Curriculum Vitae of Siddharth Rajan
December 2018

Contact Information

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The Ohio State University
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Personal Information

Born: October 1978, New Delhi, India
Status: U.S. Legal Permanent Resident, Citizen of India

Summary

Siddharth Rajan is Professor of Electrical and Computer Engineering, and Materials Science and Engineering departments at The Ohio State University, where he joined the faculty in 2008. He received his PhD in Electrical and Computer Engineering in 2006 from University of California, Santa Barbara, and has held research positions at UC Santa Barbara and GE Global Research. He is recipient of Best Student Paper Awards at Electronic Materials Conference (2006) and Workshop on Frontiers of Electronics (2008), Most Valuable Contribution Award at the Workshop on Compound Semiconductor Materials and Devices (WOCSEMMAD) in 2013, Young Investigator Award of the 2017 North American Molecular Beam Epitaxy Conference (NAMBE), the Harrison Award for Research Excellence from Ohio State University College of Engineering in 2018, and Japan Society of Applied Physics (JSAP) Outstanding Paper Award in 2018.

Rajan's education and research activities focus on the area of semiconductor materials and devices. He adopts a vertically integrated approach combining semiconductor and solid-state physics, material growth, and device engineering. He has co-authored 2 book chapters, over 125 journal papers, and over 150 invited and contributed presentations. He currently advises ten Ph.D. students and two post-doctoral scholars. He has advised nine Ph.D. students, and six M.S. students, who have gone on to positions in academia and in industry. Since November 2008, he has been awarded over $19.8 million in collaborative research funding, of which $11.4 million was obtained as principal investigator.

Professional Preparation

2006	University of California, Santa Barbara Ph.D. Electrical and Computer Engineering Dissertation Title: Advanced Polarization Engineering for GaN-Based Transistors Ph.D. Advisor: Umesh K. Mishra
2004	University of California, Santa Barbara M.S. Electrical and Computer Engineering
1996-2001	Birla Institute of Technology and Science, Pilani, India Dual major: MSc. (Honors) Physics & B.E. (Honors) Electrical and Electronics Engineering

Professional Experience

Professional and Academic Appointments

2018 - Present	Professor, Department of Electrical and Computer Engineering and Department of Material Science and Engineering, The Ohio State University
2013 – 2018	Associate Professor, Department of Electrical and Computer Engineering and Department of Material Science and Engineering, The Ohio State University
2008 –2013	Assistant Professor, Department of Electrical and Computer Engineering & Department of Material Science and Engineering, The Ohio State University
2008	Assistant Project Scientist, Department of Electrical and Computer Engineering, University of California, Santa Barbara Sponsors: U.K. Mishra and J. S. Speck
2007	Electrical Engineer, Semiconductor Technology Laboratory, General Electric Global Research, Niskayuna, USA

Industry and National Laboratory Activities/Collaborations

Duration	**Affiliation**	**Area of collaboration/tasks**
2015-present	Texas Instruments	GaN Power Devices
2015-2017	Northrop Grumman Space Systems, CA	2D/GaN Semiconductor Devices
2012-2015	Raytheon IDS, Andover MA	III-Nitride Microwave Devices
2017- present	Qorvo Inc.	III-Nitride Microwave Devices
2016-present	Air Force Research Laboratory Materials and Sensors Directorates	Gallium Oxide-based materials and devices
2014-present	Naval Research Laboratory	Linearity Engineering for Microwave Devices
2013-present	Sandia National Laboratory	AlGaN-based optoelectronics and electronics
2018-present	Northrop Grumman Space Systems, CA	Wide band gap electronics

Awards/Distinctions/Honors

2018 Japan Society of Applied Physics Outstanding Paper Award
2018 Lumley Research Award, College of Engineering, Ohio State University
2018 Harrison Research Award, College of Engineering, Ohio State University
2017 North American Molecular Beam Epitaxy Conference (NAMBE) Young Investigator Award
2013 Most Valuable Contribution Award, WOCSEMMAD (Workshop on Compound Semiconductor Materials and Devices)
2012 Lumley Research Award, College of Engineering, Ohio State University
2008 Best Paper Award, Workshop on Frontiers of Electronics
2006 Best Paper Award, Electronic Materials Conference
2000 JNC-Advanced Scientific Research Summer Fellowship from the Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India

Advising

Current Graduate Students/Reseach Area

1. Zhanbo Xia, Ph.D. expected 2020, Gallium Oxide Electronics
2. Towhidur Razzak, Ph.D. expected 2020, AlGaN-based High Frequency Devices
3. Wahidur Rahman, Ph.D. expected 2020, GaN Lateral Power Devices
4. Zane Jamal-Eddine, Ph.D. expected 2021 GaN Optoelectronics
5. Wyatt Moore, Ph.D. expected 2023, Gallium Oxide Electronics
6. Shahadat Sohel, Ph.D. expected 2021 Microwave Linearity Engineering in GaN Transistors
7. Hyunsoo Lee, Ph.D. expected 2023, Vertical GaN Power Devices
8. Caiyu Wang, Ph.D. expected 2021 High Dielectric Constant Perovskite Based Electronics
9. Nidhin Kalarickal, Ph.D. expected 2023 MBE Growth of Gallium Oxide
10. Zhichao Yang, Ph.D. expected 2019, III-Nitride Tunneling Hot Electron Transistors

Current Post-doctoral Scholars

2018- present Dr. Choong Hee Lee
2018- present Dr. Hareesh Chandrashekar

Advisee Distinctions/Awards

2017 Advisor of Yuewei Zhang, winner of Best Paper Award, ISSLED 2018
2017 Advisor of Choong Hee Lee, winner of Outstanding Student Paper Award, NAMBE 2018
2015 Presidential Fellowship, Ohio State University, awarded to Yuewei Zhang
2013 Presidential Fellowship, Ohio State University, awarded to Sriram Krishnamoorthy
2012 Presidential Fellowship, Ohio State University, awarded to Digbijoy Nath
2010 Best Student Poster Award OSU IMR Materials Week, awarded to Digbijoy Nath

Past Ph.D. Advisees (* = co-advised)

