. T. (2022). The Influence of the bottle’s price and label reported information on the perception of the minerality attribute in white wines. Beverages, 8(3), 42.
46. Lu, A. Y., Martins, L. G. P., Shen, P. C., Chen, Z., Park, J. H., Xue, M., ... & Kong, J. (2022). Unraveling the Correlation between Raman and Photoluminescence in Monolayer MoS2 through Machine‐Learning Models. Advanced Materials, 34(34), 2202911.
47. Shih, P. C., Rughoobur, G., Engel, Z., Ahmad, H., Doolittle, W. A., Akinwande, A. I., & Palacios, T. (2022). Stable and High Performance AlGaN Self-Aligned-Gate Field Emitter Arrays. IEEE Electron Device Letters, 43(8), 1351-1354.
48. Luo, Y., Wu, K., Spielberg, A., Foshey, M., Rus, D., Palacios, T., & Matusik, W. (2022, April). Digital Fabrication of Pneumatic Actuators with Integrated Sensing by Machine Knitting. In CHI Conference on Human Factors in Computing Systems (pp. 1-13).
49. Chowdhury, N., Xie, Q., & Palacios, T. (2022). Tungsten-Gated GaN/AlGaN p-FET With I max> 120 mA/mm on GaN-on-Si. IEEE Electron Device Letters, 43(4), 545-548.
50. Guo, Y., Shi, E., Zhu, J., Shen, P. C., Wang, J., Lin, Y., Mao, Y., Deng, S., Li, B., Park, J.H., Lu, A.Y., Zhang, S., Ji, Q., Li, Z., Qiu, C., Qiu, S., Li, Q., Dou, L., Wu, Y., Zhang, J., Palacios, T., Cao, A., Kong, J. (2022). Soft-lock drawing of super-aligned carbon nanotube bundles for nanometre electrical contacts. Nature Nanotechnology, 17(3), 278-284.
51. Yuan, M., Xie, Q., Niroula, J., Chowdhury, N., & Palacios, T. (2022). GaN Memory Operational at 300° C. IEEE Electron Device Letters, 43(12), 2053-2056.
52. Shih, P. C., Engel, Z., Ahmad, H., Doolittle, W. A., & Palacios, T. (2022). Wet-based digital etching on GaN and AlGaN. Applied Physics Letters, 120(2), 022101.
53. Yuan, M., Xie, Q., Niroula, J., Isamotu, M. F., Rajput, N. S., Chowdhury, N., & Palacios, T. (2022, November). High temperature robustness of enhancement-mode p-GaN-Gated AlGaN/GaN HEMT technology. In 2022 IEEE 9th Workshop on Wide Bandgap Power Devices & Applications (WiPDA) (pp. 40-44). IEEE.
54. Kim, D., Lu, Z., Han, T., McVay, E., Hong, K. H., Palacios, T., & Ju, L. (2023). Tunable excitons in multilayer graphene for on-chip infrared spectroscopy. Bulletin of the American Physical Society. (Yet to Publish)
55. **PROCEEDINGS OF REFEREED CONFERENCES**
	1. Montero, J. M., J. Colás, T. Palacios, R. de Córdoba, J. Macías and A. de Santos, “El Laboratorio en casa: un Sistema de Desarrollo basado en el Microcontrolador 68331, de bajo coste,” Congreso de Tecnologías Aplicadas a la Enseñanza de la Electrónica TAEE'2000, Barcelona. ISBN: 84-600-9596-7 edited by Gabriel Abadal and Nuria Varonil (ETS Enginyeria-UAB), vol. II pp. 381-384, September 2000. (Oral Presentation)
	2. Palacios, T., F. Calle, E. Monroy, O. Abril, C. Prieto and C. Zaldo, “Design and Processing of SAW Devices on AlN Epilayers,” 3ª Conferencia de Dispositivos Electrónicos, Granada, Spain, pp. 241-244, 15-16 February 2001. (Oral Presentation)
	3. Palacios, T., F. Calle, E. Monroy, J. Grajal, M. Eickhoff, O. Ambacher and C. Prieto, “Nanotechnology for SAW devices on AlN Epilayers,” E-MRS Spring Meeting, Strasbourg, France, 1 page, 5-8 June 2001. (Poster) [[35]](#footnote-35)\*\*
	4. Sánchez, A. M., F. J. Pacheco, S. I. Molina, P. Ruterana, F. Calle, T. Palacios, M. A. Sánchez-García, E. Calleja and R. Garcia, “AlN Buffer Layer Thickness Influence on Inversion Domains in GaN/AlN/Si (111),” E-MRS Spring Meeting, Strasbourg, France, 1 page, 5-8 June 2001. (Poster)
	5. Rubio-Zuazo, J., R.J. Jiménez-Rioboó, E. Rodríguez-Cañas, C. Prieto, T. Palacios, F. Calle, E. Monroy and M. A. Sánchez-García, “Brillouin Characterization of the Acoustic waves Phase-Velocity in AlxGa1-xN Epilayers,” E-MRS Spring Meeting, pp. H/PI.11, Strasbourg, France, 1 page, 5-8 June 2001. (Poster)
	6. Monroy, E., F. Calle, T. Palacios, J. Sánchez-Osorio, M. Verdú, F. J. Sánchez, M. T. Montojo, F. Omnès, Z. Bougrioua and I. Moerman, “Reliability of Schottky contacts on AlGaN,” 4th International Conference on Nitride Semiconductors, Denver, pp. 367-370, 16-20 July 2001. (Oral Presentation)
	7. Calle, F., E. Monroy, J. M. Tirado, R. Ranchal, A. Jiménez, T. Palacios, E. Muñoz, J. Grajal, M. Verdú, F. J. Sánchez, M. T. Montojo, Z. Bougrioua and I. Moerman, “Fabrication and characterization of AlGaN/GaN HEMTs,” 11th European Heterostructure Technology Workshop, Padova, Italy, 2 pages, 28-30 October 2001. (Oral Presentation) \*\*
	8. Palacios, T., F. Calle, E. Monroy, J. Grajal, M. Eickhoff, O. Ambacher, F. Omnès, Z. Bougrioua, I. Moerman and E. Muñoz, “Sub-micron technology in group-III nitrides. Application to electronic devices,” 11th European Heterostructure Technology Workshop, Padova, Italy, 2 pages, 28-30 October 2001. (Oral Presentation)
	9. Eickhoff, M., O. Ambacher, G. Steinhoff, J. Schalwig, R. Neuberger, T. Palacios, E. Monroy, F. Calle, G. Müller and M. Stutzmann, “Novel Sensor Applications of group-III nitrides,” MRS Fall Meeting, pp. I12.1.1-12, Boston, MA, November 2001. (Invited)
	10. Snoeys, W., G. Anelli and T. Palacios, “New NMOS Layout Structure for Radiation Tolerance,” IEEE Nuclear Science Symposium, vol. 2, San Diego, CA, pp. 822-826, 4-10 November 2001. (Oral Presentation) [[36]](#footnote-36)\*\*
	11. Bougrioua, Z., I. Moerman, L. Nistor, B. van Daele, E. Monroy, T. Palacios, F. Calle and M. Leroux, “Engineering of an Insulating Buffer and Use of AlN Interlayers: Two Optimisations for AlGaN/GaN HEMT-Like Structures,” Expert Evaluation and Control of Compound Semiconductor Materials and Technologies, EXMATEC, Budapest, Hungary, 2 pages, May 2002. (Oral Presentation) \*\*
	12. Calle, F., T. Palacios, E. Monroy, J. Grajal, J.M. Tirado, A. Jiménez, E. Muñoz, M. Verdú, F. J. Sánchez, M. T. Montojo, Z. Bougrioua and I. Moerman, “Fabrication and characterization of AlGaN/GaN HEMTs,” 4th International Conference on Materials for Microelectronics and Nanoengineering, Espoo, Finland, 2 pages, 10-12 June 2002. (Oral Presentation)
	13. Palacios, T., E. Monroy, F. Calle, and F. Omnès, “Technology and Performance of Submicron Metal-Semiconductor-Metal GaN Ultraviolet Detectors,” 60th Annual Device Research Conference, Santa Barbara, CA, pp. 141-142, 24-28 June 2002. (Oral Presentation)
	14. Palacios, T., F. Calle, E. Monroy, J. Grajal, M. Eickhoff, O. Ambacher, R. Jiménez, and C. Prieto, “AlGaN/Sapphire Epilayers for Acoustic Wave Devices,” 2002 Electronic Materials Conference, Santa Barbara, pp. 28, 28-30 June 2002. (Oral Presentation)
	15. Palacios, T., F. Calle, E. Monroy, F. Omnès, “Novel Approaches for Submicron Metal-Semiconductor-Metal GaN UV Photodetectors,” International Workshop on Nitride Semiconductors, Aachen, Germany, 2 pages, 22-25 July 2002. (Oral Presentation)
	16. Palacios, T., F. Calle, J. Grajal, E. Monroy, M. Eickhoff, O. Ambacher, and F. Omnès, “High Frequency SAW Devices on AlGaN: Fabrication, Characterization and Integration with Optoelectronics,” 2002 IEEE International Ultrasonic Symposium, Munich, pp. 57-60, 8-11 October 2002. (Oral Presentation)
	17. Sánchez, A. M., P. Ruterana, S. I. Molina, F. J. Pacheco, R. García, F. Calle, T. Palacios, M. A. Sánchez-García, E. Calleja, “Correlation between the AlN buffer layer thickness and the GaN polarity in GaN/AlN/Si (111) grown by MBE,” MRS Fall Meeting, Boston, MA, 1 page, 2-6 November 2002. (Poster) \*\*
	18. Pedrós, J., F. Calle, J. Grajal, T. Palacios, A. Jiménez. F. Omnès and Z. Bougrioua, “SAW devices on 2DEG AlGaN/GaN heterostructures,” 12th European Workshop on Heterostructure Technology (heTech 2003), Segovia, Spain, 2 pages, 12-15 October 2003. (Oral Presentation)
	19. Grajal, J., F. Calle, J. Pedrós and T. Palacios, “Voltage controlled SAW filters on 2DEG AlGaN/GaN heterostructures,” 2004 International Microwave Symposium, Fort Worth, TX, pp. 387-390, 6-11 June 2004. (Oral Presentation)
	20. Calle, F., T. Palacios, J. Pedrós and J. Grajal, “Surface-acoustic-waves controlled photodetectors,” 2nd European Workshop on Fiber Optical Sensors, Santander, Spain, 4 pages, 9-11 June 2004. (Oral Presentation)
	21. Chini, A., D. Buttari, R. Coffie, L. Shen, T. Palacios, S. Heikman, A. Chakraborty, S. Keller, and U. K. Mishra, “Effect of Gate Recessing on the Linearity Characteristics of AlGaN/GaN HEMTs,” 62nd Device Research Conference, Notre Dame, IN, pp. 33-34, June 2004. (Oral Presentation)
	22. Sanabria, C., H. Xu, T. Palacios, A. Chakraborty, S. Heikman, U.K. Mishra, R.A. York, “Influence of the Heterostructure Design in Noise Figure of AlGaN/GaN HEMTs,” 62nd Device Research Conference, Notre Dame, IN, pp. 43-44, June 2004. (Oral Presentation)
	23. Palacios, T., A. Chini, D. Buttari, S. Heikman, S. Keller, S.P. DenBaars, and U.K. Mishra, “Use of Multichannel Heterostructures to Improve the Access Resistance and fT Linearity in GaN-based HEMTs,” 62nd Device Research Conference, Notre Dame, IN, pp. 41-42, June 2004. (Oral Presentation) [[37]](#footnote-37)\*\*
	24. Palacios, T., S. Rajan, L. Shen, A. Chakraborty, S. Heikman, S. Keller, S.P. DenBaars, and U.K. Mishra, “Influence of the Access Resistance in the RF Performance of mm-wave AlGaN/GaN HEMTs,” 62nd Device Research Conference, Notre Dame, IN, pp. 75-76, June 2004. (Poster)
	25. Rajan, S., H. Xing, A. Chakraborty, A. Chini, M. J. Grundmann, T. Palacios, S. P. DenBaars, D. Jena, and U. K. Mishra, “Tailoring the Transconductance Profile for Improved Linearity in AlGaN/GaN Polarization-Doped Field Effect Transistors,” International Workshop on Nitride Semiconductors, IWN-2004, Pittsburgh, PA, p. 65, July 2004. (Oral Presentation)
	26. Palacios, T., L. Shen, S. Keller, A. Chakraborty, S. Heikman, D. Buttari, S.P. DenBaars, and U.K. Mishra, “Demonstration of a GaN-spacer High Electron Mobility Transistor with Low Alloy Scattering,” International Workshop on Nitride Semiconductors, IWN-2004, Pittsburgh, PA, pp. 65-66, July 2004. (Oral Presentation)
	27. Singh, M., Y.-R. Wu, J. Singh, T. Palacios and U. Mishra, “Monte Carlo study of noise scaling in AlGaN/GaN HFETs,” 27th International Conference on the Physics of Semiconductors, Flagstaff, FL, pp. 441-442, 26-30 July 2004. (Oral Presentation)
	28. Buttari, D., 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,” Lester Eastman Conference on High Performance Devices, Troy, NY, pp. 132-137, 4-6 August 2004. (Oral Presentation)
	29. Calle, F., J. Pedrós, T. Palacios, and J. Grajal, “Nitride-bases Surface Acoustic Wave Devices and Applications,” European Meeting of the Material Research Society, E-MRS, Varsovia, Poland, pp. 976-983, October 2004. (Invited)
	30. Palacios, T., A. Chakraborty, S. Keller, S. P. DenBaars, and U. K. Mishra, “AlGaN/GaN HEMTs with an InGaN-based back-barrier,” 63rd Device Research Conference, Santa Barbara, CA, pp. 181-182, June 2005. (Oral Presentation, Best Paper Award)
	31. Palacios, T. and U. K. Mishra, “Determining electron velocity in GaN-based HEMTs,” 14th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors, HCIS-14, Chicago, IL, 1 page, 24-29 July 2005. (Oral Presentation)
	32. Sanabria, C., H. Xu, T. Palacios, A. Chakraborty, S. Heikman, U. K. Mishra, and R. A. York, “Noise Figure Measurement and Modeling of Field-Plated AlGaN/GaN HEMTs,” 6th International Conference on Nitride Semiconductors, ICNS-2005, Bremen, Germany, pp. Tu-P-005, August 2005. (Poster)
	33. Palacios, T., Y. Dora, A. Chakraborty, C. Sanabria, S. Keller, S. P. DenBaars, and U. K. Mishra, “Optimization of AlGaN/GaN HEMTs for High Frequency Operation,” 6th International Conference on Nitride Semiconductors, ICNS-2005, Bremen, Germany, pp. We-ED2-3, September 2005. (Oral Presentation, Best Paper Award)
	34. Palacios, T., A. Chakraborty, S. Keller, S. P. DenBaars and U. K. Mishra, “Optimization of Device Structure and Harmonic Tuning in AlGaN/GaN HEMTs for High Power Added Efficiency,” 32nd International Symposium on Compound Semiconductors, Freiburg, Germany, pp. TU-2.2, September 2005. (Oral Presentation) [[38]](#footnote-38)\*\*
	35. Palacios, T., and U.K. Mishra, “Dipole Engineering in Nitride-based HEMTs,” 208th Meeting of the Electrochemical Society, Los Angeles, CA, pp. 806, 16-21 October, 2005. (Invited)
	36. Palacios, T., E. Snow, Y. Pei, A. Chakraborty, S. Keller, S. P. DenBaars, and U. K. Mishra, “Ge-spacer Technology in AlGaN/GaN HEMTs for mm-Wave Applications,” International Electron Device Meeting, IEDM-2005, Washington, DC, pp. 1084-1086, 5-7 December, 2005. (Oral Presentation)
	37. Palacios, T., A. Chakraborty, S. Keller, S. P. DenBaars, and U. K. Mishra, “High Power AlGaN/GaN HEMTs for mm-Wave Operation,” Government Microcircuit Applications and Critical Technology Conference, GomacTech 2006, San Diego, CA, 2 pages, 20-23 March 2006. (Oral Presentation)
	38. Matulionis, A., J. Liberis, O. Kiprijanovic, T. Palacios, A. Chakraborty, S. Keller, and U. K. Mishra, “Effect of alloy scattering on electron drift velocity in GaN HEMTs,” 30th Workshop on Compound Semiconductors Devices and Integrated Circuits (WOCSDICE), Fiskebackskil, Sweden, 3 pages, 13-17 May 2006. (Oral Presentation)
	39. Shen, L., L. McCarthy, T. Palacios, M. H. Wong, C. Poblenz, A. Corrion, S. Keller, S. P. DenBaars, J. S. Speck, and U. K. Mishra, “Improved Processing Technology for GaN-capped deeply-recessed GaN HEMTs without surface passivation,” 64th Device Research Conference, Penn State University, PA, pp. 101-102, 26-28 June 2006. (Oral Presentation)
	40. Palacios, T., N. Fichtenbaum, S. Keller, S. P. DenBaars, and U. K. Mishra, “50 nm AlGaN/GaN Technology for mm-wave Applications,” 64th Device Research Conference, Penn State University, PA, pp. 99-100, 26-28 June 2006. (Oral Presentation)
	41. Recht, F., L. McCarthy, S. Rajan, A. Chakraborty, T. Palacios, C. Poblenz, J. S. Speck, and U. K. Mishra, “Origin of the Resistance in Unalloyed Ion Implanted Ohmics in AlGaN/GaN HEMTs,” International Symposium on Compound Semiconductors, Vancouver, Canada, 2 pages, 13-17 August 2006. (Oral Presentation)
	42. Wong, M. H., R. Chu, T. Palacios, S. Rajan, J. S. Speck, and U. K. Mishra, “N-face High Electron Mobility Transistors with a GaN spacer,” International Workshop on Nitride Semiconductors, IWN-2005, Kyoto, Japan, 2 pages, 22-27 October 2006. (Oral Presentation)
	43. Mishra, U.K., T. Palacios, S. Keller, N. Fichtenbaum, J. Speck, and S. P. DenBaars, “GaN HEMTs: The Ideal Device for mm-Wave Applications?” International Workshop on Nitride Semiconductors, IWN 2006, Kyoto, Japan, 2 pages, 22-27 October 2006. (Invited) [[39]](#footnote-39)\*\*
	44. Pei, Y., D. Buttari, T. Palacios, L. Shen, R. Chu, N. Fichtenbaum, L. McCarthy, S. Heikman, A. Chakraborty, S. Keller, S. P. DenBaars, and U. K. Mishra, “Application of n+ GaN Cap in AlGaN/GaN HEMT,” Fall Meeting of the Material Research Society, Boston, MA, pp. I.14.4, November 2006. (Oral Presentation)
	45. Chung, J. W., X. Zhao, and T. Palacios, “Estimation of Trap Density in AlGaN/GaN HEMTs from Subthreshold Slope Study,” 65th Device Research Conference, Notre Dame, IN, pp. 111-112, 18-20 June 2007. (Poster) [[40]](#footnote-40)\*\*
	46. Zhao, X., J. W. Chung, H. Tang, and T. Palacios, “Schottky Drain AlGaN/GaN HEMTs for mm-wave Applications,” 65th Device Research Conference, Notre Dame, IN, pp. 107-108, 18-20 June 2007. (Poster)[[41]](#footnote-41)\*\*
	47. Zhao, X., J. W. Chung, and T. Palacios, “Recent Progress in GaN HEMTs for mm-waves frequencies and beyond,” 7th Topical Workshop on Heterostructure Microelectronics (TWHM 2007), Chiba, Japan, pp. 95-96, 21-24 August 2007. (Invited)\*\*
	48. Palacios, T., “New Device Ideas for Nitride-based mm-wave Electronics,” 16th European Heterostructure Technology Workshop (HETECH), St. Raphael, France, pp. 8-9, 2-5 September 2007. (Invited)\*\*
	49. Zhao, X., J. W. Chung, and T. Palacios, “Atomic Layer Etching of AlGaN/GaN Structures,” 7th International Conference on Nitride Semiconductors, Las Vegas, NV, p. 42, 17-21 September 2007. (Oral Presentation)\*\*
	50. Zhao, X., J. W. Chung, and T. Palacios, “Increase of Electron Velocity in GaN HEMTs by Electric Field Engineering,” International Conference on Nitride Semiconductors, Las Vegas, NV, pp. 50-51, 17-21 September 2007. (Poster)\*\*
	51. Chung, J. W., X. Zhao, and T. Palacios, “Effect of Image Charges in the Drain Delay of AlGaN/GaN HEMTs,” 7th International Conference on Nitride Semiconductors, Las Vegas, NV, pp. 50, 17-21 September 2007. (Poster)\*\*