Year	Name	Dissertation Title	Current Position
2018	Choong Hee Lee	Synthesis and Properties of Van der Waals-bonded Semiconductor Heterojunctions with Gallium Nitride	Postdoctoral Scholar Ohio State University
2018	Yuewei Zhang	Tunnel Junction-based Ultraviolet Light Emitting Diodes	Postdoctoral Scholar UC Santa Barbara
2018	Sanyam Bajaj	Design and Engineering of AlGaN Channel-Based Transistors	Device Engineer Intel Corporation
2017	Shubhendhu Bhardwaj*	Hybrid Numerical Models for Fast Design of Terahertz Plasmonic Devices	Assistant Professor Florida International University
2016	Edwin W. Lee	Growth and Nb-Doping of MoS_2 Towards Novel 2D/3D Heterojunction Bipolar Transistors	Program Manager Ohio State University
2016	Fatih Akyol	Nanoscale Electron Transport Engineering for GaN Optoelectronic Devices	Assistant Professor Yildiz Technical University, Turkey
2015	Ting-Hsiang Hung	Novel High-k Dielectric Enhanced III-Nitride Devices	Principal Device Engineer GlobalFoundries
2014	Sriram Krishnamoorthy	Gallium Nitride Based Heterostructure Interband Tunnel Junctions	Assistant Professor University of Utah

Year	Name	Dissertation Title	Current Position
2013	Digbijoy Nath	Advanced polarization engineering of III-nitride heterostructures towards high-speed device applications	Assistant Professor Indian Institute of Science, Bangalore, India
2013	Pil Sung Park	Advanced Channel Engineering in III-Nitride HEMTs for High Frequency Performance	Senior Staff Device Engineer Navitas Semiconductor
2012	Prashanth Ramesh*	Smart Materials for Electromagnetic and Optical Applications	Senior Design Engineer Qorvo Inc.

Past Terminal Master's Degree (Thesis) Advisees

Year	Name	Thesis Title	Current/Next Position
2015	Preethi Someswaran	Large Signal Modelling of AlGaN/GaN HEMT for Linearity Prediction	Intel Corporation
2015	Omor Faruk Shoron	Extreme Electron Density Perovskite Oxide Heterostructures for Field Effect Transistors	Ph.D. Student, UCSB
2012	Fatih Akyol	N-Polar III-Nitride Optoelectronic Devices	Ph.D. Student, OSU

Past Non-Thesis (Project-based) Master's Advisees

1. Minu Manoharan (MS) –Patent Engineer, Eschweiler & Associates
2. Santosh Hariharan (MS) – Senior Device Engineer, Microchip Technology
3. Sadia Monika (MS) – Intel Corporation

Past Post-doctoral Scholars

1. Dr. Digbijoy Nath (Indian Institute of Science)
2. Dr. Masihhur Laskar (University of Wisconsin)
3. Dr. Alessandro Guissiani (Fraunhofer Institute)
4. Dr. Michele Esposto (Angelantoni Life Science)
5. Dr. Sriram Krishnamoorthy (University of Utah)
6. Dr. Fatih Akyol (Yildiz Technical University)

Past Undergraduate Researchers

1. Samuel Cooler (2009) – Ph.D. Student, Northwestern University
2. Jeremiah Santos (2009) – Alliance Data
3. Sanyam Bajaj (2011) – Intel Corporation
4. Zane Jamal-Eddine (2015) – Ph.D. Student, Ohio State University
5. Brian Li (2015) – Ph.D. Student, U of Illinois, Urbana-Champaign

Teaching

Numbers in brackets are student evaluation ratings on a scale of 5.0

ECE 5530 – Fundamentals of Semiconductors for Microelectronics and Photonics
Created course, and developed all course content
Taught course in Autumn 2013 (4.9), Autumn 2014 (4.2), Autumn 2015 (4.3), Autumn 2016 (5.0)

ECE 6531 – Fundamentals of Semiconductor Devices
Created course, and developed all course content
Taught course in Spring 2013 (4.5), Spring 2014 (4.8) , Spring 2015 (4.4), Spring 2016 (5.0)

ECE 730 Fundamentals of Semiconductors for Microelectronics and Optoelectronics
Taught course in Autumn 2009 (4.3), Autumn 2010 (3.8), Autumn 2011 (4.0)

ECE 694 – Principles of Wide Band Gap Devices
Created course, and developed all course content
Taught course in Winter 2012 (3.8), Spring 2010 (4.8)

Undergraduate courses
ECE 3030 – Semiconductor Electronic Devices
Taught course in Spring 2014 (4.2)

ECE 331 Introduction to Materials for ECE
Taught course in Autumn 2008 (3.9), Spring 2009 (4.0), Spring 2010 (4.5), Spring 2012 (4.5)

ECE 432 Physics of Semiconductor Devices
Taught course in Spring 2009 (4.2), Autumn 2010 (4.2), Spring 2011 (4.8)

Professional Service Activities

Editorial Service

Editor	IEEE Transactions on Electron Devices
Guest Editor	Special Issue on Gallium Nitride Electronics, IOP SST (2012)
Guest Editor	Physica Status Solidi A and B Special Issue

Conference Committee Chair or Co-Chair

2018 Technical Program Chair, 3rd International Workshop on Gallium Oxide (IWGO)
2018 Technical Program Chair, 77th Device Research Conference (DRC)
2018 General Chair, Lester Eastman Conference on High Performance Devices
2017 Technical Program Vice-Chair, 76th Device Research Conference (DRC)
2016 Program Chair, IEEE Lester Eastman Conference on High Performance Devices
2016 Technical Program Co-Chair, International Workshop on Nitride Semiconductors(IWN)
2016 Program Co-Chair, Topical Workshop on Heterostructure Materials (TWHM)
2015 Program Vice-Chair, Topical Workshop on Heterostructure Materials (TWHM)
2014 Program Chair, Workshop on Compound Semiconductor Devices and Materials
2014 Vice-Chair, IEEE Workshop on Wide Bandgap Devices and Application
2013 Vice-Chair, IEEE Workshop on Wide Bandgap Devices and Application

Technical Program and Conference Committees (selected)

2018 North American MBE Conference
2018 Electronic Materials Conference
2017 International Conference on Nitride Semiconductors
2017 Electronic Materials Conference
2017 International Conference on Nitride Semiconductors
2016 Device Research Conference (DRC)
2016 Electronic Materials Conference (EMC)
2016 Workshop on Compound Semiconductor Devices & Materials (WOCSEMMAD)
2015 Device Research Conference (DRC)
2015 Electronic Materials Conference (EMC)
2015 Workshop on Compound Semiconductor Devices & Materials (WOCSEMMAD)
2014 IEEE Lester Eastman Conference on High Performance Devices
2014 Device Research Conference (DRC)
2014 Electronic Materials Conference (EMC)
2014 North American MBE Conference (NAMBE)
2014 Workshop on Compound Semiconductor Devices & Materials (WOCSEMMAD)
2013 Workshop on Compound Semiconductor Devices & Materials (WOCSEMMAD)
2012 Workshop on Compound Semiconductor Devices & Materials (WOCSEMMAD)

Peer Review for Journals

Applied Physics Letters
IEEE Electron Device Letters
IEEE Transactions on Electron Devices
IEEE Journal of Photovoltaics
Journal of Applied Physics
Japanese Journal of Applied Physics
Journal of Vacuum Science and Technology B
Journal of Crystal Growth
ACS Nano
ACS Nano Letters

Physica Status Solidi C
Nature Materials
Nature Electronics
Advanced Materials

Proposal Review
National Science Foundation (NSF) USA
U.S. Army Research Laboratory
U.S. Department of Energy SSL Program
US Department of Energy ARPA-E
Air Force Office of Scientific Research
U.S. Army Research Office
Canada National Science and Engineering Research Council (NSERC)
Swiss National Science Foundation
Kentucky Science and Engineering Foundation

University Service
ECE Department Graduate Studies Committee - 2018
ECE Department Advisory Committee - 2018
ECE Department Personnel Committee - 2015
ECE Department Clean Room Committee – 2008- present
ECE Department Admissions Committee – 2011-2017
ECE Department Graduate Fellowship Committee – 2008-2010
OSU Nanotech West Advisory Committee – 2010-present

Publications of Siddharth Rajan (updated December 2018)

Google Scholar Profile: https://scholar.google.com/citations?user=f3MzMwoAAAAJ&hl=en

Book Chapters

2. **Gallium Nitride Tunnel Junctions**, S. Rajan and T. Takeuchi (in Gallium Nitride: Physics, Devices, and Technology, CRC Press)

1. **Advances in Ga_2O_3 solar-blind UV photodetectors** , Pratiyush, Anamika Singh, Sriram Krishnamoorthy, Rangarajan Muralidharan, Siddharth Rajan, and Digbijoy N. Nath, (in *Gallium Oxide*, pp. 369-399. Elsevier, 2019)

Journal Publications

128. Kong, Wei, et al. "Polarity governs atomic interaction through two-dimensional materials." *Nature materials* 17.11 (2018): 999.

127. O'Hara, D.J., Zhu, T., Trout, A.H., Ahmed, A.S., Luo, Y.K., Lee, C.H., Brenner, M.R., Rajan, S., Gupta, J.A., McComb, D.W. and Kawakami, R.K., 2018. Room temperature intrinsic ferromagnetism in epitaxial manganese selenide films in the monolayer limit. *Nano letters*, *18*(5), pp.3125-3131.

126. Bajaj, Sanyam, Andrew Allerman, Andrew Armstrong, Towhidur Razzak, Vishank Talesara, Wenyuan Sun, Shahadat H. Sohel et al. "High Al-Content AlGaN Transistor With 0.5 A/mm Current Density and Lateral Breakdown Field Exceeding 3.6 MV/cm." *IEEE Electron Device Letters* 39, no. 2 (2018): 256-259.

125. Armstrong, Andrew M., Brianna A. Klein, Albert Colon, Andrew A. Allerman, Erica A. Douglas, Albert G. Baca, Torben R. Fortune, Vincent M. Abate, Sanyam Bajaj, and Siddharth Rajan. "Ultra-wide band gap AlGaN polarization-doped field effect transistor." *Japanese Journal of Applied Physics* 57, no. 7 (2018): 074103.

124. Gao, H., Muralidharan, S., Pronin, N., Karim, M.R., White, S.M., Asel, T., Foster, G., Krishnamoorthy, S., Rajan, S., Cao, L.R. and Higashiwaki, M., 2018. Optical signatures of deep level defects in Ga2O3. *Applied Physics Letters*, *112*(24), p.242102.

123. McGlone, Joe F., Zhanbo Xia, Yuewei Zhang, Chandan Joishi, Saurabh Lodha, Siddharth Rajan, Steven A. Ringel, and Aaron R. Arehart. "Trapping Effects in Si delta-Doped beta-Ga2O3 MESFETs on an Fe-Doped beta-Ga2O3 Substrate." *IEEE Electron Device Letters* 39, no. 7 (2018): 1042-1045.

122. Joishi, Chandan, Zhanbo Xia, Joe McGlone, Yuewei Zhang, Aaron R. Arehart, Steven Ringel, Saurabh Lodha, and Siddharth Rajan. "Effect of buffer iron doping on delta-doped β-Ga2O3 metal semiconductor field effect transistors." *Applied Physics Letters* 113, no. 12 (2018): 123501.

121. Zhang, Y., Jamal-Eddine, Z., Akyol, F., Bajaj, S., Johnson, J.M., Calderon, G., Allerman, A.A., Moseley, M.W., Armstrong, A.M., Hwang, J. and Rajan, S., 2018. Tunnel-injected sub 290 nm ultra-violet light emitting diodes with 2.8% external quantum efficiency. *Applied Physics Letters*, *112*(7), p.071107.

120. Xia, Zhanbo, Chandan Joishi, Sriram Krishnamoorthy, Sanyam Bajaj, Yuewei Zhang, Mark Brenner, Saurabh Lodha, and Siddharth Rajan. "Delta Doped $\beta $-Ga2O3 Field Effect Transistors With Regrown Ohmic Contacts." *IEEE Electron Device Letters* 39, no. 4 (2018): 568-571.

119. Zhang, Yuewei, et al. "Demonstration of high mobility and quantum transport in modulation-doped β-(AlxGa1-x) 2O3/Ga2O3 heterostructures." *Applied Physics Letters* 112.17 (2018): 173502.