	52. Palacios, T., “Nitride Transistors for Beyond-Si Digital Electronics,” 213th Electrochemical Society Meeting, Phoenix, AZ, p. 47, 18-23 May 2008. (Invited)\*\*
	53. Tirado, J. M., F. Mieville, X. Zhao, J. Chung, J. L. Sanchez-Rojas, and T. Palacios, “Origin of the Increasing Access Resistance in AlGaN/GaN HEMTs,” 66th Device Research Conference, Santa Barbara, CA, pp. 203-204, June 2008. (Oral Presentation)\*\*
	54. Chung, J. W., E. Piner, and T. Palacios, “N-face GaN/AlGaN Transistors Through Substrate Removal,” 66th Device Research Conference, Santa Barbara, CA, pp. 100-200, June 2008. (Oral Presentation) [[42]](#footnote-42)\*\*
	55. Palacios, T., “GaN and Digital Electronics: A Way out of Moore’s Law?” 35th International Symposium on Compound Semiconductors, ISCS-2008, Freiburg, Germany, pp. Tu-2.1, September 21-24, 2008. (Invited)\*\*
	56. Chung, J. W. E. L. Piner, J. C. Roberts, and T. Palacios, “New Technologies for Improving the High Frequency Performance of AlGaN/GaN High Electron Mobility Transistors,” International Conference on Advances in Electronics and Micro-Electronics (ENICS-2008), Valencia, Spain, pp. 66-71, 29 September-4 October, 2008. (Oral Presentation, Best Paper Award)
	57. Palacios, T., “Beyond the AlGaN/GaN HEMT: New Concepts for High-Speed Nitride Transistors,” International Workshop on Nitride Semiconductors (IWN-2008), Montreaux, Switzerland, p. 26, October 2008. (Invited)\*\*
	58. Lu, B. and T. Palacios, “New-Enhancement Mode GaN HEMT based on Dipole-Engineering,” International Workshop on Nitride Semiconductors, Montreux, Switzerland, pp. 536, October2008. (Poster)\*\*
	59. Saadat, O. I., J. Chung, E. L. Piner, and T. Palacios, “Gate-first GaN HEMT Technology for High Frequency Applications,” International Workshop on Nitride Semiconductors, Montreux, Switzerland, pp. 290, October2008. (Oral Presentation) [[43]](#footnote-43)\*\*
	60. Chung, J. W., B. Lu, E. Piner, and T. Palacios, “On-wafer integration of GaN and Si (100) Electronics through substrate removal technology,” International Workshop on Nitride Semiconductors, Montreux, Switzerland, pp. 320, October2008. (Oral Presentation)\*\*
	61. Wang, H., D. Nezich, J. Kong, and T. Palacios, “Graphene Frequency Multipliers,” 2009 Meeting of the American Physics Society, pp. 252, Pittsburgh, PA, March 2009. (Oral Presentation)\*\*
	62. Chung, J. W., and T. Palacios, “Heterogeneous Integration of Nitride and Si Electronics,” Meeting of the American Physical Society, Pittsburgh, PA, p. 102, 16-20 March 2009. (Invited)\*\*
	63. Palacios, T., “GaN and Si on-wafer Integration: The Future of High Frequency and High Power Electronics?” Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT, pp. 2a-2b, 11 March 2009. (Invited)\*\*
	64. Palacios, T., “New Applications for Graphene Electronics,” The 6th US-Korea Nanoforum (Nanoelectronics and Its Integration with Applications), Las Vegas, NV, pp. 80-81, 28-29 April 2009. (Invited)\*\*
	65. Chung, J. W., O. I. Saadat, H. Wang, and T. Palacios, “GaN Transistors: Redefining the Limits of Electronics,” 33rd Workshop on Compound Semiconductor Devices and Integrated Circuits (WOCSDICE), Malaga, Spain, pp. 2-6, 17-20 May 2009. (Invited)\*\*
	66. Wang, H., J. Wu, A. Hsu, D. Nezich, and T. Palacios, “Graphene RF Electronics,” IEEE International Microwave Symposium (IMS), Boston, MA, 1 page, June 2009.(Invited)\*\*
	67. Palacios, T., “The Challenges and Rewards of Industry/University Collaborative Research,” IEEE International Microwave Symposium (IMS), Boston, MA, 1 page, June 2009. (Invited)\*\*
	68. Palacios, T., J. W. Chung, and B. Lu, “On-Wafer Integration of Nitrides and Si Devices: Bringing the Power of Polarization to Si,” IEEE International Microwave Symposium (IMS), Boston, MA, 3 pages, June 2009. (Invited) [[44]](#footnote-44)\*\*
	69. Lu, B, O. I. Saadat, E. L. Piner, and T. Palacios, “Enhancement-mode AlGaN/GaN HEMTs with High Linearity Fabricated by Hydrogen Plasma Treatment,” 67th Device Research Conference, Penn State University, PA, pp. 59-60, 22-24 June 2009. (Poster) [[45]](#footnote-45)\*\*
	70. Chung, J. W., J. Lee, E. L. Piner, and T. Palacios, “Seamless On-wafer Integration of GaN HEMTs and Si(100) MOSFETs,” 67th Device Research Conference, Penn State University, PA, pp. 155-156, 22-24 June 2009. (Oral Presentation)\*\*
	71. Wang, H., A. Hsu, J. Wu, D. Nezich, J. Kong, and T. Palacios, “Nitride and Carbon Nanoelectronics for Terahertz Applications,” DARPA MTO Nanoelectronics Workshop, Sunriver, OR, p. 3, 7 July 2009. (Invited)\*\*
	72. Wang, H, J. W. Chung, X. Gao, S. Guo, and T. Palacios, “Al2O3 Passivated Thin Barrier InAlN/GaN HEMTs on SiC Substrate with Record Current Density and Transconductance,” International Symposium on Compound Semiconductors (ISCS), Santa Barbara, CA, 2 pages, August 30 – September 2, 2009. (Invited)\*\*
	73. Chung, J. W., O. I. Saadat, H. Wang, and T. Palacios “Sub-mm wave applications of GaN Transistors,” Compound Semiconductor Integrated Circuit Symposium (CSICS). Greensboro, NC, 4 pages, 11-14, October 2009. (Invited) [[46]](#footnote-46)\*\*
	74. Joh, J., F. Gao, T. Palacios, and J. del Alamo, “A model for the critical voltage for electrical degradation of GaN high electron mobility transistors,” Reliability of Compound Semiconductors Workshop (ROCS 2009), Greensboro, NC, 3 pages, 11 October 2009. (Oral Presentation) [[47]](#footnote-47)\*\*
	75. Lu, B., and T. Palacios, “Schottky-Drain Technology for High Breakdown Voltage AlGaN/GaN HEMTs on Si Substrate,” International Conference on Nitride Semiconductors, Jeju Island, South Korea, 2 pages, 18-23 October 2009. (Oral Presentation)
	76. Chung, J. W., O. Saadat, and T. Palacios, “Gate-recessed AlGaN/GaN HEMT with a Record fmax of 300 GHz,” International Conference on Nitride Semiconductors, Jeju Island, South Korea, 2 pages, 18-23 October 2009. (Oral Presentation) \*\*
	77. Guo, S., X. Gao, D. Gorka, J. W. Chung, Tomas Palacios, Antonio Crespo, James Gillespie, Kelson Chaback, Manuel Trejo, Virginia Miller, Mark Bellot, Glen Via, Mauricio Kossler, Howard Smith, and David Tomich, “AlInN HEMTs grown by metalorganic vapor phase epitaxy for millimeter-wave applications,” International Conference on Nitride Semiconductors, Jeju Island, South Korea, 2 pages, 18-23 October 2009. (Poster) [[48]](#footnote-48)\*\*
	78. Wang, H., A. Hsu, J. Wu, J. Kong, and T. Palacios, “Ambipolar RF Electronics Based on CVD Grown Graphene,” 2010 Graphene Week, College Park, MD, 2 pages, 19-23 April 2010. (Poster)\*\*
	79. Hsu, A., K. K. Kim, J. Kong, and T. Palacios, “Substrate Treatment Effects and Rapid Characterization of CVD Graphene,” 2010 Graphene Week, College Park, MD, 2 pages, 19-23 April 2010. (Poster) [[49]](#footnote-49)\*\*
	80. Nayfeh, O., S. Kilpatrick, B. Nichols, M. Dubey, A. Hsu, H. Wang, and T. Palacios, “Interfacing to Single and Bilayer Graphene Advanced Devices,” 2010 Graphene Week, College Park, MD, 1 page, 19-23 April 2010. (Poster)\*\*
	81. Lu, B., E. L. Piner, and T. Palacios, “High Performance Dual-Gate AlGaN/GaN Enhancement-Mode Transistor,” 37th International Symposium on Compound Semiconductors (ISCS), Takamatsu, Japan, 2 pages, 31 May – 4 June 2010. (Oral Presentation)\*\*
	82. Makaram, P., J. Joh, C. V. Thompson, J. A. del Alamo, and T. Palacios, “Formation of Structural Defects in AlGaN/GaN High Electron Mobility Transistors under Electrical Stress,” Electronic Materials Conference, Notre Dame, IN, 2 pages, 23-25 June 2010. (Oral Presentation). \*\*
	83. Gu, Q., A. Arehart, A. Malonis, O. I. Saadat, T. Palacios, and S. A. Ringel, “The Influence of High-k Gate Dielectrics on Deep Traps in AlGaN/GaN High Electron Mobility Transistors Measured by Deep Level Spectroscopy Methods,” Electronic Materials Conference, Notre Dame, IN, 2 pages, 23-25 June 2010. (Oral Presentation). \*\*
	84. Azize, M., and T. Palacios, “Effect of Substrate-Induced Strain in the Transport Properties of AlGaN/GaN Heterostructures,” The 3rd International Symposium on Growth of III-Nitrides, Montpellier, France, 2 pages, 4-8 July 2010. (Poster)\*\*
	85. Palacios, T., “Graphene Ambipolar Electronics,” Recent Advances in Graphene and Related Materials, Singapore, 1 page, 1-6 August 2010. (Invited)\*\*
	86. Palacios, T., “Graphene Ambipolar Electronics,” XIX International Materials Research Congress, Cancun, Mexico, 1 page, 15-19 August 2010. (Invited)[[50]](#footnote-50)\*\*
	87. Palacios, T., “GaN-on-Si Technology, A New Approach for Advanced Devices in Energy and Communications,” 40th European Solid-State Device Research Conference (ESSDERC), Seville, Spain, 4 pages, 13-17 September 2010. (Invited)\*\*
	88. Lee, D. S., R. Molnar, C. Hatem, X. Gao, S. Guo, and T. Palacios, “Ultralow Contact Resistance in InAlN/GaN Heterostructures Through Si Ion Implantation,” International Workshop on Nitride Semiconductors (IWN-2010), Tampa, FL, 1 page, 19-24 September 2010. (Oral Presentation) [[51]](#footnote-51)\*\*
	89. Azize, O. Saadat, H. Wang, B. Lu, S. Guo, and T. Palacios, “Top-down Fabrication of AlInN/GaN Nano-ribbon Transistors,” International Workshop on Nitride Semiconductors (IWN-2010), Tampa, FL, 1 page, 19-24 September 2010. (Oral Presentation) [[52]](#footnote-52)\*\*
	90. Saadat, O. I., K. K. Ryu, E. L. Piner, and T. Palacios, “Low-k Dielectric Passivation for AlGaN/GaN HEMTs,” International Workshop on Nitride Semiconductors (IWN-2010), Tampa, FL, 1 page, 19-24 September 2010. (Oral Presentation)\*\*
	91. Boles, T., C. Varmazis, D. Carlson, and T. Palacios, “Effect of Isolation Techniques on GaN on Silicon Breakdown Voltage,” International Workshop on Nitride Semiconductors (IWN-2010), Tampa, FL, 1 page, 19-24 September 2010. (Poster)\*\*
	92. Palacios, T., “GaN Transistors: Revolutionizing Electronics from Terahertz to Kilovolts,” International Workshop on Nitride Semiconductors (IWN-2010), Tampa, FL, 1 page, 19-24 September 2010. (Invited, Plenary)\*\*
	93. Palacios, T., “Future of GaN Electronics,” European Microwave Week, CNIT, Paris, France, 26 September – 1 October 2010. (Invited)\*\*
	94. Ryu, K., J. W. Chung, B. Lu, and T. Palacios, “Wafer Bonding Technology in Nitride Semiconductors for Applications in Energy and Communications,” 218th Meeting of the Electrochemical Society, Las Vegas, NV, 11 pages, 11-15 October 2010. (Invited)
	95. Palacios, T., “Graphene: Novel Science for Advanced Devices and Systems,” Materials Science & Technology Conference, Houston, TX, one page, 17-21 October 2010. (Invited)\*\*
	96. Palacios, T., “GaN Power Electronics,” 8th International Conference on Advanced Semiconductor Devices and Microsystems (ASDAM 2010), Smolenice, Slovakia, pp. 105-110, 25-27 October 2010. (Invited)\*\*
	97. Wang, H., and T. Palacios, “Graphene Ambipolar Electronics,” The International Symposium on Graphene Devices: Technology, Physics, and Modeling (ISGD 2010), Aizuwakamatsu, Japan, 2 pages, 27-29 October 2010. (Invited) \*\*
	98. Medlock, M., and T. Palacios, “Theoretical Study of the Expected Potential of Nitride-Based Photovoltaics,” Fall Meeting of the Materials Research Society, Boston, MA, 1 page, 29 November – 3 December 2010. (Poster) [[53]](#footnote-53)\*\*
	99. Mailly, B., and T. Palacios, “CVD-Grown Graphene Field Effect Transistors for Chemical Sensing Applications,” Fall Meeting of the Materials Research Society, Boston, MA, 6 pages, 29 November – 3 December 2010. (Oral Presentation)\*\*
	100. Wang, H. A. Hsu, K. Kang Kim, J. Kong, and T. Palacios, “Gigahertz Ambipolar Frequency Multipliers based on CVD Graphene,” Proc. of the International Electron Device Meeting, pp. 572-575, San Francisco, CA, 2010. (Oral Presentation)
	101. Chung, J. W., T.-W. Kim, and T. Palacios, “Advanced Gate Technologies for State-of-the-art fT in AlGaN/GaN HEMTs,” Proc. of the International Electron Device Meeting, pp. 676-679, San Francisco, CA, 2010. (Oral Presentation)\*\*
	102. Palacios, T., “500 GHz GaN Transistors… When and How?,” SPIE OPTO Photonics West, San Francisco, CA, 1 page, 22-27 January 2011. (Invited)
	103. Bonner, R.W., T. Desai, F. Gao, X. Tang, T. Palacios, S. Shin, and M. Kaviani, “Die level thermal storage for improved cooling of pulsed devices,” Proc. Of the 27th Annual IEEE Semiconductor Thermal Measurement and Management Symposium (SEMI-THERM), pp. 193-197, 20-24 March 2011. (Oral Presentation)\*\*
	104. Palacios, T., “Graphene Devices and Systems,” Graphene Week 2011, Obergurgl, Austria, 4 pages, 24-30 April 2011. (Invited)\*\*
	105. Ryu, K. K., H.-S. Lee, J. W. Chung and Palacios, T., “New Opportunities in GaN-Si Integration,” 2011 International Conference on Compound Semiconductor Manufacturing Technology (CSMANTECH), Palm Springs, CA, 4 pages, 16-19 May 2011. (Invited)
	106. Azize, M., K. Ryu, J. Roberts, E. L. Piner, and T. Palacios, “Top-down Fabrication of N-face GaN/AlGaN Nanowire Transistors,” 2011 International Symposium on Compound Semiconductors (ISCS), Berlin, Germany, 2 pages, 22-26 May 2011. (Oral Presentation)\*\*
	107. Lee, H.-S., K. Ryu, , and T. Palacios, “Heterogeneous Integration of GaN and Si (100) Devices on 4” Wafers,” 2011 International Symposium on Compound Semiconductors (ISCS), Berlin, Germany, 2 pages, 22-26 May 2011. (Oral Presentation)\*\*
	108. Lee, D. S., X. Gao, S. Guo, and T. Palacios, “New Technologies for mm-Wave InAlN/GaN Transistors,” 2011 International Symposium on Compound Semiconductors (ISCS), Berlin, Germany, 2 pages, 22-26 May 2011. (Oral Presentation)\*\*
	109. Wang, H., A. Hsu, K. K. Kim, J. Kong, and T. Palacios, “Graphene Ambipolar Electronics for RF Applications,” 2011 International Microwave Symposium (IMS), Baltimore, MD, 1 page, 5-10 June 2011. (Oral Presentation)\*\*
	110. Palacios, T, “Graphene Applications,” International Conference on the Science and Applications of Nanotubes (NT-11), Graphene Technology: Production, Assembly and Applications Symposium, Cambridge, MA, 1 page, 15-16, July 2011 (Invited)\*\*
	111. Palacios, T., “High Frequency Electronics Based on GaN and Graphene,” 9th Topical Workshop on Heterostructure Microelectronics (TWHM), Gifu-City, Japan, 28-30th, Aug. 2011. (Invited) \*\*
	112. Palacios, T., “Graphene-Based Electronics for RF Communications and Sensing,” Ohio Materials Week, Columbus, OH, September 12-14, 2011. (Plenary Talk)\*\*
	113. Saadat, O. I., and T. Palacios, “Low Temperature Gate Dielectric Deposition for Recessed AlGaN/GaN MIS-HEMTs,” 41st European Solid-State Device Research Conference (ESSDERC), Helsinki, Finland, pages 287-290, 12-16, Sept. 2011. (Oral Presentation) [[54]](#footnote-54)\*\*
	114. Lu, B., T. Palacios, D. Risbud, S. Bahl, and D. I. Anderson, “Extraction of Dynamic On-Resistance in GaN Transistors under Soft- and Hard-switching Conditions,” Compound Semiconductors IC Symposium, Hawaii’s Big Island, HI, pages 1-4, 16-19, October 2011. (Oral Presentation) [[55]](#footnote-55)\*\*
	115. Palacios, T., “Graphene Electronics for RF Communications,” 20th European Workshop on Heterostructure Technology (HeTech), Lille, France, pp. 44, 7-9, November 2011. (Invited)\*\*
	116. Lee, D. S., B. Lu, M. Azize, X. Gao, S. Guo, D. Kopp, P. Fay, and T. Palacios, “Impact of GaN Channel Scaling in InAlN/GaN HEMTs,” International Electron Device Meeting, Washington DC, pages 19.2.1 - 19.2.4, 5-7, December, 2011. (Oral Presentation)\*\*
	117. Palacios, T., “GaN Transistors: Revolutionizing Energy Processing,” fourth International Symposium on Advanced Plasma Science and its Applications to Nitrides and Nanomaterials, Aichi, Japan, March 4-8, 2012. (Invited)\*\*
	118. Palacios, T., “Graphene-based Electronics for RF Applications,” 7th German Microwave Conference (GeMiC), Ilmenau, Germany, pp. 8-9, 12-14, March 2012. (Invited)\*\*
	119. Palacios, T., “Graphene-based Electronics for RF Communications and Sensing,” 2012 Spring Meeting of the Materials Research Society, San Francisco, CA, April 9-13, 2012. (Invited). [[56]](#footnote-56)\*\*
	120. Palacios, T., “High Frequency GaN Transistors,” Tutorial, 2012 Spring Meeting of the Materials Research Society, San Francisco, CA, April 9-13, 2012. (Invited)\*\*
	121. Palacios, T., “Graphene and Other Layered Materials for Advanced Communications and Sensing,” Nanotechnology for Defense Conference, Las Vegas, NV, August 7, 2012. (Invited)\*\*
	122. Palacios, T., “Graphene-based Electronics for RF Communications and Sensing,” Crystal and Graphene Science Symposium, Waltham, MA, September 9, 2012. (Invited)\*\*