118. Sohel, S.H., Xie, A., Beam, E., Xue, H., Roussos, J.A., Razzak, T., Bajaj, S., Cao, Y., Meyer, D.J., Lu, W. and Rajan, S., 2018. X-Band Power and Linearity Performance of Compositionally Graded AlGaN Channel Transistors. *IEEE Electron Device Letters*, *39*(12), pp.1884-1887.

117. Pratiyush, A.S., Krishnamoorthy, S., Kumar, S., Xia, Z., Muralidharan, R., Rajan, S. and Nath, D.N., 2018. Demonstration of zero bias responsivity in MBE grown β-Ga2O3 lateral deep-UV photodetector. *Japanese Journal of Applied Physics*, *57*(6), p.060313.

116. Zhang, Yuewei, Chandan Joishi, Zhanbo Xia, Mark Brenner, Saurabh Lodha, and Siddharth Rajan. "Demonstration of β-(AlxGa1-x) 2O3/Ga2O3 double heterostructure field effect transistors." *Applied Physics Letters* 112, no. 23 (2018): 233503.

115. Joishi, Chandan, Subrina Rafique, Zhanbo Xia, Lu Han, Sriram Krishnamoorthy, Yuewei Zhang, Saurabh Lodha, Hongping Zhao, and Siddharth Rajan. "Low-pressure CVD-grown β-Ga2O3 bevel-field-plated Schottky barrier diodes." *Applied Physics Express* 11, no. 3 (2018): 031101.

114. Pratiyush, Anamika Singh, Zhanbo Xia, Sandeep Kumar, Yuewei Zhang, Chandan Joishi, Rangarajan Muralidharan, Siddharth Rajan, and Digbijoy N. Nath. "MBE-Grown $\beta $-Ga 2 O 3-Based Schottky UV-C Photodetectors With Rectification Ratio~ 10 7." *IEEE Photonics Technology Letters*30, no. 23 (2018): 2025-2028.

113. Sanyam Bajaj, Andrew Allerman, Andrew Armstrong, Towhidur Razzak, Vishank Talesara, Wenyuan Sun, Shahadat H Sohel, Yuewei Zhang, Wu Lu, Aaron R Arehart, Fatih Akyol, Siddharth Rajan, "High Al-Content AlGaN Transistor with 0.5 A/mm Current Density and Lateral Breakdown Field Exceeding 3.6 MV/cm" IEEE Electron Device Letters, 39(2), 256 (2017)

112. Yuewei Zhang, Sriram Krishnamoorthy, Fatih Akyol, Jared M Johnson, Andrew A. Allerman, Michael W Moseley, Andrew M. Armstrong, Jinwoo Hwang, Siddharth Rajan, "Reflective Metal/Semiconductor Tunnel Junctions for Hole Injection in AlGaN UV LEDs", Applied Physics Letters, 111, 051104 (2017).

111. Choong Hee Lee, Sriram Krishnamoorthy, Pran K. Paul, Dante J. O'Hara, Mark R. Brenner, Roland K. Kawakami, Aaron R. Arehart, and Siddharth Rajan, "Large-area SnSe2/GaN heterojunction diodes grown by molecular beam epitaxy", Applied Physics Letter 111, 202101 (2017).

110. S. Bajaj, Z. Yang, F. Akyol, P.S. Park, Y. Zhang, A. Price, S. Krishnamoorthy, D. Meyer and S. Rajan, "Graded AlGaN Channel Transistors for Improved Current and Power Gain Linearity", IEEE Transactions on Electron Devices, 64(8), 3114 (2017).

109. S Krishnamoorthy, Z Xia, S Bajaj, M Brenner, S Rajan, "Delta-doped β-gallium oxide field-effect transistor", Applied Physics Express 10 (5), 051102 (2017). (Featured as Spotlight article)

108. Yuewei Zhang, Sriram Krishnamoorthy, Fatih Akyol, Sanyam Bajaj , Andrew A. Allerman, Michael William Moseley, Andrew M. Armstrong, and Siddharth Rajan, "Tunnel-injected sub-260 nm ultraviolet light emitting diodes", Applied Physics Letters, 110, 201102 (2017). (Featured in Editor's Picks)

107. Choong Hee Lee, Sriram Krishnamoorthy, Dante J. O'Hara, Mark R. Brenner, Jared M. Johnson, John S. Jamison, Roberto C. Myers, Roland K. Kawakami, Jinwoo Hwang, and Siddharth Rajan, "Molecular beam epitaxy of 2D-layered gallium selenide on GaN substrates", Journal of Applied Physics 121, 094302 (2017)

106. Choong Hee Lee, Edwin W. Lee II, William McCulloch, Zane Jamal-Eddine, Sriram Krishnamoorthy, Michael J. Newburger, Roland K. Kawakami, Yiying Wu, and Siddharth Rajan. "A self-limiting layer-by-layer etching technique for 2H-MoS2." Applied Physics Express 10, 035201 (2017).

105. Singh Pratiyush, A., Krishnamoorthy, S., Vishnu Solanke, S., Xia, Z., Muralidharan, R., Rajan, S., & Nath, D. N. (2017). High responsivity in molecular beam epitaxy grown β-Ga2O3 metal semiconductor metal solar blind deep-UV photodetector. *Applied Physics Letters*, *110*(22), 221107.

104. Krishnamoorthy, Sriram, Zhanbo Xia, Sanyam Bajaj, Mark Brenner, and Siddharth Rajan. "Delta-doped β-gallium oxide field-effect transistor." *Applied Physics Express* 10, no. 5 (2017): 051102.

103. Krishnamoorthy, Sriram, Zhanbo Xia, Chandan Joishi, Yuewei Zhang, Joe McGlone, Jared Johnson, Mark Brenner et al. "Modulation-doped β-(Al0. 2Ga0. 8) 2O3/Ga2O3 field-effect transistor." *Applied Physics Letters* 111, no. 2 (2017): 023502.

102. Johnson, Jared M., Sriram Krishnamoorthy, Siddharth Rajan, and Jinwoo Hwang. "Point and Extended Defects in Ultra Wide Band Gap β-Ga 2 O 3 Interfaces." *Microscopy and Microanalysis* 23, no. S1 (2017): 1454-1455.

101. Zhang, Y., Allerman, A., Krishnamoorthy, S., Akyol, F., Moseley, M. W., Armstrong, A., & Rajan, S. (2015). Enhanced Light Extraction in Tunnel Junction Enabled Top Emitting UV LEDs. Appl. Phys. Express 9 052102 (2016)

100. Akyol, Fatih and Krishnamoorthy, Sriram and Zhang, Yuewei and Johnson, Jared and Hwang, Jinwoo and Rajan, Siddharth, Applied Physics Letters, 108, 131103 (2016), DOI:http://dx.doi.org/10.1063/1.4944998

99. Bhardwaj, S., Sensale-Rodriguez, B., Xing, H. G., Rajan, S., & Volakis, J. L. (2016). Resonant tunneling assisted propagation and amplification of plasmons in high electron mobility transistors. Journal of Applied Physics, 119(1), 013102.

98. Bajaj, S., Shoron, O. F., Park, P. S., Krishnamoorthy, S., Akyol, F., Hung, T. H., ... & Rajan, S. . Density-dependent electron transport and precise modeling of GaN high electron mobility transistors. Applied Physics Letters, 107, 153504 (2015)

97. Zhichao Yang; Nath, D.N.; Yuewei Zhang; Khurgin, J.B.; Rajan, S., "Common Emitter Current and Voltage Gain in III-Nitride Tunneling Hot Electron Transistors," in Electron Device Letters, IEEE , vol.36, no.5, pp.436-438, May 2015

96. Lee, I. I., Edwin, W., Lee, C. H., Paul, P. K., Ma, L., McCulloch, W. D., ... & Rajan, S. (2015). Layer-Transferred MoS2/GaN PN Diodes, Applied Physics Letters.

95. Lee, C. H., McCulloch, W., Lee II, E. W., Ma, L., Krishnamoorthy, S., Hwang, J., ... & Rajan, S. (2015). Transferred large area single crystal MoS2 field effect transistors. Applied Physics Letters, 107(19), 193503.

94. Akyol, F., Krishnamoorthy, S., Zhang, Y., & Rajan, S. (2015). GaN-based three-junction cascaded light-emitting diode with low-resistance InGaN tunnel junctions. Applied Physics Express, 8(8), 082103.

93. Kornblum, L., Jin, E. N., Shoron, O., Boucherit, M., Rajan, S., Ahn, C. H., & Walker, F. J. (2015). Electronic transport of titanate heterostructures and their potential as channels on (001) Si. Journal of Applied Physics, 118(10), 105301.

92. Khurgin, J. B., Bajaj, S., & Rajan, S. (2015). Elastic scattering by hot electrons and apparent lifetime of longitudinal optical phonons in gallium nitride. Applied Physics Letters, 107(26), 262101.

91. Yang, Z., Zhang, Y., Nath, D. N., Khurgin, J. B., & Rajan, S. (2015). Current gain in sub-10 nm base GaN tunneling hot electron transistors with AlN emitter barrier. Applied Physics Letters, 106(3), 032101.

90. Zhang, Y., Krishnamoorthy, S., Johnson, J. M., Akyol, F., Allerman, A., Moseley, M. W., ... & Rajan, S. (2015). Interband tunneling for hole injection in III-nitride ultraviolet emitters. Applied Physics Letters, 106(14), 141103.

89. Park, P. S., Krishnamoorthy, S., Bajaj, S., Nath, D. N., & Rajan, S. (2015). Recess-Free Nonalloyed Ohmic Contacts on Graded AlGaN Heterojunction FETs. Electron Device Letters, IEEE, 36(3), 226-228.

88. Zhichao Yang, Digbijoy Nath and Siddharth Rajan, "Negative differential resistance in GaN tunneling hot electron transistors", Applied Physics Letters 105, 202111 (2014).

87. S. Bajaj, T.-H. Hung, F. Akyol, D. N. Nath and S. Rajan. "Modeling of high composition AlGaN channel high electron mobility transistors with large threshold voltage." Applied Physics Letters 105(26), 263503 (2014).

86. Sriram Krishnamoorthy, Fatih Akyol, and Siddharth Rajan, " InGaN/GaN Tunnel Junctions For Hole Injection in GaN Light Emitting Diodes", Applied Physics Letters 105, 141104 (2014) .

85. P Ramesh, S Krishnamoorthy, S Rajan, GN Washington, "Energy band engineering for photoelectrochemical etching of GaN/InGaN heterostructures" Applied Physics Letters 104 (24), 243503

84. Lu Ma, Digbijoy N Nath, Edwin W Lee II, Choong Hee Lee, Mingzhe Yu, Aaron Arehart, Siddharth Rajan, Yiying Wu, "Epitaxial growth of large area single-crystalline few-layer MoS2 with high space charge mobility of 192 cm2 V− 1 s− 1" Applied Physics Letters 105 (7), 072105

83. M Boucherit, O Shoron, CA Jackson, TA Cain, MLC Buffon, C Polchinski, S Stemmer, S Rajan, "Modulation of over 1014 cm− 2 electrons in SrTiO3/GdTiO3 heterostructures" Applied Physics Letters 104 (18), 182904

82. TH Hung, K Sasaki, A Kuramata, DN Nath, PS Park, C Polchinski, S Rajan "Energy band line-up of atomic layer deposited Al2O3 on β-Ga2O3" Applied Physics Letters 104 (16), 162106

81. Krishnamoorthy, Sriram, Fatih Akyol, and Siddharth Rajan. "III-nitride tunnel junctions for efficient solid state lighting." SPIE OPTO. International Society for Optics and Photonics, 2014.

80. Ting-Hsiang Hung, Pil-Sung Park, Sriram Krishnamoorthy, Digbijoy Nath, Siddharth Rajan, “Interface Charge Engineering for Enhancement-Mode GaN MISHEMTs”, IEEE Electron Device Letters, Vol. 35, No. 3, 99. 312-314, March 2014.

79. M Laskar, DN Nath, L Ma, E Lee, CH Lee, T Kent, Z Yang, R Mishra, MA Roldan, Juan- Carlos Idrobo, Sokrates T. Pantelides, Stephen J. Pennycook, R. Myers, Y. Wu, S. Rajan, “p-type doping in CVD grown MoS2 using Nb”, Appl. Phys. Lett. 104 092104 (2014).