	123. Wang, H., L .Yu, Y. H. Lee, W. Fang, A. Hsu, P. Herring, M. Chin, M. Dubey, J. Kong, and T. Palacios, “Large-scale 2D Electronics based on Single-layer MoS2 Grown by Chemical Vapor Deposition,” International Electron Device Meeting, San Francisco, CA, pp. 4.6.1 - 4.6.4, 10-13, December 2012.\*\*
	124. Radhakrishna, U., L. Wei, D.-S. Lee, T. Palacios, and D. Antoniadis, “Physics-based GaN HEMT Transport and Charge Model: Experimental Verification and Performance Projection,” International Electron Device Meeting, San Francisco, CA, pp. 13.6.1 - 13.6.4, 10-13, December 2012. \*\*
	125. Palacios, T., “Fundamentals of GaN-based High Frequency Power Electronics,” Tutorial at the International Electron Device Meeting, San Francisco, CA, December, 2012. (Invited)\*\*
	126. Gao, F., C. V. Thompson, and T. Palacios, “Impact of Electrochemical Reactions on the Reliability of AlGaN/GaN HEMTs,” GOMACTech Conference, pp. 437-444, 13, March 2013. \*\*
	127. Wang, H., L. Yu, Y.-H. Lee, W. Fang, A. Hsu, P. Herring, M. Chin, M. Dubey, J. Kong, and T. Palacios, “Two-Dimensional Materials for Ubiquitous Electronics,” GOMACTech Conference, 3 pages, 13, March 2013. (Invited)\*\*
	128. Zhang, X., Y. Song, A. Hsu, K. K. Kim, J. Kong, M. S. Dresselhaus, and T. Palacios, “Surface Functionalization on Graphene Through Chlorination,” March Meeting of the American Physical Society, 1 page, 18-22, March 2013.\*\*
	129. Birdwell, A. G., F. J. Crowne, T. P. O’Regan, P. B. Shah, M. Dubey, L. Yu, H. Wang, and T. Palacios, “Temperature Dependence of the Raman Spectra of Mechanically Exfoliated Monolayer MoS2,” March Meeting of the American Physical Society, 1 page, 18-22, March 2013.\*\*
	130. Herring, P. K., A. L. Hsu, Y. C. Shin, S. J. Ha, K. K. Kim, J. Kong, T. Palacios, and P. Jarillo-Herrero, “Mid-Infrared Graphene Photoresponse,” March Meeting of the American Physical Society, 1 page, 18-22, March 2013. \*\*
	131. Wang, H., L. Yu and T. Palacios, “Large-scale 2D Electronics based on Single-layer MoS2,” March Meeting of the American Physical Society, 1 page, 18-22, March 2013. \*\*
	132. Palacios, T., “GaN Devices for the Next Generation of Power Electronics,” Spring Meeting of the Materials Research Society, San Francisco, CA, April 4, 2013. (Invited)\*\*
	133. Palacios, T., “Atom Thick Materials for the Next Revolution in Electronics,” Graphene 2013, Bilbao, Spain, p. 136, 23 April 2013. (Invited) \*\*
	134. Palacios, T., “Thoughts on Graphene Research Status, Funding and Priorities,” Graphene 2013, Bilbao, Spain, April 23, 2013. (Invited) [[57]](#footnote-57)\*\*
	135. Palacios, T., “Two-Dimensional Crystals for Ubiquitous Electronics,” Meeting of the Electrochemical Society, Toronto, Canada, 1 page, 15, May 2013. (Invited)\*\*
	136. Araki, T., S. Uchimura, J. Sakaguchi, Y. Nanishi, T. Fujishima, A. Hsu, K. K. Kim, T. Palacios, A. Pesquera, A. Centeno, A. Zurutuza, “RF-MBE Growth of GaN on Graphene/Si (100) Substrates,” 40th International Symposium on Compound Semiconductors (ISCS), Kobe, Japan, 3 pages, 19-23, May 2013.\*\*
	137. Palacios, T., “Gallium Nitride: The Silicon of the 21st Century,” WOCSDICE 2013, Warnemunde, Germany, pp. 39-40, 27 May 2013. (Invited) \*\*
	138. Palacios, T., “Short Course: New Circuits and Systems Based on 2D Materials,” Short Course in the Device Research Conference, South Bend, IN, June 22-24, 2013 (Invited)\*\*
	139. Zhang, Y., M. Sun, S. J. Joglekar, and T. Palacios, “High Threshold Voltage in GaN MOS-HEMTs by Fluorine Plasma and Gate Oxide,” Device Research Conference, South Bend, IN, 4 pages, Applied Physics Letters, 22-24 June 2013.\*\*
	140. Araki, T., K. Shaggy, J. Sakaguchi, K. Wang, Y. Nanishi, A. Uedo, Y. K. Zhou, S. Hasegawa, T. Fujishima, E. Matioli, and T. Palacios, “Impact of plasma power on the electrical properties of InN thin films grown by RF-MBE,” Electron Materials Conference, South Bend, IN, 3 pages, 24-26 June 2013.\*\*
	141. Lee, D. S., H. Wang, A. Hsu, M. Azize, O. Laboutin, Y. Cao, W. Johnson, E. Beam, A. Ketterson, M. Schuette, P. Saunier, and T. Palacios, “High Linearity Nanowire Channel GaN HEMT,” Device Research Conference, South Bend, IN, pp. 969-971, 22-24 June 2013.\*\*
	142. Samsel, I. K., E. X. Zhang, N. C. Hooten, E. D. Funkhouser, W. G. Bennet, R. A. Reed, R. D. Schrimpf, M W. McCurdy, D. M. Fleetwood, R. A. Weller, G. Vizkelethy, X. Sun, T.-P. Ma, O. I. Saadat, T. Palacios, “Charge Collection Mechanisms in AlGaN/GaN MOS High Electron Mobility Transistors,” 2013 IEEE Nuclear and Space Radiation Effects Conference, San Francisco, CA, pp. 4439-4445, 8-12 July 2013.\*\*
	143. Wang, H., L. Yu, A. Hsu, X. Zhao, B. Mailly, C. Mackin, Y. Hsien, Y. Shi, M. Dresselhaus, J. Kong, and T. Palacios, “Atom Thick Materials for the Next Revolution in Electronics,” Summer School of the Polytechnic University of Madrid, Madrid, Spain, 1 page, 16 July 2013. (Invited)\*\*
	144. Gao, F., and T. Palacios, “On the Origin of Surface Trapping Effects in AlGaN/GaN HEMTs,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013.\*\*
	145. Radhakrishna, U., T. Imada, T. Palacios, and D. Antoniadis, “MIT Virtual Source GaN HEMT – High Voltage (MVSH-HV) model: A physics based compact model for HV-GaN HEMTs,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013. \*\*
	146. Sun, M., B. Lu, and T. Palacios, “An Etch-Stop Barrier Structure for GaN Normally-off High Electron Mobility Transistors,” 10th International Conference on Nitride Semiconductors, Washington, DC, pp. 369-371, 25-30 August 2013.\*\*
	147. Zhang, L., Z. Liu, C. B. Soh, T. Palacios, and Soo Jin Chua, “Selective Area MOCVD Growth of InGaN/GaN LED on AlGaN/GaN HEMT for Nitride Monolithic Integration,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013.\*\*
	148. Uchimura, S.,J. Sakaguchi, T. Araki, Y. Nanishi, T. Fujishima, A. Hsu, K. K. Kim, T. Palacios, A. Pesquera, A. Centeno, A. Zurutuza, “Growth and Characterization of GaN on Graphene/Si (100) Substrates by RF-MBE,” 10th International Conference on Nitride Semiconductors, Washington, DC, 3 pages, 25-30 August 2013. \*\*
	149. Araki, T., S. Uchimura, J. Sakaguchi, Y. Nanishi, T. Fujishima, A. Hsu, K. K. Kim, T. Palacios, A. Pesquera, A. Centeno, and A. Zurutuza, “TEM Study on Microstructure of GaN on Graphene/Si (100) Grown by RF-MBE,” 10th International Conference on Nitride Semiconductors, Washington, DC, 3 pages, 25-30 August 2013.\*\*
	150. Imada, T.,D. Piedra, and T. Kikkawa, and T. Palacios, “Correlation of On-Wafer 400 V Dynamic Behavior and Trap Characteristics of GaN HEMTs,” 10th International Conference on Nitride Semiconductors, Washington, DC, pp. 779-783, 25-30 August 2013. [[58]](#footnote-58)\*\*
	151. Matioli, E., B. Lu, and T. Palacios, “Ultra-Low leakage AlGaN/GaN Schottky diodes based on 3D anode structure,” 10th International Conference on Nitride Semiconductors, Washington, DC, pp. 3365-3370, 25-30 August 2013.\*\*
	152. Lu, B., M. Sun, and T. Palacios, “Interface Analysis and Modeling of Normally-Off GaN MISFETs with an Etch-Stop-Barrier Structure,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013. \*\*
	153. Saadat O. I., and T. Palacios, “Mobile-ion contamination and its impact on AlGaN/GaN MOSHEMTs,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013. \*\*
	154. Liu, Z., M. Heuken, and T. Palacios, “Low ohmic contact resistance Rc<0.1 ohm.mm for GaN HEMTs using Au-free metallization and low-temperature annealing,” 10th International Conference on Nitride Semiconductors, Washington, DC, August 25-30, 2013. \*\*
	155. Wang, H., L. Yu, Y.-H. Lee, X. Zhang, B. Mailly, J. Kong and T. Palacios, “Two-Dimensional Materials for Ubiquitous Electronics,” International Microwave Symposium, Seattle, WA, 3 pages, 2-7 September 2013. (Invited)\*\*
	156. Matioli, E., B. Lu, F. Gao, and T. Palacios, “Nanostructured GaN Devices: Pushing the Limits of Linearity and Reliability,” International Conference on Solid State Devices and Materials, Fukuoka, Japan, September 24-27, 2013. (Invited) \*\*
	157. Palacios, T., “Atom-Thick Materials for the Next Electronics Revolution,” MIT Industrial Liaison Program Conference, Cambridge, MA, 1 page, 14 November 2013. (Invited)\*\*
	158. Boles, T., L. Xia, A. Kaleta, C. McLean, O. Saadat, and T. Palacios, “Hafnium Oxide ALD Passivation of GaN MISHEMTs,” MACOM 26th Engineering Conference, October 21, 2013. \*\*
	159. Palacios, T., “The Future of Nitrides (and other Extreme Electronic Materials),” MACOM 26th Engineering Conference, October 21, 2013. (Plenary) \*\*
	160. Lin, Y., X. Ling, Y.-Hsien Lee, M. Dresselhaus, J. Kong, and T. Palacios, “Optical Properties of Monolayer MoS2 by Chemical Vapor Deposition at High Carrier Density,” Fall Meeting of the Materials Research Society, Boston, MA, December 1-6, 2013.\*\*
	161. Radhakrishna, U., D. Piedra, Y. Zhang, T. Palacios, and D. Antoniadis, “High Voltage GaN HEMT Compact Model: Experimental Verification, Field Plate Optimization and Charge Trapping,” International Electron Device Meeting (IEDM), Washington, DC, pp. 32.7.1-32.7.4, 9-11 December 2013. \*\*
	162. Rakheja, S., H. Wang, T. Palacios, I. Meric, K. Shepard, and D. Antoniadis, “A Unified Charge-Current Compact Model for Ambipolar Operation in Quasi-Ballistic Graphene Transistors: Experimental Verification and Circuit-Analysis Demonstration,” International Electron Device Meeting (IEDM), Washington, DC, pp. 5.5.1-5.5.4, 9-11 December 2013. [[59]](#footnote-59)\*\*
	163. Kobayashi, K., S. Hatakeyama, T. Yoshida, D. Piedra, T. Palacios, T. Otsuji, and T. Suemitsu, “Current Collapse Suppression in AlGaN/GaN HEMTs by Means of Slant Field Plates Fabricated by Multi-layer SiCN,” International Semiconductor Device Research Symposium 2013, Washington, DC, pp. 63-69, 11-13 December 2013.\*\*
	164. Palacios, T., "Two-Dimensional Materials: Challenges and Opportunities," Molecular Materials Meeting (M3 Conference), Biopolis, Singapore, January 2014. (Invited talk)\*\*
	165. Palacios, T. "New Applications of 2D Materials," WOCSEMMAD, San Antonio, TX, February 16-19 2014. (Invited talk)\*\*
	166. Zhang, X., H. Wang, Y. Song, A. Hsu, J. Kong, M.S. Dresselhaus, T. Palacios, "Surface fluorination on graphene field effect transistors,” APS March Meeting, Denver, CO, p. 37007, March 2014.\*\*
	167. Yu, L., H. Wang , Y.H. Lee , X. Ling , Y.C. Shin , E.J.G. Santos , E. Kaxiras , J. Kong , T. Palacios, " Graphene-MoS2 Hybrid Technology for Large-Scale Two-Dimensional Electronics" APS March meeting, Denver, CO, pp. 3055-3063, March 2014.\*\*
	168. Zubair, A.,O.I. Saadat, Y. Song, J. Kong, M.S. Dresselhaus, and T. Palacios, "Vertical Graphene-base Transistor on GaN Substrate," Bulletin of American Physical Society, Denver, CO., vol. 59, No. 1, 3-7 March 2014.\*\*
	169. Palacios, T., "2D Semiconductors: The Road from Physics and Materials to Systems," MRS Spring Meeting, San Francisco, CA, 2014. (Invited talk) \*\*
	170. Palacios, T., "Graphene-based Mid-Infrared Detector Array for Night Vision and Sensing Applications," Government Microcircuit Applications and Critical Technology Conference, GOMACTECH, April 2014. \*\*
	171. 筑波大数理1，産総研ナノシステム2，産総研計測フロンティア3，物質・材料研究機構, 上殿 明良，石橋 章司，大平 永康3，鈴木 良，角谷 正友，T. Palacios, "Studies of an optical response of point defects and electric fields in a crystal singularity by means of positron annihilation," Meeting of the Japanese Applied Physics Society, May 5, 2014.\*\*
	172. Palacios, T., "Recent Progress on Two-Dimensional Materials for RF Communications and Sensing," SPIE Defense, Security and Sensing Meeting, Baltimore, MD, pp. 9083-2, 6-8 May 2014. (Invited talk) [[60]](#footnote-60)\*\*
	173. Gao, F., C.V. Thompson, J. Del Alamo, and T. Palacios, “Role of Electrochemical Reactions in the Degradation Mechanisms of AlGaN/GaN HEMTs,” CS MANTECH Conference, Denver, CO, pp. 29-32, 19-22 May 2014. (Invited talk)\*\*
	174. Yu, L., H. Wang, Y.-H. Lee, X. Ling, Y.-C. Shin, J. Kong, and T. Palacios, "Graphene-MoS2 Hybrid Technology for Large-Scale Two-Dimensional Electronics," Meeting of the American Physical Society, Denver, CO, pp. 3055-3063, 8 May 2014.\*\*
	175. Zhang, Y., M. Sun, D. Piedra, M. Azize, X. Zhang, T. Fujishima, and T. Palacios, “Fabrication and Performance of GaN-on-Si Vertical Schottky and p-n Diodes,” 41st International Symposium on Compound Semiconductor (ISCS), Oral Presentation, Montpellier, France, May 2014. \*\*
	176. Uedono, A., T. Fujishima, Yu Cao, S. Joglekar, D. Piedra, H.-S. Lee, Y. Zhang, Y. Zhang, N. Yoshihara, S. Ishibashi, M. Sumiya. O. Laboutin, W. Johnson, and T. Palacios, "Native and process induced defects in GaN films frown on Si substrate using a monoenergetic positron beam," 14th International Workshop on Junction Technology (IWJT), Shanghai, China, May 18-20, 2014.\*\*
	177. Boles, T., D. Carlson, L. Xia, A. Kaleta, C. McLean, D. Jin, T. Palacios, G. W. Turner, R. J. Molnar, "Effect of Multi-Field Plates on the Reverse Breakdown and Leakage Characteristics of GaN-on-Silicon HEMTs," CS MANTECH Conference, Denver, CO, 4 pages, May 2014. \*\*
	178. Bagnall, K. R., O. I. Saadat, T. Palacios, and E. N. Wang, "Analytical Thermal Model for HEMTs with Complex Epitaxial Structures," IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITHERM), Orlando, FL, pp. 947-958, 27-30 May 2014.\*\*
	179. Liu, Z., M. Heuken, D. Fahle, G. I. Ng, and T. Palacios, “CMOS-compatible Ti/Al ohmic contacts (Rc <0.3 Ωmm) for u-AlGaN/AlN/GaN HEMTs by low temperature annealing (<450 °C),” Device Research Conference (DRC), 2014 72 Annual, Santa Barbara, CA, pp. 75-76, June 2014. \*\*
	180. Yu, L., A. Zubair, T. Palacios, "High-performance WSe2 CMOS devices and integrated circuits,” Graphene Week, Sweden, Gothenburg, June 2014. \*\*
	181. Palacios, T., "Gallium Nitride: The Silicon of the 21st Century," The Age of Silicon Symposium, Cambridge, MA, July 25, 2014. (Invited talk)\*\*
	182. Uedono, A., S. Ishibashi, N. Oshima, R. Suzuki, M. Sumiya, and T. Palacios, "Point defect characterization of group-III nitrides by means of positron annihilation," Gordon Research Conference, Waltham, MA, August 2014.\*\*
	183. Srivastava, P., D. Piedra, O. I. Saadat, U. Radhakrishna and T. Palacios, “Large Periphery GaN-HEMTs for Power Amplifier Applications,” International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 72, 24-29 August 2014. \*\*
	184. Radhakrishna, U., P. Choi, P. Srivastava, T. Palacios, D. Antoniadis, “MIT Virtual Source GaNFET-RFModel: A Physics Based Compact Model for RF-GaN HEMT Power Amplifier Design,” International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 105, 24-29 August 2014.\*\*
	185. Piedra, D., E. Matioli, B. Lu, D. S. Lee, M. Azize, P. Srivastava and T. Palacios, “Nanowires HEMTs,” International Workshop on Nitride Semiconductor, Wrocław, Poland, 24-29 August 2014. [[61]](#footnote-61)\*\*
	186. Bagnall, K. R., O. I. Saadat, S. J. Joglekar, B. Barabadi, T. Palacios, and E. N. Wang, "3D Thermal Modeling and Optimization of GaN HEMTs," International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 105, 24-29 August 2014.\*\*
	187. Matioli, E., and T. Palacios, "Room Temperature Ballistic Transport in III-Nitride Heterostructures," International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 73, 24-29 August 2014. \*\*
	188. Koch, R. J., A. H. Hsu, M. Ong, M. Hofmann, E. Reed, M. Dresselhaus, J. Kong, T. Palacios, and T. Seyller, "Contact Metals on Graphene: A Photoemission Study," 15th IUMRS International Conference in Asia (IUMRS-ICA), Fukuoka, Japan, August 24-30, 2014.\*\*
	189. Liu, Z., M. Heuken, G. I. Ng, and T. Palacios, "Low Temperature Au-free Ti-Al Ohmic Contact for Gate-First GaN HEMTs," International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 44, 24-29 August 2014.\*\*
	190. Joglekar, S., M. Azize, and T. Palacios, "Impact of Al2O3 Passivation on the Surface Properties and Schottky Barrier Height of AlGaN/GaN Transistors," International Workshop on Nitride Semiconductor, Wrocław, Poland, p. 179, 24-29 August 2014. Best student paper award. \*\*
	191. Zhang, Y., M. Sun, D. Piedra, M. Azize, T. Fujishima, and T. Palacios, “Demonstration of High-Voltage Vertical GaN Diodes on Si Substrates,” International Workshop on Nitride semiconductor 2014 (IWN2012), oral presentation, Wroclaw, Poland, p. 74, 24-29 August 2014. \*\*
	192. Piedra, D., E. Matioli, B. Lu, D. S. Lee, M. Azize, P. Srivastava, and T. Palacios, "Top-down III-N Nanowires Electronic Devices: Pushing the Limits of Power and Linearity," International Workshop on Nitride Semiconductors, IWN, Wroclaw, Poland, p. 208, 24-29 August 2014. (Invited talk)\*\*