78. Stemmer, Susanne, et al. "(Invited) Interface Trap Densities and Admittance Characteristics of III-V MOS Capacitors." ECS Transactions 50.4 (2013): 141-144.

77. Y Wang, X Luo, N Zhang, MR Laskar, L Ma, Y Wu, S Rajan, W Lu, “Low frequency noise in chemical vapor deposited MoS2”, arXiv preprint, arXiv:1310.6484.
76. J Yang, S Cui, TP Ma, TH Hung, D Nath, S Krishnamoorthy, S Rajan, “A study of electrically active traps in AlGaN/GaN high electron mobility transistor”, Applied Physics Letters 103, 173520 (2013).

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Invited Presentations

48. Tunnel-Injected UV Light Emitting Diodes, International Workshop on Nitride Semiconductors, Kanazawa, Japan, November 2018

47. Semiconductor Materials and Devices Beyond Silicon, Yale University, October 2018

46. Tunnel Junction Based UV LEDs, IEEE RAPID Conference 2018, Miramar Beach FL, August 2018

45. Material and Device Engineering for Gallium Oxide Field Effect Transistors, Gallium Oxide Workshop (GOX), Columbus OH, August 2018

44. Tunnel Junctions for Next-Generation Optoelectronics, ISGN 2018, Warsaw, Poland, August 2018

43.Gallium Oxide , SPIE Photonics West Meeting, February 2018

42. High Efficiency Tunnel-Injected Deep UV LEDs, SPIE Photonics West Meeting, February 2018

41. Material and Device Engineering for Gallium Oxide Field Effect Transistors, Compound Semiconductor Week, Boston MA, August 2018

40. Wide Band Gap Oxide Semiconductor Electronic Devices, SRC nCore Workshop (online), June 2018

39. Introduction to High Frequency GaN-Based High Electron Mobility Transistor (Tutorial), International Microwave Symposium IMS 2018, June 2018

38. Next Generation Wide Band Gap Technology, Indian Institute of Science, Bangalore, India, May 2018

37. Tunnel Junctions for Next-Generation III-Nitride Optoelectronics, SPIE Photonics West Conference, San Francisco (2017)

36. Tunnel Junctions for Ultraviolet Light Emitters, SPIE Optics and Photonics, San Diego 2017

35. Next-Generation III-Nitride Electronics, Compound Semiconductor Workshop, Berlin 2017

34. Vertical III-Nitride Electronic Devices, International Conference on Nitride Semiconductors, Strasbourg, 2017

33. Next-Generation Wide Band Gap Electronics, New Semiconductors and Devices Workshop, Northrop Grumman Space Systems, CA, January 2017

32. Molecular Beam Epitaxy of Wide Band Gap Materials and Devices, North American MBE Conference, 2017

31. III-nitride tunnel junctions for efficient III-Nitride Visible and UV Optoelectronics, Meijo University, Nagoya, Japan (2016)

30. III-nitride tunnel junctions for efficient III-Nitride Visible and UV Optoelectronics, ISPlasma 2016, Nagoya, Japan

29. Next-Generation Wide Band Gap Electronics, IEEE EDS Meeting, Rochester, NY, 2015

28. Next-Generation III-Nitride Electronics, Raytheon IDS, Andover MA, September 2016

Next-Generation III-Nitride Devices, IIT Bombay, India, October 2015

27. Next Generation Gallium Nitride Devices – Quantum Transport and Polarization Engineering, Kyoto Symposium, University of Kyoto (2015)

26. III-nitride tunnel junctions for efficient solid state lighting, SPIE Photonics West OPTO, San Franscisco, CA (2014)

25. Unipolar vertical transport in GaN/AlGaN/GaN heterostructures, International Workshop on Nitride Semiconductors, Wroclaw, Poland, (2014)

24. Recent Progress on 2D Layered Semiconductor, Air Force Research Laboratory, Dayton OH (2014)

23. Next-Generation III-Nitride Devices, HRL Laboratories, Malibu, CA, 2014

22. Nanoscale Heterostructure Engineering of Gallium Nitride Semiconductor Devices, ICONSAT, Chandigarh, India (2014)

21. III-Nitride Tunnel Junctions, Physics and Chemistry of Surfaces and Interfaces, Santa Fe, NM, Jan 12-16, 2014

20. III-Nitride Tunnel Junctions: Device Engineering and Applications, 10th Topical Workshop on Heterostructure Microelectronics September 2-5, 2013 Hakodate, Japan

19. III-Nitride Tunnel Junctions, Siddharth Rajan, International Semiconductor Device Research Symposium, Washington 2013.

18. Nanoscale Heterostructure Engineering of Gallium Nitride Semiconductor Devices, University of Illinois Urbana Champaign, India (2014)

17. III-Nitride Tunnel Junctions: Device Engineering and Applications, Photonics North Conference, August 2013, Ottawa Canada

16. III-Nitride Tunnel Junctions: Device Engineering and Applications, IUMRS, December 2013, Bangalore India

15. Nanoscale Heterostructure Engineering of Gallium Nitride Semiconductor Devices, ICONSAT, Chandigarh, India (2014)

14. III-Nitride Tunnel Junctions: Device Engineering and Applications, Topical Workshop on Heterostructure Microelectronics (2013)

13. Heterostructure Engineering for GaN Optoelectronics, Army Research Laboratory, 2012

12. Tunneling in III-Nitride Devices, Special Session, WOCSEMMAD 2012

11. III Nitride Tunneling: Devices and Applications, International Conference of Nitride Semiconductors 2011, Sapporo, Japan

10. Nanoscale Polarization Engineering in III-Nitride Electronic Devices, SUNY Albany, 2011

9. Nanoscale Polarization Engineering in III-Nitride Electronic Devices, University of Illinois, Chicago, 2011

8. N-polar GaN Materials and Devices, University of Notre Dame, 2010

7. Advanced Polarization Engineering of Gallium Nitride Transistors, The Ohio State University, 2008

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Patents

8. Rajan, Siddharth, Sriram Krishnamoorthy, and Yuewei Zhang. "ULTRAVIOLET LIGHT EMITTING DIODES WITH TUNNEL JUNCTION." U.S. Patent Application No. 15/562,092.