	193. Palacios, T., "Rump Session on the future of GaN Power Electronics," International Workshop on Nitride Semiconductors, IWN, Wroclaw, Poland, p. 15, 24-29 August 2014. (Chair and organizer) \*\*
	194. Wong, H. Y., N. Braga, R. V. Mickevicius, F. Gao, and T. Palacios, "Study of AlGaN/GaN HEMT Degradation through TCAD Simulations," International Conference on Simulation of Semiconductor Processes and Devices, Yokohama, Japan, pp. 97-100, 9-11 September 2014. [[62]](#footnote-62)\*\*
	195. Palacios, T., "Seamless on-wafer integration of GaN and Si devices for the next generation of power management chips," Integrated Power Conversion and Power Management Conference (PWRSOC), Boston, MA, p. 29, 6-8 October 2014. (Invited talk)\*\*
	196. Lin, Y., X. Ling, J. Kong, T. Palacios, M. S. Dresselhaus, "Selective Generation of Excitons and Trions in Single-Layer MoS2 by Solvent-Based Dielectric Screening," MRS 2014 Fall Meeting, Boston, MA, pp. 5569-5576, December 2014.\*\*
	197. Boles, T., A. Kaleta, C. McLean, L. Xia, O. Saadat, and T. Palacios, "Hafnium Oxide ALD Passivation of GaN MISHEMTs," MACOM Engineering Conference, 2014. \*\*
	198. Palacios, T., "GaN: The Next-Si of Power Electronics (and some of the relevant material issues to make it happen)," MRS Fall Meeting, Boston, MA, December 1, 2014. (Invited talk) [[63]](#footnote-63)\*\*
	199. Negara, M. A., D. M. Zhernokletov, R. D. Long, O. I. Saadat, T. Palacios, and P. C. McIntyre, "Analysis of Charge Trapping and Dipole Effect in TiO2/Al2O3 Bilayer Dielectric AlGaN/GaN MOSHEMTs," 45th IEEE Semiconductor Interface Specialists Conference (SISC), San Diego, CA, December 10-13, 2014. [[64]](#footnote-64)\*\*
	200. Sun, X., Y. Zhang, K. S. Chang-Liao, T. Palacios, and T. P. Ma, "Impacts of Fluorine-treatment on E-mode AlGaN/GaN MOS-HEMTs," IEEE International Electron Device Meeting (IEDM), San Francisco, CA, pp. 17.3.1 – 17.3.4, 15-17 December 2014.\*\*
	201. Radhakrishna, U., P. Choi, S. Goswami, L.-S. Peh, T. Palacios, and D. Antoniadis, "MIT Virtual Source GaN FET-RF Compact Model for GaN HEMTs: From Device Physics to RF Frontend Circuit Design and Validation, " IEEE International Electron Device Meeting (IEDM), San Francisco, CA, pp. 11.6.1 – 11.6.4, 15-17 December 2014. \*\*
	202. A. Zubair, A. Nourbakhsh, M.S. Dresselhaus, S. De Gendt, T. Palacios, "Negative Differential Transconductance in a MoS2/WSe2 Heterojunction Field Effect Transistor," American Physics Society March Meeting Abstracts, vol. 60, March 2015. \*\*
	203. Yu, L., S. Ha, D. El-Damak, E. McVay, X. Ling, A. Chandrakasan, J. Kong, T. Palacios, "Two-dimensional materials based transparent flexible electronics," In American Physics Society March Meeting Abstracts, vol. 1, p. 2013. March 2015. \*\*
	204. Zhang, X, T. Schiros, D. Nordlund, Y.C. Shin, J. Kong, M. Dresselhaus, T. Palacios, Tomas, MIT/Columbia University/SLAC Collaboration, “Near-edge X-ray Absorption Fine Structure (NEXAFS) Spectroscopy study on Chlorinated Graphene through Plasma-based Surface Functionalization,” American Physics Society March Meeting Abstracts, vol. 1, pp. 1003, March 2015.\*\*
	205. Huang, C.C, F. Reid, T. Palacios, S.J. Chua, E. A. Fitzgerald, “The Growth of Low Wafer Bow AlGaN/GaN Structure on 200mm Si(111),” CS Mantech Conference, Scottsdale, AZ, vol. 6, pp. 107-110, May 2015. \*\*
	206. T. Palacios, "System-level applications of two-dimensional materials: Challenges and Opportunities," 2015 73rd Annual Device Research Conference (DRC), pp. 233-234 (2015) (Invited Talk). \*\*
	207. Nourbakhsh, A, A. Zubair, S. Huang, X. Ling, M.S. Dresselhaus, J. Kong, S. De Gendt, T. Palacios, "15-nm channel length MoS2 FETs with single-and double-gate structures," 2015 VLSI Technology Symposium, T28-T29, June 2015.\*\*
	208. Yu, L., D. El-Damak, S. Ha, S. Rakheja, X. Ling, J. Kong, D. Antoniadis, A. Chandrakasan, T. Palacios, “MoS 2 FET fabrication and modeling for large-scale flexible electronics, ” VLSI Technology Symposium, 2015 Symposium, pp. T144-T145, June 2015. \*\*
	209. Uedono, A., S. Ishibashi, N. Oshima, R. Suzuki, T. Palacios, and M. Sumiya, "acancy-Type Defects in GaN and InxGa1-XN Studied by Means of Positron Annihilation Spectroscopy," International Conference on Nitride Semiconductors (ICNS), Beijing, China, August 2015 (Invited Talk). \*\*
	210. Liu, Z., C.-C. Huang, W. Xing, D. Fahle, M. Heuken, G. Ing Ng, and T. Palacios, “Si Ion Implantation and Activation in NH3 for CMOS-Compatible Fabrication of GaN HEMTs on Si Substrates," International Conference on Nitride Semiconductors (ICNS), Beijing, China, August 2015 (Poster). [[65]](#footnote-65)\*\*
	211. Zhang, Y., M. Sun, H.-Y. Wong, C. Hatem, D. Piedra, T. Sumitomo, N. de Almeida Braga, V. Mickevicius, T. Palacios, “Origin and Control of off-State Leakage Current in GaN-on-Si Vertical Diodes," International Conference on Nitride Semiconductors (ICNS), Beijing, China, August 2015. \*\*
	212. Palacios, T., "Gallium Nitride: The Next Silicon of Power Electronics," International Conference on Nitride Semiconductors (ICNS), Beijing, China, August 2015 (Invited Talk). \*\*
	213. Piedra, D., B. Lu, M. Sun, Y. Zhang, E  Matioli, F  Gao,  J. Chung, O. Saadat, L. Xia, M. Azize, and T. Palacios, "Advanced Power Electronic Devices Based on Gallium Nitride (GaN)", International Electron Device Meeting (IEDM), December 2015 (Invited Talk). \*\*
	214. Zhang, Y., H.-Y. Wong, M. Sun, S. Joglekar, N. Braga, V. Mickevicius, and T. Palacios: "Design Space and Origin of Off-State Leakage in GaN Vertical Power Diodes,” International Electron Device Meeting (IEDM), December 2015. \*\*
	215. Yu, L., D. El-Damak, S. Ha, X. Ling, Y. Lin, A. Zubair, and Y.-H. Lee, J. Kong, A. Chandrakasan, T. Palacios,"Enhancement-Mode Single-layer CVD MoS2 FET Technology for Digital Electronics", International Electron Device Meeting (IEDM), December 2015. \*\*
	216. Radhakrishna, U., S. Lim, P. Choi, T. Palacios, and D.A Antoniadis: "GaNFET Compact Model for Linking Device Physics, High Voltage Circuit Design and Technology Optimization", International Electron Device Meeting (IEDM), December 2015. \*\*
	217. Palacios, T: “How Integration will Enable the Light Bulb of the Future” 2016 DOE Solid State Lighting, Raleigh, NC, February 2016 (Invited Talk.) \*\*
	218. T. Palacios, “System-Level Applications of Two-Dimensional Materials: Challenges and Opportunities,” Graphene 2016, Genova, Italy, May 2016. (Invited talk)A. Nourbakhsh, A. Zubair, A. Tavakkoli, R. Sajjad, X. Ling, M. Dresselhaus, J. Kong, K. Berggren, D. Antoniadis ,T. Palacios, “Serially Connected MoS2 FETs with Channel Patterned by a 7.5 nm Resolution Directed Self-Assembly Lithography,” VLSI Technology Symposium, June 2016, Honolulu, HI. [[66]](#footnote-66)\*\*
	219. T. Palacios, “New Materials to Push the Limits of Moore’s Law,” Lester Eastman Conference, Lehigh University, August 2016. (Invited talk)
	220. T. Palacios, “System-level Applications of Two-Dimensional Materials: Challenges and Opportunities,” Princeton University, Feb. 2016.
	221. T. Palacios, “GaN and Graphene: Extreme Materials for the Future of Electronics,” MIT Spain Club, MIT, April 2016.
	222. T. Palacios, “Redefining Electronics: System-Level Applications of 2D Materials,” Fundación Ramon Areces, Madrid, June 2016.
	223. M. Sun, Y. Zhang, and T. Palacios, “Vertical GaN Transistors for the Next Generation of Power Electronics,” WiPDA 2016 (Keynote/Plenary talk). \*\*
	224. T. Palacios, “System-Level Applications of Two Dimensional Materials,” Graphene, Genova Italy, 2016. (Invited talk)
	225. T. Palacios, “New Materials to Push the Limits of Moore’s Law,” Lester Eastman Conference, August 2016. (Invited talk)
	226. Y. Zhang, M. Sun, and T. Palacios, “Low-cost and High-performance Vertical GaN Diodes and Transistors for Power Electronics,” IFWS, Beijing, China, 2016. (Invited talk) \*\*
	227. W. Xing, Z. Liu, H. Qiu, G. Ing Ng, T.Palacios, “Planar-Nanostrip-Channel InAlN/GaN HEMTs on Si With Improved gm and ftextsfT Linearity”, IEEE Electron Device Letters, 38. 38 (5), 619-622, 2017. \*\*
	228. M. Fátima Romero; Alberto Boscá; Jorge Pedrós; Javier Martínez; Rajveer Fandan; Tomás Palacios; Fernando Calle, “Impact of 2D-Graphene on SiN Passivated AlGaN/GaN MIS-HEMTs Under Mist Exposure,” in IEEE Electron Device Letters, 38 (10), 1441-1444, 2017. \*\*
	229. W. Xing, Z. Liu, H.Qiu, K. Ranjan, Y. Gao, G. Ing Ng; T. Palacios, “InAlN/GaN HEMTs on Si with high fT of 250 GHz,” in IEEE Electron Device Letters, PP (99), 1-1, 2017. \*\*
	230. T. Srimani, G.Hills, M.D. Bishop, U. Radhakrishna, A. Zubair, R. S. Park,Y. Stein, T. Palacios, D. Antoniadis; M.M. Shulaker, “Negative Capacitance Carbon Nanotube FETs,” in IEEE Electron Device Letters, 38 (4), 509-512, 2017. \*\*
	231. N. Chowdhury, G. Iannaccone, G. Fiori, D. A. Antoniadis, and T. Palacios. "GaN Nanowire n-MOSFET with 5 nm Channel Length for Applications in Digital Electronics," IEEE Electron Device Letters (2017). V. 38(7) pp. 859-862. \*\*
	232. E. Aklimi, D. Piedra, K. Tien, T. Palacios, K. L. Shepard, “Hybrid CMOS/GaN 40-MHz Maximum 20-V Input DC–DC Multiphase Buck Converter,” in IEEE Electron Device Letters, 38 (4), 509-512, 2017\*\*
	233. Y. Zhang, M. Sun, D. Piedra, J. Hennig, A. Dadgar, T. Palacios, “Reduction of on-resistance and current crowding in quasi-vertical GaN power diodes”, Applied Physics Letters 111, 163506, Oct. 2017. \*\*
	234. Y. Zhang; Z. Liu; M. J. Tadjer; M. Sun; D. Piedra; C. Hatem; T. J. Anderson; L. E. Luna; A. Nath; A. D. Koehler; H. Okumura; J. Hu; X. Zhang; X. Gao; B. N. Feigelson; K. D. Hobart; T. Palacios, "Vertical GaN Junction Barrier Schottky Rectifiers by Selective Ion Implantation," in IEEE Electron Device Letters , vol.38, no.8, pp.1097-1100, Aug. 2017. \*\*
	235. M. Sun, Y. Zhang, X. GAO, T. Palacios, “High-Performance GaN Vertical Fin Power Transistors on Bulk GaN Substrates,” in IEEE Electron Device Letters, 38 (4), 509-512, 2017. \*\*
	236. K.T. Lee, C. Bayram, D. Piedra; E. Sprogis, H. Deligianni, B. Krishnan, G. Papasouliotis, A. Paranjpe, E. Aklimi, K. Shepard, T. Palacios, D. Sadana, “GaN Devices on a 200 mm Si Platform Targeting Heterogeneous Integration”, in IEEE Electron Device Letters , 38 (8), 1094-1096, 2017. [[67]](#footnote-67)\*\*
	237. Y. Zhang, D. Piedra, M. Sun, J. Hennig, A. Dadgar, L. Yu, T. Palacios, "High-Performance 500 V Quasi- and Fully-Vertical GaN-on-Si pn Diodes," in IEEE Electron Device Letters, vol. 38, no. 2, pp.248-251, February 2017. \*\*
	238. Y. Zhang, M. Sun, Z. Liu, D. Piedra, J. Hu, X. Gao, T. Palacios. “Trench formation and corner rounding in vertical GaN power devices,” Applied Physics Letters, Vol. 110, Issue 19, May 2017. \*\*
	239. W. Xing, Z. Liu, H. Qiu, K. Ranjan, Y. Gao, G. Ing Ng, T. Palacios, “InAlN/GaN HEMTs on Si with high fT of 250 GHz,” in IEEE Electron Device Letters, PP (99) pp1-1, 2017\*\*(Invited) Y. Zhang, M. Sun and T. Palacios, “GaN power devices: Perfecting the vertical architecture”, Feature Article in Compound Semiconductor Magazine, pp. 22-26, Oct. 2017. [[68]](#footnote-68)\*\*
	240. S. Joglekar, U. Radhakrishna, D. Piedra, D. Antoniadis, T. Palacios, “Large signal linearity enhancement of AlGaN/GaN high electron mobility transistors by device-level Vt engineering for transconductance compensation,” 2017 IEEE International Electron Devices Meeting (IEDM) \*\*
	241. Y. Zhang, M. Sun, D. Piedra, J. Hu, Z. Liu, Y. Lin, X. Gao, K. Shepard, T. Palacios, “1200 V GaN vertical fin power field-effect transistors,” 2017 IEEE International Electron Devices Meeting (IEDM) [[69]](#footnote-69)\*\*
	242. S.W. Chung, P. Srivastava, X. Yang, T. Palacios, H.S. Lee, “Digital post-correction on dynamic nonlinearity in GaN HEMT track-and-hold sampling circuits,” 2017 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS) \*\*
	243. N. Chowdhury, T. Palacios, “Nanostructured GaN transistors,” 2017 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS) \*\*
	244. M. Hempel, E.McVay, J.Kong, T. Palacios, MIT, “Building Flexible, Microscopic Sensor Nodes with 2D Materials\*,” APS March Meeting 2018, March 5–9, 2018; Los Angeles, California\*\*
	245. E. McVay, A. Zubair, A. Nourbakhsh, T. Palacios (MIT), “Fabrication and characterization of multi-layer WSe2 solar cells,”APS March Meeting 2018, March 5–9, 2018; Los Angeles, California\*\*
	246. Zubair, A. Nourbakhsh, H.Wang, M.Qi, M. Hempel, J. Kong, D. Jena, M.Dresselhaus, T.Palacios, “Carrier transport studies in graphene-base Hot Electron Transistor,” APS March Meeting 2018, March 5–9, 2018; Los Angeles, California\*\*
	247. Y. Lin, Q. Ma, P.-C. Shen, M. Dresselhaus, P. Jarillo-Herrero, X. Ling, J. Kong, T. Palacios, “Broadband photoresponse from asymmetric hot-carrier thermalizations in atomically thin lateral heterojunctions,” APS March Meeting 2018, March 5–9, 2018; Los Angeles, California
	248. P.C. Shen, Y. Lin, X. Wang, X. Ling, T. Palacios, J. Kong, “Unraveling the effect of multiple defect states in synthetic monolayer MoS2 through electronic and optical probes,” APS March Meeting 2018, March 5–9, 2018; Los Angeles, California\*\*
	249. S.C. Lu, Y.Chu, Y. Kim, M. Y. Mohamed, G. Klimeck, T. Palacios, U. Ravaioli, “Design Guidelines and Limitations of Multilayer Two-dimensional Vertical Tunneling FETs for UltraLow Power Logic Applications,” 2018 International Conference on Simulation of Semiconductor Processes and Devices (SISPAD), Sept. 2018 \*\*
	250. X. Zhang, J. Grajal, X. Wang, U. Radhakrishna, Y. Zhang, J. Kong, T. Palacios, “MoS2Phase-junction-based Schottky Diodes for RF Electronics,” 2018 IEEE/MTT-S International Microwave Symposium-IMS, 345-347 \*\*
	251. M. Ruzzarin, M. Meneghini, C. De Santi, G. Meneghesso, E. Zanoni, M. Sun, T. Palacios, “Degradation of vertical GaN FETs under gate and drain stress,” 2018 IEEE International Reliability Physics Symposium (IRPS) \*\*
	252. Zubair, A. Nourbakhsh, M. Theng, T. Palacios, “Negative Capacitance MoS2 FET with Doped HfO2 Ferroelectric/dielectric Gate Stack,” Compound Semiconductor Week 2018, Cambridge, MA, USA [[70]](#footnote-70)\*\*
	253. Zubair, A. Nourbakhsh, M. Theng, T. Palacios, “MoS2 FETs with Doped HfO2 Ferroelectric/Dielectric Gate Stack,” MRS Fall Meeting 2018, Boston, MA, USA
	254. T. Palacios, “GaN Nanoelectronics,” UKNC Winter Conference 2018, Manchester, GB. Jan 2018. (Invited talk)
	255. T. Palacios, “Gallium Nitride: Extreme Properties (and Opportunities) for Post-Moore Computing,” APS March Meeting 2018 Los Angeles, California, Mar. 2018. (Invited talk)
	256. T. Palacios, “Fin-based GaN RF and Power Devices,” GaN Marathon 2.0 Padova, Italy, Apr. 2018. (Invited talk)
	257. T. Palacios, “2D Materials for Hardware Accelerators in More-than-Moore Electronics,” Gordon Research Conference, Frontiers of Science, Stonehill College, Easton, MA, USA, June 2018. (Invited talk)
	258. X. Zhang, T. Palacios, “MoS2 Phase-Junction-Based Schottky Diodes for RF Electronics,” International Microwave Symposium, Philadelphia, PA, June 2018. (Invited talk)
	259. T. Palacios, “GaN Nanostructures (or how to Take Transistor Linearity to new Levels),” International Symposium on Growth of III-Nitrides ISGN-7, Warsaw, Poland, Aug 2018. (Invited talk) \*\*
	260. T. Palacios, “Novel Vertical GaN Power Devices,” SSDM2018 (International Conference on Solid State Devices and Materials) University of Tokyo, Tokyo, Japan, Sept. 2018. (Invited talk)
	261. T. Palacios, “Gallium nitride, graphene and the new computing revolution,” 12 Spanish Conference on Electron Devices, Salamanca, Spain, Sept. 2018. (Invited talk)
	262. T. Palacios, “Gallium Nitride and the New Computer Revolution,” International Workshop on Nitride Semiconductors 2018, Kanazawa, Japan, Nov. 2018. (Plenary talk)
	263. Girish Rughoobur, Jiayuan Zhao, Ahmad Zubair, Lay Jain, T Palacios, Jing Kong and Akintunde I. Akinwande, “Nano-encapsulation with 2D Materials for Ambient Operation of Field Emission Electron Devices,” Fall Meeting of the Materials Research Society, Boston, MA (2019)
	264. Mantian Xue, Charles Markin, Yiyue Luo, Tomas Palacios, “Large-area multiplexed graphene sensors for detection of ions in electrolyte,” Fall Meeting of the Materials Research Society, Boston, MA (2019) \*\*
	265. Ma, Qiong; Lui, Chun Hung; Song, Justin CW; Lin, Yuxuan; Kong, Jian Feng;

Cao, Yuan; Dinh, Thao H; Nair, Nityan L; Fang, Wenjing; Watanabe, Kenji;

“Giant intrinsic photoresponse in pristine graphene,” Nature Nanotechnology, 14, 2, 145 (2019).

* 1. Zhang, Xu; Grajal, Jess; Vazquez-Roy, Jose Luis; Radhakrishna, Ujwal; Wang, Xiaoxue; Chern, Winston; Zhou, Lin; Lin, Yuxuan; Shen, Pin-Chun; Ji, Xiang; “Two-dimensional MoS 2-enabled flexible rectenna for Wi-Fi-band wireless energy harvesting,” Nature, 566, 7744, 368 (2019). \*\*
	2. Hironori Okumura, Yuji Kato, Takayoshi Oshima, and T. Palacios, “Demonstration of (AlGa)2O3-channel MOSFETs,”; 3rd International Workshop on Gallium Oxide and Related Materials (IWGO-3), Columbus, OH, Aug. 12-15th, 2019. \*\*
	3. Guo, Yunfan; Shen, Pin-Chun; Su, Co, ng; Lu, Ang-Yu; Hempel, Marek; Han, Yimo; Ji, Qingqing; Lin, Yuxuan; Shi, Enzheng; McVay, Elaine; “Additive manufacturing of patterned 2D semiconductor through recyclable masked growth,” Proceedings of the National Academy of Sciences, 116, 9, 3437-3442 (2019). \*\*
	4. Nadim Chowdhury, Mengyang Yuan, Qingyun Xie, Nitul S. Rajput, Peng Xiang, Kai Cheng, and Toms Palacios, “First Demonstration of Self-Aligned 100 nm Channel Length E-Mode p-FET with Record RON Based on GaN/AlGaN Heterostructure on Si,” 2019 International Electron Device Meeting, San Francisco, CA, Dec. 8-11, 2019.
	5. Okumura, Hironori; Kato, Yuji; Oshima, Takayoshi; Palacios, T; “Demonstration of lateral field-effect transistors using Sn-doped&(AlGa) 2O3 (010),”Japanese Journal of Applied Physics, 58, SBBD12 (2019). [[71]](#footnote-71)\*\*
	6. Xiao, Ming; Gao, Xiang; Palacios, Tomas; Zhang, Yuhao; “Leakage and breakdown mechanisms of GaN vertical power FinFETs,” Applied Physics Letters, 114, 16, 163503 (2019). \*\*
	7. Sun, Yilin; Qian, Liu; Xie, Dan; Lin, Yuxuan; Sun, Mengxing; Li, Weiwei; Ding, Liming; Ren, Tianling; Palacios, Toms; “Photoelectric Synaptic Plasticity Realized by 2D Perovskite,” Advanced Functional Materials, 1902538 (2019).
	8. Chowdhury, Nadim; Lemettinen, Jori; Xie, Qingyun; Zhang, Yuhao; Rajput, Nitul S; Xiang, Peng; Cheng, Kai; Suihkonen, Sami; Then, Han Wui; Palacios,Tomas; “p-Channel GaN Transistor based on p-GaN/AlGaN/GaN on Si,” IEEE Electron Device Letters, 1036-1039 (2019). \*\*
	9. Lin, Yuxuan; Ma, Qiong; Shen, Pin-Chun; Ilyas, Batyr; Bie, Yaqing; Liao, Albert; Ergeen, Emre; Han, Bingnan; Mao, Nannan; Zhang, Xu; “Asymmetric hot- carrier thermalization and broadband photoresponse in graphene-2D semiconductor lateral heterojunctions,” Science Advances, 5, 6, eaav1493 (2019). \*\*
	10. Lemettinen, Jori; Chowdhury, Nadim; Okumura, Hironori; Kim, Iurii; Suihkonen, Sami; Palacios, T; “Nitrogen-Polar Polarization-Doped Field-Effect Transistor Based on Al 0.8 Ga 0.2 N/AlN on SiC With Drain Current Over 100 mA/mm, IEEE Electron Device Letters,” 40, 8, 1245-1248 (2019). \*\*
	11. Xiao, Ming; Palacios, Toms; Zhang, Yuhao; “ON-Resistance in Vertical Power FinFETs,” IEEE Transactions on Electron Devices, 66, 9, 3903-3909 (2019).
	12. Ruzzarin, M; De Santi, C; Chiocchetta, F; Sun, M; Palacios, T; Zanoni, E; Meneghesso, G; Meneghini, M; “Characterization of charge trapping mechanisms in GaN vertical Fin FETs under positive gate bias,” Microelectronics Reliability, 100, 113488 (2019). \*\*
	13. Mao, Nannan; Wang, Xingzhi; Lin, Yuxuan; Sumpter, Bobby G; Ji, Qingqing; Palacios, Toms; Huang, Shengxi; Meunier, Vincent; Dresselhaus, Mildred S; Tisdale, William A; “Direct Observation of Symmetry-Dependent ElectronPhonon Coupling in Black Phosphorus,” Journal of the American Chemical Society, 141, 48, 18994-19001 (2019). \*\*
	14. Hironori Okumura, Yuji Kato, Takayoshi Oshima, and Tomas Palacios, “Demonstration of beta-AlGaO (010) metal-semiconductor field-effect transistors with high breakdown voltage over 900 V” International Conference on Solid State Devices and Materials, Sept. 2-5, 2019, Nagoya, Japan. \*\*
	15. Hengyu Wang, Ming Xiao, Kuang Sheng, Toms Palacios, Yuhao Zhang,”Switching Performance Evaluation of 1200 V Vertical GaN Power FinFETs”, 7th IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA 2019). October 29-31, 2019.
	16. Nadim Chowdhury, Qingyun Xie1, Ujwal Radhakrishna, Joshua A. Perozek, Xingyu Zou, Thomas A. Jokinen, Garrett J. Schlenvogt, Dimitri A. Antoniadis, and T Palacios, “Vertical GaN Fin Transistor for High Power RF,” International Conference on Nitride Semiconductors, Seattle, WA (2019) \*\*
	17. Ming Xiao, Toms Palacios, Yuhao Zhang, “Unveiling the Forward Current Paths and On-resistance Components in Vertical Power FinFETs,” International Conference on Nitride Semiconductors, Seattle, WA (2019) \*\*
	18. Pao-Chuan Shih and Tomas Palacios, “Novel Field Emitter based on an In- Plane-Gate AlGaN/GaN 2DEG Structure” International Conference on Nitride Semiconductors, Seattle, WA (2019) \*\*
	19. Joshua Perozek, Ayrton Munoz, and Tomas Palacios, “Vertical Fin GaN Transistors for Power and RF Applications,” GOMACTech 2019, Alburquerque, NM. (2019) \*\*
	20. Jaime Orellana, Marek Hempel, Fernando Calle, Jing Kong, and Tomas Palacios, “Defect assessment in graphene through water-soluble polymers, ” European Congress and Exhibition on Advanced Materials and Processes, Stockholm, Sweden, Sept. 1-5, (2019.) [[72]](#footnote-72)\*\*
	21. Nadim Chowdhury, Ahmad Zubair, Joshua Perozek, Qingyun Xie and Tomas Palacios, “GaN for 5G Applications: FinFETs, CMOS and Vertical Transistors ” International Microwave Symposium, Boston, June 3rd, 2019. (invited talk)
	22. Tomas Palacios, “Vertical GaN Nanostructures for RF and Power Electronics,” Topical Workshop on Heterostructure Microelectronics 2019 (TWHM 2019) August 27th, 2019, Toyama, Japan (Invited talk)
	23. Tomas Palacios, “From Flexible Electronics to Synthetic Cells: The Unique Opportunities of 2D Materials”, Invited talk at the Air Force Research Laboratory (Dayton, OH), Oct. 21, 2019. \*\*
	24. Wang, H., […], T. Palacios, “Frank-van der Merwe Growth in Bilayer Graphene” ChemRxiv, preprint (2020). [[73]](#footnote-73)\*\*
	25. Wang, H., […], T. Palacios and Y. Zhang, “Switching Performance Analysis of Vertical GaN FinFETs: Impact of Inter-Fin Designs,” IEEE Journal of Emerging and Selected Topics in Power Electronics (2020).
	26. Meneghini, M., Fabris, E., Ruzzarin, M., De Santi, C., Nomoto, K., Hu, Z., Li, W., Gao, X., Jena, D., Xing, H.G., Sun, M., Palacios, T., Meneghesso, G. and Zanoni, E. (2020), Degradation Mechanisms of GaN‐Based Vertical Devices: A Review. Phys. Status Solidi A, 217: 1900750. doi:10.1002/pssa.201900750.
	27. Mackin, C., […], T. Palacios, “Chemical sensor systems based on 2D and thin film materials,” 2D Materials, Vol 7, Number 2, (2020).
	28. Cao, J., […], T. Palacios, “Realization of 2D crystalline metal nitrides via selective atomic substitution,” Science Advances, vol. 6, pg.2, (2020).
	29. P. Shih et al., "GaN Nanowire Field Emitters with a Self-Aligned Gate Process," 2020 Device Research Conference (DRC), Columbus, OH, USA, 2020, pp. 1-2, doi: 10.1109/DRC50226.2020.9135161.(2020)
	30. G. bur, J Zhao, L Jain, A Zubair, T Palacios, J Kong, AI Akinwande, “Enabling Atmospheric Operation of Nanoscale Vacuum Channel Transistors,” 2020 Device Research Conference (DRC), (2020)
	31. A Zubair, J Perozek, J Niroula, O Aktas, V Odnoblyudov, T Palacios, “First Demonstration of GaN Vertical Power FinFETs on Engineered Substrate,” 2020 Device Research Conference (DRC), (2020) \*\*
	32. A Zubair, J Niroula, N Chowdhury, Y Zhang…, “Materials and Technology Issues for the Next Generation of Power Electronic Devices,” 2020 Device Research Conference (DRC), (2020)
	33. T. Palacios, P. Shih et al., "GaN Nanowire Field Emitters with a Self-Aligned Gate Process," 2020 Device Research Conference (DRC), Columbus, OH, USA, 2020 (Invited Talk).
	34. Zubair, J. Niroula, J. Perozek, N. Chowdhury, D. Pei, M. Dipsey, H.Emmer, B. Lu, T. Palacios, “GaN 2.0: Power FinFETs, Complementary Gate Drivers and Low-Cost Vertical Devices,”2021 33rd International Symposium on Power Semiconductor Devices and ICs (ISPSD), Pages 6-10, 2021.
	35. N.Chowdhury, J.Jung, Q.Xie, M.Yuan, K.Cheng, T.Palacios, “Performance estimation of GaN CMOS technology,”IEEE, 2021 Device Research Conference (DRC), pp 1-2, 2021
	36. J.A Perozek, A. Zubair, T.Palacios, “Small-Signal, High Frequency Performance of Vertical GaN FinFETs with fmax= 5.9 GHz,”IEEE, 2022 Device Research Conference (DRC), pp 1-2, 2021
	37. Y. Luo, Y. Li, M. Foshey, W.Shou, P. Sharma, T. Palacios, A. Torralba, W. Matusi, “Intelligent Carpet: Inferring 3D Human Pose From Tactile Signals,” Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 11255-11265, 2021.
	38. Y.Lin, C. Su, P.C. Shen, A.S.Chou, C.C. Cheng, J.H Park, M.H. Chiu, A.Y.Lu, H.L. Tang, J.Li, A. Zettl, T. Palacios, L.J. Li, J. Bokor, J. Kong, “Towards High-Performance Monolayer Semiconductor Transistors with Semimetallic Ohmic Contact,”APS March Meeting 2021, Bulletin of the American Physical Society, 2021.
	39. Y. Luo, K.Wu, T. Palacios, W. Matusik, “KnitUI: Fabricating Interactive and Sensing Textiles with Machine Knitting,”2021 CHI Conference on Human Factors in Computing Systems, pp 1-12, 2021.
	40. Q. Xie, N.Chowdhury, A.Zubair, M.S.Lozano, J.Lemettinen, M.Colangelo, O.Medeiros, I. Charaev, K.K.Berggren, P.Gumann, D.Pfeiffer, T.Palacios, “NbN-Gated GaN Transistor Technology for Applications in Quantum Computing Systems,”IEEE, 2021 Symposium on VLSI Technology, 2021.
	41. T. Palacios, “The Extreme Materials Revolution: From Computers in Venus to Synthetic Cells ,“ Virtual Workshop on Materials Science and Advanced Electronics Created by Singularity, Feb. 2nd, 2021 (Invited speaker)
	42. T. Palacios, “From Lab to Ventures: IP Management and Business Plans in Nanoelectronics,” 2nd ULTIMATE Workshop, EU Graphene Flagship, April 22nd, 2021 (Invited speaker)
	43. T. Palacios, “Vertical Power Devices… Where is the Limit?,” Compound Semiconductor Week, May 12th, 2021 (Invited speaker)
	44. T. Palacios, “GaN 2.0: Lateral CMOS Power Devices and Low-cost Ver7cal Devices, “ 2022 International Symposium on Power Semiconductors Devices and IC’s (ISPSD), May 31st, 2021 (Plenary speaker)
	45. T. Palacios, “New Materials and Devices for Edge Intelligence,” Solid State Devices and Materials Conference (SSDM), Sept. 6, 2021 (Plenary speaker)
	46. T. Palacios, “Electronics 5.0: The Critical Infrastructure to Build the Future,” MIT’s annual Undergraduate Research and Technology Conference (URTC), October 9, 2021 (Invited speaker)
	47. T. Palacios, “The Coming of Age for Two-Dimensional Electronics,” Virtual Graphene Conference, November 2-5, 2021 (Plenary Speaker)
	48. T. Palacios, “Graphene-based Sensors for Real-time Monitoring of Physiological Parameters,” Materials Research Society Fall Meeting, Boston, Dec. 1st, 2021 (Invited speaker)
	49. T. Palacios, “New Semiconductor Materials: The Critical Infrastructure to Build the Future,” International Conference on Materials and Systems for Sustainability, Nagoya (Japan) Nov. 5th, 2021 (Plenary speaker)
	50. R. Bhattacharya, P. C. Shih, T. Palacios and J. Browning, &#34;Field Emission Characteristics of GaN Arrays,&#34; International Virtual Exchange Conference IVEC 2022
	51. Mengyang Yuan, Qingyun Xie, John Niroula, Nadim Chowdhury, Mohamed Fadil Isamotu, and Tom&#225;s Palacios, &#34;High Temperature Robustness of Enhancement- Mode p-GaN-Gated AlGaN/GaN HEMT,&#34; 2022 IEEE Workshop on Wide Bandgap Power Devices and Applications WiPDA 2022.
	52. J. Zhu, T. Palacios, &#34;Highly-scaled, high-performance transistors based on wafer-scale monolayer MoS2,&#34; SRC TechCON 2022
	53. Mantian Xue, Charles Mackin, Wei-Hung Weng, Jiadi Zhu, Yiyue Luo, Shao- Xiong Lennon Luo, Ang-Yu Lu, Marek Hempel, Elaine McVay, Jing Kong, Tom&#225;s Palacios, &#34;Integrated biosensor platform based on graphene transistor arrays for real-time high-accuracy ion sensing,&#34; MRS Fall Meeting, 2022.
	54. Pao Chuan Shih, Tao Zheng, Maria J. Arellano Jimenez, Bruce Gnade, Akintunde I. Akinwande, and Tom&#225;s Palacios, &#34;GaN Field Emitter Arrays with J A of 10 A/cm2 at V GE = 50 V for Power Applications,&#34; 2022 International Electron Device Meeting (IEDM), Dec. 2022
	55. Qingyun Xie, Mengyang Yuan, John Niroula, James A. Greer, Nitul S. Rajput, Nadim Chowdhury, and Tom&#225;s Palacios, &#34;Highly-Scaled Self-Aligned GaN Complementary Technology on GaN-on-Si Platform,&#34; 2022 International Electron Device Meeting (IEDM), Dec. 2022. *Paper selected for publication in IEEE Trans. on Electron Devices.*