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<u>Contributed Presentations</u> (> 120 presentations, list incomplete after 2011. Complete list is available by request)

122. Towhidur Razzak, Hao Xue, Zhanbo Xia, Seongmo Hwang, Asif Khan, Wu Lu, and Siddharth Rajan "Ultra Wide Band Gap Semiconductors for High Frequency Applications", IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes for RF and THz Applications (IMWS-AMP), Michigan (2018)

121. Towhidur Razzak, Hao Xue, Seongmo Hwang, Sanyam Bajaj, Yuewei Zhang, Zane Jamal-Eddine, Shahadat Hasan Sohel, Asif Khan, Wu Lu and Siddharth Rajan, "High Al-Composition AlGaN Channel Polarization-Graded Field-Effect Transistors" in 60th Electronic Materials Conference, June 27-29, Santa Barbara, California, USA (2018)

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21. Electron Transport in N-polar Vicinal AlGaN/GaN Heterostructure, Siddharth Rajan, Yun- Hao Hsieh, Steve P. DenBaars, James S. Speck and Umesh K. Mishra, Electronic Materials Conference 2008, Santa Barbara CA .

20. Characterization of MOCVD-Grown N-Polar GaN/AlGaN Heterostructures, Nidhi Nidhi; Siddharth Rajan; Stacia Keller; Steven DenBaars; Umesh Mishra. Accepted Electronic Materials Conference 2008, Santa Barbara CA .

19. AlGaN Channel HEMTs Grown by PAMBE: Structural and Device Characterizations, Sansaptak Dasgupta; Ajay Raman; Siddhath Rajan, Umesh Mishra, Accepted Electronic Materials Conference 2008, Santa Barbara CA

18. Gate Leakage Reduction in AlGaN/GaN HEMTs Grown by Plasma-Assisted MBE, Rongming Chu; Christiane Poblenz; Man Hoi Wong; Sansaptak Dasgupta; Siddharth Rajan; Yi Pei; Likun Shen; James Speck; Umesh Mishra, Accepted Electronic Materials Conference 2008, Santa Barbara CA

17. Electron Transport in N-polar Vicinal AlGaN/GaN Heterostructures, Siddharth Rajan, Eric Hsieh, Steve P. DenBaars, James S. Speck and Umesh K. Mishra, WOCSEMMAD 2008, Pal Springs, USA, February 2007.

16. Migration-enhanced epitaxy of N-polar Indium Nitride, Siddharth Rajan, Man Hoi Wong, Feng Wu, James S. Speck and Umesh K. Mishra, EMC 2007, Las Vegas, USA, February 2007.

15. Migration-enhanced epitaxy of N-polar Indium Nitride, Siddharth Rajan, Man Hoi Wong, Feng Wu, James S. Speck and Umesh K. Mishra, WOCSEMMAD 2007, Savannah, USA, February 2007.

14. Polarization-induced 3-Dimensional slabs in Graded AlGaN layers, John Simon, Siddharth Rajan, Kejia Wang, Huili Xing and Debdeep Jena, to be presented at 2006 MRS Fall Meeting, Boston

13. Advanced Transistor Structures Based on N-face GaN, S. Rajan, A. Chini, M. Wong, C. Suh,

Y. Fu, M. J. Grundmann, F. Wu, J. S. Speck and U. K. Mishra, 32nd International Symposium on Compound Semiconductors (ISCS), Sept 18-22 2005, Europa-Park Rust, Germany

12. N-face Modulation Doped Field Effect Transistors, S. Rajan, F. Wu, M. Wong, Y. Fu, J. S. Speck and U. K. Mishra, 6th International Conference on Nitride Semiconductors (ICNS) 2005, Aug 28- Sept 2 2005, Bremen, Germany.

11. Structural and Electrical Characterization of N-face GaN grown on C-face SiC by MBE, Siddharth Rajan; Feng Wu; Manhoi Wong; Yenyun Fu; James S. Speck; Umesh K. Mishra, 47th Electronic Materials Conference, June 22-24 (2005), Santa Barbara, California USA.

10. Electron Mobility in Graded AlGaN Layers, Siddharth Rajan, Tomas Palacios, Steven P. Denbaars and Umesh K. Mishra, WOCSEMMAD 2005, Miami, USA, February 2005.

9. Dipole Engineering in Nitride-based HEMTs, T. Palacios, S. Rajan, A. Chakraborty, S. Keller, S. P. DenBaars, and U. K. Mishra, 208th Meeting of the Electrochemical Society, Los Angeles, October 16-21 2005

8. An Experimental Method to Identify Bulk and Surface Traps in GaN HEMTs, A. Chini, Y. Fu, S. Rajan, J. S. Speck and U. K. Mishra, 32nd International Symposium on Compound Semiconductors (ISCS), Sept 18-22 2005, Europa-Park Rust, Germany.

7. Fabrication and Characterization of N-face GaN/AlGaN/GaN HEMTs, A. Chini, S. Rajan., M. Wong, Y. Fu, J. S. Speck, U. K. Mishra, 63rd Device Research Conference, June 20-22 (2005), Santa Barbara, California USA

6. Progress in the Development of an all-MBE HEMT, Siddharth Rajan, Christiane Poblenz, Patrick Waltereir, Arpan Chakraborty, James S. Speck and Umesh K. Mishra, 11th Advanced Heterostructure Workshop, Hawaii, 2004.

5. MBE-Grown AlGaN/GaN HEMTs on SiC, Siddharth Rajan, Christiane Poblenz, Patrick Waltereir, Arpan Chakraborty, James S. Speck and Umesh K. Mishra, IEEE Lester Eastman Conference on High Performance Devices, August 2004, Troy, NY, USA.

4. Tailoring of Transconductance Profile for Improved Linearity in AlGaN/GaN Polarization- Doped Field Effect Transistors, Siddharth Rajan; Xing, Huili ; Chakraborty, Arpan ; Chini, Alessandro ; Grundmann, Michael J.; Palacios, Tomas ; DenBaars, Steven P.; Jena, Debdeep ; Mishra, Umesh K.., International Workshop on Nitride Semiconductors, July 2004, Pittsburgh, PA, USA.