1. **OTHER MAJOR PUBLICATIONS**
	1. Palacios, T., F. Calle, E. Monroy, J. Grajal, M. Eickhoff, O. Ambacher and C. Prieto: “Nanotechnology for SAW devices on AlN Epilayers,” 11th International Travelling Summer School in Microwaves and Lightwaves, Materials Science and Engineering vol. 93, pp. 154-158, Madrid, Spain, 7-12 July 2001. (Oral Presentation).
	2. Palacios, T., L. Shen, S. Keller, A. Chakraborty, S. Heikman, D. Buttari, S. P. DenBaars, and U. K. Mishra: “GaN-spacer HEMTs: the impact of AlGaN in the ve of AlGaN/GaN HEMTs,” 11th Advanced Heterostructure Workshop, Hawaii, HI, December 2004. (Oral Presentation).
	3. Rajan, S., T. Palacios, S. P. DenBaars, and U. K. Mishra: “Electron Mobility in Graded AlGaN Layers,” WOCSEMMAD 2005, Miami, FL, February 2005. (Oral Presentation).
	4. Suh, C.S., T. Palacios, S. Rajan, A. Chini, E. Snow, Y. Dora, L. Shen, C. Poblenz, N. Fichtenbaum, A. Chakraborty, S. Keller, S. DenBaars, J. Speck, and U. K. Mishra: “E-mode GaN HEMTs,” WOCSEMMAD 2006, Phoenix, AZ, pp. 428-430, 20-22 February 2006. (Oral Presentation).
	5. Palacios, T., C.-S. Suh, E. Snow, Y. Dora, and U. K. Mishra: “GaN HEMT’s enhanced by Fluorine Treatment,” WOCSEMMAD 2006, Phoenix, AZ, pp. 428-430, 20-22 February 2006. (Oral Presentation).
	6. Palacios, T., Z. Xu, J. W. Chung: “Drain Delay: The Ultimate Limit for the Frequency Performance of AlGaN/GaN HEMTs,” 12th Advanced Heterostructure Workshop, Kohala Coast, HI, 3-8 December 2006. (Oral Presentation).
	7. Palacios, T. and Mishra, U.K., “Modeling and Simulation of AlGaN/GaN High Electron Mobility Transistors,” chapter in Nitride Semiconductor Devices: Principles and Simulation, edited by Piprek, J., Wiley-VCH, chapter 10, pp. 213, March 2007.
	8. Palacios, T., “mm-wave Initiative for Carbon Electronics,” DARPA Workshop on Carbon-Based Ultra-High-Speed Electronics for Wafer-Scale Integration, Arlington, VA, 19 April 2007. (Invited)
	9. Palacios, T., “Steps towards 300 GHz GaN amplifiers,” WOCSEMMAD 2008, Palm Springs, CA, p. 3, 17-20 February 2008. (Oral Presentation).
	10. Palacios, T., “New structures for AlGaN/GaN High Electron Mobility Transistors,” chapter in Advanced Semiconductors Materials and Devices Research: III-Nitrides and SiC, edited by Dr. Ho-Young Cha, Research Signpost, pp. 103, 104, 107, 158, October 2008.
	11. Palacios, T., “Recent Progress Towards sub-mm wave GaN Transistors,” WOCSEMMAD ’09, Fort Myers, FL, p. 3, February 15-18, 2009. (Oral Presentation).
	12. Wang, H., A. Hsu, J. Wu, D. Nezich, J. Kong, and T. Palacios, “Workshop on Graphene Nanoelectronics,” Army Research Laboratory, Adelphi, MD, pp. 16, 12-13 August 2009. (Invited). [[74]](#footnote-74)\*\*
	13. Palacios, T., A. Hsu, and H. Wang, “Applications of Graphene Devices in RF Communications,” IEEE Communications Magazine, vol. 48, pp. 122-128, 2010. (Invited).
	14. Palacios, T. and Mishra, U.K., “AlGaN/GaN High Electron Mobility Transistors,” chapter in Comprehensive Semiconductor Science and Technology, edited by Dr. Pallab Batthacharia, Elsevier, March 2011.
	15. Palacios, T, “Graphene-Based Electronics for RF Communications and Sensing,” Winter Technical Session, MTT –S Distinguished Microwave Lectures, Phoenix, AZ, IEEE Microwave Magazine pp. 114-125, 15 January 2011. (Invited).
	16. Lee, D. S., and T. Palacios, “500 GHz transistors based on GaN… when and how?,” Compound Semiconductor Magazine, pp. 33-35, August/September 2011. (Invited).
	17. Cordier, Y., Fujishima, T., Lu, B., Matioli, E., and Palacios, T., "Nitride-based electron devices for high-power/high-frequency applications," chapter in III-Nitride Semiconductors and their Modern Devices, edited by Dr. Bernard Gil, Oxford University Press, December 2013.
	18. Piedra, D., E. Matioli, B. Lu, and T. Palacios, "Nanowire GaN transistors," chapter in Power GaN Devices, edited by Gaudenzio Meneghesso, Enrico Zanoni and Matteo Meneghini, December 2015.
	19. Hu, J.; Stoffels, S., Lenci, S.,Decoutere, S.,Groeseneken, G. Palacios, T.: “High Performance and Stable Au-free AlGaN/GaN Lateral Power Diode on 200-mm Silicon Substrate,” submitted to IEEE Electron Device Letters (Sept. 2016).
	20. Aklimi, E., D. Piedra, K.Tien, T.Palacios, K. Shepard, “Hybrid CMOS/GaN 40-MHz Multiphase 20V:1V DC-DC Buck Converter,” submitted to IEEE Journal of Solid State Circuits (Oct. 2016).
	21. Lee, K.T., C. Bayram, D. Piedra, E. Sprogis, H. Deligianni, B. Krishnan, G. Papasouliotis, A. Paranjpe, E. Aklimi, K. Shepard, W.J. Gallagher, T. Palacios, and Devendra K. Sadana, “Heterogeneous Integration of GaN Devices on 200 mm Si for Scalable CMOS Technology,” IEEE Electron Device Letters (Oct. 2016).
	22. Hou, H.W., Z. H. Liu, J. H. Teng, T. Palacios, and S. J. Chua, “A sub-THz broadband detector based on a GaN HEMT with nano antennas,” IEEE Electron Device Letters (Oct. 2016).
	23. Xing, W.; Liu, Z.; Qiu, H.; Ng, G. I.; and Palacios, T: “Planar-Nanostrip-Channel InAlN/GaN HEMTs on Si with Improved gm and fT Linearity,” IEEE Electron Device Letters (Dec. 2016). [[75]](#footnote-75)\*\*
	24. Ruzzarin, M., M. Meneghini, D. Bisi, M. Sun, T. Palacios, G. Meneghesso, and E. Zanoni, “Pulsed Performance and Degradation of GaN-on-GaN Vertical Junction Field Effect Transistor,” submitted to IEEE Trans. Of Electron Devices (Dec. 2016).
	25. Hou, H., Zhihong, L., Jinghua, T., T. Palacios, and S.J. Chua, “Optical Tuning of the Terahertz Plasmonic Response in a Graphene Disk Array,” IEEE Electron Device Letters (Dec. 2016).
	26. H. W. Hou, Z. Liu, J. H. Teng, T. Palacios, and S. J. Chua, “Enhancement of responsivity for a transistor terahertz detector by a Fabry-Pérot resonance-cavity,” IEEE Electron Device Letters (Dec. 2016).
	27. A. Zubair, A. Nourbakhsh, J.-Y. Hong, Y. Song, M.Qi, D. Jena, J. Kong, M. S. Dresselhaus, T. Palacios,”Graphene-on-GaN Hot Electron Transistor,” Applied Physics Society March Meeting 2017, New Orleans, Louisiana.
	28. A. Zubair, A. Nourbakhsh, J.-Y. Hong, Y. Song, M.Qi, D. Jena, J. Kong, M. S. Dresselhaus, T. Palacios, “Graphene-base Hot Electron Transistor with GaN emitter,” International Conf. on Nitride Semiconductors 2017, Strasbourg, France.
	29. A. Nourbakhsh, A. Zubair, R. N. Sajjad, A. Tavakkoli K. G. , X. Ling, J. Kong, M. S. Dresselhaus, D. Antoniadis and T. Palacios , “Scaling and carrier transport properties of monolayer MoS2 transistors,” Applied Physical Society March Meeting 2017, New Orleans, Louisiana.
	30. P. Wei, A. Zubair, T. Palacios, J. Moodera, “Towards valley transistor in MoS2/EuS through interfacial magnetic exchange field,” Applied Physical Society March Meeting 2017, New Orleans, Louisiana.
	31. H. Okumura, S. Suihkonen, J. Lemettinen, A. Uedono, and T. Palacios, “AlN metal-semiconductor field-effect transistors using Si-ion implantation,”2017 International Conference on Solid State Devices and Materials, Sendai, pp. 641-642.
	32. Y. Zhang, D. Piedra, M. Sun, J. Hennig, A. Dadgar, and T. Palacios, “Vertical High-Voltage GaN pin Diodes on Si,” 2016 Compound Semiconductor Week, Berlin, Germany, May 14-18 2017.
	33. W. Xing, …, and T. Palacios, “Fin-like nanowire-channel InAlN/GaN HEMTs on Si with Improved gm and fT linearity,” 9th International Conference on Materials for Advanced Technologies, 2017, 18-23 June 2017, Singapore.
	34. M. Meneghini, M. Ruzzarin, D. Bisi, M. Sun, T. Palacios, G. Meneghesso, and E. Zanoni, “Dynamic performance and stability of GaN-on-GaN Vertical Fin-FETs,” Fall Meeting of the Materials Research Society, Boston, MA. Nov. 2017.
	35. H. Okumura, S. Suihkonen, J. Lemettinen, A. Uedono, and T. Palacios, “AlN Metal-Semiconductor Field-Effect Transistors Using Si-Ion Implantation,” Fall Meeting of the Materials Research Society, Boston, MA. Nov. 2017.
	36. Zubair, A. Nourbakhsh, J.-Y. Hong, M. Qi, J. Kong, D. Jena, M. S. Dresselhaus, and T. Palacios, “GaN Hot Electron Transistors Based on a van der Waals Base-Collector Barrier,” Fall Meeting of the Materials Research Society, Boston, MA. Nov. 2017.
	37. M. F. Romero, A. Boscá, J. Martínez, J. Pedrós, T. Palacios, F. Calle, “Effects of mist exposure on SiN passivated AlGaN/GaN-based MISHEMTS with and without graphene top layer,” Workshop on Compound Semiconductor Devices and Integrated Circuits Las Palmas de Gran Canarias 21-24 May 2017.
	38. Y. Zhang, M. Sun, D. Piedra, J. Hu, Z. Liu, Y. Lin, X. Gao, K. Shepard, T. Palacios “1200 V GaN Vertical Fin Power Field-Effect Transistors”, 2017 International Electron Devices Meeting (IEDM 2017), 9.2, Dec 2017. (highlight by multiple media including MIT News).
	39. S. Joglekar, U. Radhakrishna, D. Piedra, D. Antoniadis, and T. Palacios “Linearity Enhancement of AlGaN/GaN HEMTs by Device-level VT Engineering for gm compensation”, 2017 International Electron Devices Meeting (IEDM 2017), 9.2, Dec 2017.
	40. E. Mattioli, B. Lu, D. Piedra, T. Palacios, “Chapter 6: GaN-Based Nanowire Transistors”. In M. Meneghini et al. (eds.), Power GaN Devices (pp. 123-144). Springer International Publishing Switzerland 2017.
	41. Nourbakhsh, Amirhasan; Yu, Lili; Lin, Yuxuan; Hempel, Marek; Shiue, Ren-Jye; Englund, Dirk; Palacios, Toms; “Heterogeneous Integration of 2D Materials and Devices on a Si Platform, chapter in Beyond-CMOS Technologies for Next Generation Computer Design,” Springer, 43-84 (2019).
	42. Ran Li, Xiaoyuan Ma, Jianmin Li, Jun Cao, Hongze Gao, Tianshu Li, Xiaoyu Zhang, Lichao Wang, Qinghong Zhang, Gang Wang, Chengyi Hou, Yaogang Li, Tomas Palacios, Yuxuan Lin, Hongzhi Wang, Xi Ling, “Flexible and High-Performance Electrochromic Devices Enabled by Self-Assembled 2D TiO2/MXene Heterostructures,” Research Square, pg. 1-28, (2020). [[76]](#footnote-76)\*\*
	43. E McVay, A Zubair, Y Lin, A Nourbakhsh, T Palacios – “Impact of $ Al\_2O\_3 $ Passivation on the Photovoltaic Performance of Vertical $ WSe\_2 $ Schottky Junction Solar Cells,” arXiv preprint arXiv:2006.16517, 2020.re. [[77]](#footnote-77)\*\*
	44. Highly-Scaled GaN Complementary Technology on GaN-on-Si Platform by Q.

Xie, M. Yuan, J. Niroula, J. A. Greer, N. S. Rajput, N. Chowdhury, T. Palacios. *Invited paper to Trans. on Electron Devices.*

* 1. Low thermal budget synthesis of monolayer molybdenum disulfide for silicon back-end-of-line integration on 200 mm platform by Jiadi Zhu, Ji-Hoon Park, Steven A. Vitale, Wenjun Ge, Gang Seob Jung, Jiangtao Wang, Mohamed Mohamed, Tianyi Zhang, Maitreyi Ashok, Mantian Xue, Xudong Zheng, Zhien Wang, Jonas Hansryd, Anantha Chandrakasan, Jing Kong, Tomas Palacios, under review (3rd round) in Nature Nanotechnology.
1. **INVITED LECTURES**

September 2005, ISOM, Universidad Politécnica de Madrid, Madrid, Spain.

September 2005, Walter Schottky Institute, Technical University of Munich, Munich, Germany.

March 2007, “Nitride Electronics: New Ideas at the mm-wave Frontier,” Tufts University, Medford, MA; also at University of Notre Dame, Notre Dame, IN; and CEA-Grenoble, Grenoble, France.

July 2007, “Nitride Electronics: The Power of Polarization,” M/A-COM Electronics, Lowell, MA.

August 2007, “Nitride Electronics: The Power of Polarization,” TriQuint Electronics, Dallas, TX; also at NEC, Kyoto, Japan; Toyota Central Research Laboratories, Nagoya, Japan; and Hitachi Electric, Tokyo, Japan.

September 2007, “Nitride Electronics: New Ideas at the mm-wave Frontier,” Northrop Grumman Corporation, Baltimore, MD.

July 2008, “GaN Electronics,” OptoSchool Summer School 2008, Mumbai, India.

February 2009, “GaN Transistors: Redefining the Limits of Electronics,” M/A-COM Electronics, Lovell, MA.

September 2009, “Heterogeneous Integration with Si, the Next Frontier for Electronics,” Yale University, New Haven, CT.

May 2010, “GaN Power Electronics,” National Semiconductors, Santa Clara, CA.

August 2010, “GaN Power Electronics,” Analog Devices, Wilmington, MA.

July 2011, “Graphene-based Electronics for RF Communications and Sensing,” University of Aveiro, Aveiro, Portugal. IEEE Distinguished Microwave Lecture.

August 2011, “Graphene-based Electronics for RF Communications and Sensing,” DNP, Tokyo, Japan.

August 2011, “GaN Transistors: Revolutionizing Electronics from THz to KV,” Sumitomo Electric, Tokyo, Japan.

September 2011, “GaN Transistors: Revolutionizing Electronics from THz to KV,” ROHM Co., Kyoto, Japan.

September 2011, “Graphene-based Electronics for RF Communications and Sensing,” Panasonic, Nagoya, Japan.

September 2011, “GaN Transistors: Revolutionizing Electronics from THz to KV,” Fujitsu Laboratories, Yokohama, Japan.

September 2011, “GaN Power Electronics,” Army Research Laboratory – Fellow Symposium, Baltimore, MD.

October 2011, “Graphene-based Electronics for RF Communications and Sensing,” University of Michigan, Ann Arbor, MI. IEEE Distinguished Microwave Lecture.

October 2011, “GaN Power Electronics,” Texas Instruments - Fellow Conference, Dallas, TX.

February 2012, “Graphene-based Electronics for RF Communications and Sensing,” University of Southern California, Los Angeles, CA. IEEE Distinguished Microwave Lecture.

February 2012, “Graphene-based Electronics for RF Communications and Sensing,” Chalmers University, Gothenburg, Sweden. IEEE Distinguished Microwave Lecture.

February 2012, “GaN Electronics for Sub-mm Wave Applications,” Symposium of the National Nanotechnology Infrastructure Network, University of California, Santa Barbara, CA.

October 2012, “Atom-Thick Materials for the Next Revolution in Electronics,” Physics Colloquium, Harvard University, Cambridge, MA.

October 2012, “Atom-Thick Materials for the Next Revolution in Electronics,” MTT Distinguished Seminar, Dallas, TX.

November 2012, “GaN and Graphene – Extreme Materials for Advanced Electronics,” Cornell University, Ithaca, NY.

November 2012, “Graphene Based Analog Devices,” ITRS Workshop, Webinar.

January 2013, “Graphene and other 2D materials: New Opportunities in Flatland,” MIT-Japan ILP Conference, Tokyo, Japan

September 2013, “GaN and 2D Materials: Extreme Materials for Extreme Frequencies,” International Microwave Symposium, Seattle, WA.

September 2013, “The Impact of Graphene: What is Next after the Hype?,” IPC Technology Market Research Conference, Chicago, IL.

April 2014, "2D Semiconductors: From Devices to Systems," Applied Materials, Santa Clara, CA.

October 2014, "Atom-thick Materials for the Next Revolution in Electronics," Applied Physics Laboratory Symposium, John Hopkins University, Baltimore, MD.

January 2015, "Atom-thick Materials for the Next Revolution in Electronics," IMDEA Nanociencia, Madrid, Spain.

May 2015, "Recent Progress on Electronic Systems Based on 2-Dimensional Materials," Army Research Laboratory, Adelphi, MD.

June 2015, "The Future of Microsystems," Polytechnic University of Madrid, Spain.

June 2015, "Atom-thick Materials for the Next Revolution in Electronics," Instituto de Ingenieria de España, Madrid, Spain.

Feb. 2016, T. Palacios, “How Integration will Enable the Light Bulb of the Future,” Solid State Lighting Symposium, Rayleigh, NC (Invited talk)

Feb. 2016, T. Palacios, “System-level Applications of Two-Dimensional Materials: Challenges and Opportunities,” Princeton University, (Invited talk).

April 2016, T. Palacios, “GaN and Graphene: Extreme Materials for the Future of Electronics,” MIT Spain Club, MIT, (Invited Talk).

April 2016, T. Palacios, “System-Level Applications of Two Dimensional Materials,” Graphene 2016, Genova Italy (Invited talk).

June 2016, T. Palacios, “Redefining Electronics: System-Level Applications of 2D Materials,” Fundación Ramon Areces, Madrid, (Invited talk).

Aug. 2016, T. Palacios, “New Materials to Push the Limits of Moore’s Law,” Lester Eastman Conference, August 2016. (Invited talk).

Nov. 2016, M. Sun, Y. Zhang, and T. Palacios, “Vertical GaN Transistors for the Next Generation of Power Electronics,” WiPDA (Keynote/Plenary talk).

Nov. 2016, Y. Zhang, M. Sun, and T. Palacios, “Low-cost and High-performance Vertical GaN Diodes and Transistors for Power Electronics,” IFWS, Beijing, China, (Invited talk).

Feb. 2017, M. Sun, Y. Zhang, M. Pan, X. Gao, and T. Palacios, “Vertical GaN transistors for power electronics,” SPIE Photonics West Conference, San Francisco, CA.

May 2017, T. Palacios, “High-voltage vertical GaN pn diodes on Si”, Compound Semiconductor Week 2017 (44th International Symposium on Compound Semiconductors), Berlin, Germany.

July 2017, T. Palacios, “Redefining Electronics: System-level Applications of 2D Materials,” 1st International Workshop on 2D Atomic Sheets, organized in Washington DC.

Oct. 2017 Palacios, “Nanostructured GaN Transistors,” 39th IEEE Compound Semiconductor IC (CSIC) Symposium, Miami, FL. (Plenary Talk).

July 2017, M. Sun…T. Palacios, “Vertical GaN Electronics,” International Conf. on Nitride Semiconductors 2017, Strasbourg, France.

Sept. 2017, T. Palacios, “Graphene Electronics (or how to reinvent engineering with extreme materials),” Solvay Workshop on “Physics of Graphene and Graphene for Physics,” Brussels, Belgium.

Jan 2018, T. Palacios, “GaN Nanoelectronics,” UKNC Winter Conference 2018, Manchester, GB.

Mar. 2018, T. Palacios, “Gallium Nitride: Extreme Properties (and Opportunities) for Post-Moore Computing,” APS March Meeting 2018 Los Angeles, California.

Apr. 2018, T. Palacios, “Fin-based GaN RF and Power Devices,” GaN Marathon 2.0 Padova, Italy.

June 2018, T. Palacios, “2D Materials for Hardware Accelerators in More-than-Moore Electronics,” Gordon Research Conference, Frontiers of Science, Stonehill College, Easton, MA, USA.

June 2018, X. Zhang, T. Palacios, “MoS2 Phase-Junction-Based Schottky Diodes for RF Electronics,” International Microwave Symposium, Philadelphia, PA.

Aug 2018, T. Palacios, “GaN Nanostructures (or how to Take Transistor Linearity to new Levels),” International Symposium on Growth of III-Nitrides ISGN-7, Warsaw, Poland.

Sept. 2018, T. Palacios, “Novel Vertical GaN Power Devices,” SSDM2018 (International Conference on Solid State Devices and Materials) University of Tokyo, Tokyo, Japan.

Sept. 2018, T. Palacios, “Gallium nitride, graphene and the new computing revolution,” 12 Spanish Conference on Electron Devices, Salamanca, Spain (Invited Talk).

Nov. 2018, T. Palacios, “Gallium Nitride and the New Computer Revolution,” IWN 2018, Kanazawa, Japan (Invited Talk).

Jan. 2019, T. Palacios, “Gallium Nitride, Graphene and the Next Computing Revolution,” Hong Kong University of Science and Technology, Hong Kong (Invited talk).

Feb. 2019, T. Palacios, “The Graphene Revolution: From electronics to synthetic cells,” Graphene-for-US Conference, New York City, NY. (Plenary talk).

June 2019, Nadim Chowdhury, Ahmad Zubair, Joshua Perozek, Qingyun Xie and Tomas Palacios, “GaN for 5G Applications: FinFETs, CMOS and VerticalTransistors,” International Microwave Symposium, Boston, MA (Invited Talk).

June 2019, T. Palacios, “GaN Devices for Space Applications,,” Jet Propulsion Laboratory, Pasadena, CA. (Invited talk).

Aug. 2019, Xu Zhang and Tomas Palacios, “Two-dimensional MoS2-enabled Flexible Rectenna for Wireless Energy Harvesting in the Wi-Fi band,” SPIE Optics + Photonics, Nanoscience + Engineering 2019, San Diego, CA (Invited talk).

Aug. 2019 T. Palacios, “Vertical GaN Nanostructures for RF and Power Electronics”Topical Workshop on Heterostructure Microelectronics 2019 (TWHM 2019)Toyama, Japan (Invited talk).

Sept. 2019, T. Palacios, “The Graphene Revolution: From Transistors to Synthetic Cells,” Graphene Week, Helsinki, Finland, Sept. 23, 2019 (Plenary/Keynote talk).

Oct. 2019, T. Palacios, “From Flexible Electronics to Synthetic Cells: The Unique Opportunities of 2D Materials,” Air Force Research Laboratory, Dayton, OH (Invited Talk).

June 2020, T. Palacios, P. Shih et al., "GaN Nanowire Field Emitters with a Self-Aligned Gate Process," 2020 Device Research Conference (DRC), Columbus, OH, USA, 2020 (Invited Talk).

June 2020, G. bur, J Zhao, L Jain, A Zubair, T Palacios, J Kong, AI Akinwande, “Enabling Atmospheric Operation of Nanoscale Vacuum Channel Transistors,” 2020 Device Research Conference (DRC), (2020).

June 2020, A Zubair, J Perozek, J Niroula, O Aktas, V Odnoblyudov, T Palacios, “First Demonstration of GaN Vertical Power FinFETs on Engineered Substrate,” Device Research Conference (DRC), Columbus, OH, USA, 2020 (Invited Talk).

T. Palacios, “GaN For High Temperature Operation,” Workshop fundamental limits of GaN (and related III-N) electronics technology, DARPA, Sept. 28th, 2021

T. Palacios, “Extreme Semiconductors: The Critical Infrastructure to Build a Sustainable Future, “ Annual meeting of the Semiconductor and Electronics Industries in the Philippines Foundation, Inc., Nov. 23rd, 2021 (Invited speaker)

T. Palacios, “Materials and Devices for Edge Computing: Data to Decision, ” Army Research Laboratory, August 10th, 2021 (Invited speaker)

T. Palacios, “Electronics 5.0: New Materials and Devices for Edge Intelligence, “ University of California - Berkeley, April 30th, 2021 (Invited speaker)

T. Palacios, “The Future of Semiconductor Research,” Universidad Politecnica de Madrid (Spain), Feb. 10, 2021 (Invited speaker)

T. Palacios, “Electronics 5.0: New Materials and Devices for Edge Intelligence, “ Naval Research Laboratory, April 7th, 2021 (Invited speaker)

T. Palacios, “GaN 2.0: A Breakthrough Semiconductor for RF, Power and Space, “ Ohio State University, April 15th, 2021 (invited speaker)

T. Palacios, &#34;2D Materials: The Key towards Ubiquitous Intelligence,&#34; PolyU 85th Anniversary FAST Workshop Series on Two-dimensional Materials and Devices, March 24-25, 2022 (Invited speaker)

T. Palacios, &#34;Extreme Materials to Enable New Form-Factors in Electronics,&#34; Integrated Cognitive and Autonomous Multi-Sensor Systems Workshop, Texas A&amp;M, April 14, 2022 (Invited speaker)

T. Palacios, &#34;The Superpowers of New Materials,&#34; TEDx-MIT, April 23, 2022 (Invited speaker)

T. Palacios, &#34;Unlocking the Next Generation of Chip Materials, Technology Review&#39;s Future of Compute, May 3-4, 2022 (Invited speaker)

T. Palacios, &#34;Electronics 5.0: New Materials and Devices for Edge Intelligence,&#34; University of Michigan - Ann Arbor, May 6th, 2022 (Invited speaker)

T. Palacios, &#34;2D Nanoelectronics: New Materials and Devices for Edge Intelligence,&#34; 2022 IEEE Microelectronics Design and Test Symposium (MDTS), May 23-26, 2022 (Invited speaker)

T. Palacios, &#34;2D Materials: The Critical Infrastructure for the Future of Technology,&#34; Graphene 2022, July 5-7, 2022. (Invited speaker)

T. Palacios, &#34;MoS2 Transistors for Silicon Back-end-of-line Integration,&#34; Advanced Metallization Conference ADMETA, October 13-14, 2022 (Invited speaker)

T. Palacios, &#34;MoS2 Transistors for Back-End-of-the-Line Si Integration,&#34; MRS Fall Meeting, November 30, 2022 (Invited speaker)

T. Palacios, &#34;Zero-Energy Devices: Technology and Applications of Ubiquitous 6G Systems,&#34; MIT Industrial Liaison Program Conference, November 14th, 2022 (Invited speaker)

T. Palacios, &#34;Zero-Energy Devices: Technology and Applications of Ubiquitous 6G Systems,&#34; 6G Standarization meeting, November 30th, 2022 (Invited speaker)

T. Palacios, &#34;Electronics 5.0: New Materials and Devices for Edge Intelligence,&#34; University of Pennsylvania, December 14th, 2022 (Invited speaker)

1. **THESIS ADVISOR AND POST GRADUATE SCHOLAR SUPPORT****:**
	* + Students (graduated): 20 (Ph.D. since 2012) and 9 (M.S)
		+ Post graduate: 14 (Supported)
		+ Graduate (Ph.D.) students currently supported (15): J. Zhu, J. Niroula, J. Perozek, K. Limanta, M. Xue, P. Shih, Q. Xie, S. Hsia, Y. Luo, P. Yadav, H. W. Lee., D. Morales, M. Oh, H. Pal. C. Lopez.
		+ Undergraduate students currently supported: 5

Doctoral and SM students:

1. Nadim Chowdhury, Ph.D. EECS (graduated in March 2022)

2. Joshua Perozek, Ph.D. EECS

3. Qingyun Xie, Ph.D., EECS

4. Mengyang Yuan, Ph.D. EECS (graduated in June 2022)

5. Mantian Xue, Ph.D. EECS

6. Jiadi Zhu, EECS, SM

7. John Niroula, Ph.D., EECS,

8. Kevin Limanta, Ph.D., EECS

9. Yiyue (Alyssa) Luo, EECS, CSAIL (supervisor Prof. Wojciech Matusik)

10. Sharon Hsia, SM., EECS

11. Dimple Kochar, Ph.D., EECS (transferred to a different group in Spring 2022)

12. Elaine McVay, Ph.D., EECS (graduated in June 2022)

13. Pao-Chuan Shih, Ph.D., EECS

14. Hae Won Lee

15. Minsik Oh

16. Hridibrata Pal

17. Pradyot Yadav

Doctoral students, as reader:

* Christian Lau, (Thesis supervisor: Prof. Max Shulaker)
* Emre Ergecen (Thesis supervisor: Nuh Gedik)
* Morgan Blevins (Thesis supervisor: Svetlana Boriskina)

MEng students:

* + - 1 Renbin Liu, 6A M.Eng. at Sky
		- Timothy Zavarella, 6A M.Eng. at NetApp

UROPs and SuperUROPs:

* + - Alisa Y Hathaway, EECS, (UROP-ELO)
		- James Greer (UROP)
		- Mathew Cook (UROP)
		- Nishat Protyasha (SuperUROP)
		- Neel Mondal (UROP)
		- Deniz Eruz (UROP)
		- Aija

Accomplishments of research supervisees:

* + - Elaine McVay graduated and became a postdoc at Lawrence Livermore National Laboratory.
		- Nadim Chowdhury graduated and became a professor at Bangladesh University of Engineering and Technology (BUET). Nadim&#39;s thesis was also selected for the 2022 MTL Doctoral Dissertation Seminar (DDS).
		- Mengyang Yuan graduated and joined Apple full time.

Supervised theses:

* Nadim Chowdhury, Ph.D. EECS (graduated in March 2022) Mengyang Yuan, Ph.D. EECS (graduated in June 2022) Elaine McVay, Ph.D., EECS (graduated in June 2022)
1. **TEACHING CONTRIBUTIONS:**
2. Teaching materials developed that illustrate teaching effectiveness or innovativeness:
	* 1. Design and teaching of a new Advanced Undergraduate Senior (AUS) level course on semiconductor device physics (6.077).
		2. Development of material to teach, for the first time, device simulation CAD in 6.720.
		3. Development of new homework and lecture content for 6.772.
		4. Development of new assignment, lectures, recitations notes, and the new transistor lab for 6.012
		5. Development of new labs and homeworks for 6.002.
		6. Development of material to bring a hardware-EE perspective for 6.02 recitations. This helped to compensate the Python/software-heavy lectures and labs.
		7. Added numerous active-learning activities for 6.02 such as creating student groups where students help engage and collaborate ideas among their peers.

2. Education contributions, apart from classroom performance and supervision, such as new educational programs and curricula developed by the candidate:

* + 1. Development of numerous activities (seminars, panels, mock interviews, mock job talks, mailing lists, etc.) to help senior graduate students to apply for faculty positions (2007-present).
		2. Participation in several events to introduce undergraduate students to course VI (e.g. “*Introducing Course 6 to Freshmen MIT students*,” MacGregor House, November 15th, 2007).
		3. Organizer of a seminar series on advanced nitride materials and devices (~12 talks) (2006-present).
		4. Chair of the MTL Seminar Series (2009-2015).
		5. Director of 6A Program (MIT EECS co-op MEng program) since July 2015.
		6. Director of the EECS Alliance program since July 2020. This program develops new initiatives to connect MIT students with industry.

3. Contributions to the educational commons and Lecturer:

* + 1. Reading admission folders of graduate students in course VI (2008-present).
		2. Reading admission folders of undergraduate students (2011-2012).
		3. Member of the advisory committee of the MIT-Spain MISTI program (2007-2008).
		4. Arrange summer internships in Spain for more than 10 MIT undergraduate students (2009).
		5. Collaboration with the MIT-France program by hosting French visiting students (2007-2010).
		6. UROP/Super-UROP supervisor (2008-present).
			1. ing students in the MIT Leaders for Global Operations (LGO) program (2011-present).
		7. Faculty Lead, MIT/Masdar Institute Microsystems program.
		8. Lecturer for 6.002 and 6.012
		9. Recitation Instructor for 6.02 and 6.012
		10. Course 6.2000 – roles (Fall 2022)

I co-lectured 6.2000 with Prof. Jeff Lang.

* + 1. Course 6.3100/2 – roles (Fall 2022)
* 6 h of lab proctoring/teaching per week
1. \*\* Outgrowth of supervised student research [↑](#footnote-ref-1)
2. \*\* Outgrowth of supervised student research [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)
4. \*\* Outgrowth of supervised student research [↑](#footnote-ref-4)
5. [↑](#footnote-ref-5)
6. \*\* Outgrowth of supervised student research [↑](#footnote-ref-6)
7. [↑](#footnote-ref-7)
8. \*\* Outgrowth of supervised student research [↑](#footnote-ref-8)
9. \*\* Outgrowth of supervised student research [↑](#footnote-ref-9)
10. [↑](#footnote-ref-10)
11. \*\* Outgrowth of supervised student research [↑](#footnote-ref-11)
12. [↑](#footnote-ref-12)
13. \*\* Outgrowth of supervised student research [↑](#footnote-ref-13)
14. \*\* Outgrowth of supervised student research [↑](#footnote-ref-14)
15. \*\* Outgrowth of supervised student research [↑](#footnote-ref-15)
16. \*\* Outgrowth of supervised student research [↑](#footnote-ref-16)
17. [↑](#footnote-ref-17)
18. [↑](#footnote-ref-18)
19. \*\* Outgrowth of supervised student research [↑](#footnote-ref-19)
20. \*\* Outgrowth of supervised student research [↑](#footnote-ref-20)
21. \*\* Outgrowth of supervised student research [↑](#footnote-ref-21)
22. [↑](#footnote-ref-22)
23. \*\* Outgrowth of supervised student research [↑](#footnote-ref-23)
24. \*\* Outgrowth of supervised student research [↑](#footnote-ref-24)
25. [↑](#footnote-ref-25)
26. [↑](#footnote-ref-26)
27. [↑](#footnote-ref-27)
28. [↑](#footnote-ref-28)
29. [↑](#footnote-ref-29)
30. [↑](#footnote-ref-30)
31. [↑](#footnote-ref-31)
32. [↑](#footnote-ref-32)
33. \*\* Outgrowth of supervised student research [↑](#footnote-ref-33)
34. \*\* Outgrowth of supervised student research [↑](#footnote-ref-34)
35. \*\* Outgrowth of supervised student research [↑](#footnote-ref-35)
36. [↑](#footnote-ref-36)
37. \*\* Outgrowth of supervised student research [↑](#footnote-ref-37)
38. \*\* Outgrowth of supervised student research [↑](#footnote-ref-38)
39. \*\* Outgrowth of supervised student research [↑](#footnote-ref-39)
40. [↑](#footnote-ref-40)
41. [↑](#footnote-ref-41)
42. \*\* Outgrowth of supervised student research [↑](#footnote-ref-42)
43. [↑](#footnote-ref-43)
44. \*\* Outgrowth of supervised student research [↑](#footnote-ref-44)
45. [↑](#footnote-ref-45)
46. [↑](#footnote-ref-46)
47. [↑](#footnote-ref-47)
48. \*\* Outgrowth of supervised student research [↑](#footnote-ref-48)
49. [↑](#footnote-ref-49)
50. \*\* Outgrowth of supervised student research [↑](#footnote-ref-50)
51. [↑](#footnote-ref-51)
52. [↑](#footnote-ref-52)
53. \*\*Outgrowth of supervised student research [↑](#footnote-ref-53)
54. \*\* Outgrowth of supervised student research [↑](#footnote-ref-54)
55. [↑](#footnote-ref-55)
56. \*\*Outgrowth of supervised student research [↑](#footnote-ref-56)
57. \*\* Outgrowth of supervised student research [↑](#footnote-ref-57)
58. \*\* Outgrowth of supervised student research [↑](#footnote-ref-58)
59. \*\* Outgrowth of supervised student research [↑](#footnote-ref-59)
60. \*\* Outgrowth of supervised student research [↑](#footnote-ref-60)
61. \*\*Outgrowth of supervised student research [↑](#footnote-ref-61)
62. [↑](#footnote-ref-62)
63. \*\* Outgrowth of supervised student research [↑](#footnote-ref-63)
64. [↑](#footnote-ref-64)
65. \*\* Outgrowth of supervised student research [↑](#footnote-ref-65)
66. \*\* Outgrowth of supervised student research [↑](#footnote-ref-66)
67. \*\* Outgrowth of supervised student research [↑](#footnote-ref-67)
68. [↑](#footnote-ref-68)
69. \*\* Outgrowth of supervised student research [↑](#footnote-ref-69)
70. \*\* Outgrowth of supervised student research [↑](#footnote-ref-70)
71. \*\* Outgrowth of supervised student research [↑](#footnote-ref-71)
72. \*\* Outgrowth of supervised student research [↑](#footnote-ref-72)
73. \*\* Outgrowth of supervised student research [↑](#footnote-ref-73)
74. \*\* Outgrowth of supervised student research [↑](#footnote-ref-74)
75. \*\* Outgrowth of supervised student research [↑](#footnote-ref-75)
76. \*\* Outgrowth of supervised student research [↑](#footnote-ref-76)
77. \*\* Outgrowth of supervised student research [↑](#footnote-ref-77)