3. Ion implantation for unalloyed ohmic contacts to AlGaN/GaN HEMTs, Yu, H.; McCarthy, L.; Rajan, S.; Keller, S.; Denbaars, S.P.; Speck, J.S.; Mishra, U.K.; Device Research Conference, 2004.

2. Influence of the access resistance in the rf performance of mm-wave AlGaN/GaN HEMTs, Palacios, T.; Rajan, S.; Shen, L.; Chakraborty, A.; Heikman, S.; Keller, S.; DenBaars, S.P.; Mishra, U.K, Device Research Conference, 2004. 62nd DRC. Conference Digest 21-23 June 2004 Page(s):75 – 76 vol.1

1. Growth and Power Performance of MBE-grown AlGaN/GaN HEMTs, Siddharth Rajan, Patrick Waltereit, Christiane Poblenz, Sten J. Heikman, James S. Speck and Umesh K. Mishra, International Workshop for Physics of Semiconductor Devices (IWPSD), December 2003, Chennai, India

Research Funding

Funding Agencies (current funding agencies are underlined): ONR, NSF, Ohio Third Frontier, Raytheon Corporation, Ford Motor Company, DOE EERE, AFOSR, Texas Instruments, DARPA, Northrop Grumman, DTRA

External Funding Data Nov 2008-Nov 2018 from OSU database
(may not include collaborator funding in other institutions)

Total Amount Awarded to Ohio State University in projects with S. Rajan as PI or co-PI: **$19.856 Million**
Total Amount Awarded to Ohio State University in projects with S. Rajan as PI: **$11.433 Million**

Current Funding

RF34. Title: **Wide Bandgap Electronic Devices**
Source of Support: Gift, Northrop Grumman Space Systems/$75,000
PI: Siddharth Rajan
Period of Performance: 2019

RF33. Title: **Exploration of Radiation Effects in Beta-Gallium Oxide Materials and Devices**
Source of Support: DTRA/Rajan share $80,000 per year
Percentage effort: 0.25 mo/year
PI: Steve Ringel, Co-PI: Siddharth Rajan
Period of performance: April 2017– March 31, 2022

RF32. Title: **E2CDA: Type II: Collaborative Research: Metal-insulator transitions for low power switching devices**
Source of Support: NSF and SRC/$300,000
Percentage effort: 0.25 mo/year
PI: Siddharth Rajan
Period of performance: September 2017– August 31, 2020

RF31. Title: **Ultrawide Band Gap AlGaN Materials and Devices**
Source of Support: AFOSR/$200,000 per year
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan, Co-PI: Jinwoo Hwang
Period of performance: September 1, 2016– August 31, 2021

RF30. Title: **AlGaN-based high power density mm-wave transistors**
Source of Support: DARPA/$3,100,000
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan
Period of performance: Nov 1, 2017 –Oct 31, 2022

RF29. Title: **Perovskite-based high power mm-wave transistors**
Source of Support: DARPA/$2,200,000
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan
Period of performance: Nov 1, 2017 – Oct 31, 2022

RF28. Title: **Highly Perfect BaSnO3 Thin Films for Electronic Devices**

Source of Support: ONR - OSU Share /$200,000
Percentage effort: 0.5 mo/year
PI: Susanne Stemmer, OSU PI: Siddharth Rajan
Period of performance: January 2019– June , 2020

RF27. Title: **Beta-Gallium Oxide Transistors for High Frequency Applications**
Source of Support: National Science Foundation/ $390,320
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan
Period of performance: Aug 1, 2018 – July 31, 2022

RF26. Title: **MURI: Gallium Oxide Materials Engineering**
Source of Support: AFOSR/OSU share: $3.75 million
Percentage effort: 1 mo/year
PI: Jim Speck, OSU PI: Siddharth Rajan
Period of performance: July 1, 2018 – June 31, 2023

RF25. Title: **Normally-off Gallium Nitride Transistors**
Source of Support: Texas Instruments/$125,000 per year
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan
Period of performance: Sept 1, 2018– Aug 31, 2021

RF24. Title: **Tunneling-Enabled High-Efficiency High-Power Multi Junction LEDs**
Source of Support: Department of Energy/$200,000 per year
Percentage effort: 0.5 mo/year
PI: Siddharth Rajan
Period of performance: Oct 1, 2018– Dec 31, 2021

Past Funding

RF23. Title: **PFI:AIR - TT: High efficiency ultraviolet light emitting diodes based on tunneling**
Source of Support: NSF/ $200,000 per year
Period of Performance: 9/2016-3/2018

RF22. Title: **Devices and architectures for terahertz electronics Extension**
Source of Support: NSF/ $520,527, Rajan Share: 25%
PI: Rajan, Co-PI: J. Volakis, P. Berger, K. Kertel
Period of Performance: 9/2016-12/2017

RF21. Title: **Channel transport engineering for III-Nitride HEMTs**
Source of Support: Raytheon IDS/$100,000
PI: Rajan
Period of Performance: 8/2015-7/2016

RF20. Title: **2D/3D Heterojunction bipolar transistors**
Source of Support: AFOSR/$330,000, Rajan share: 75%
PI: Rajan, Co-PI: J. Hwang
Period of Performance: 9/2015-8/2018

RF19. Title: **Major Research Instrumentation: Development of epitaxial growth system for few layer semiconductors**
Source of Support: NSF/$750,036 (excludes cost-share)
PI: Rajan
Period of Performance: 8/2014-7/2017

RF18. Title: **Gift to Support Research on GaN Power Devices**
Source of Support: Texas Instruments/$75,000
PI: Rajan
Period of Performance: 2016

RF17. Title: **Gift to Support Research on 2D Semiconductors**
Source of Support: Northrop Grumman/$45,000
PI: Rajan
Period of Performance: 2016

RF16. Title: **Collaborative research EAGER: Reliable high current density vacuum electronics**
Source of Support: NSF/$129,653
PI: Rajan
Period of Performance: 7/2014-8/2016

RF15. Title: **High conductivity tunnel junctions for next-generation UV emitters**
Source of Support: NSF/$388,787
PI: Rajan
Period of Performance: 8/2014-7/2017

RF14. Title: **Evaluation of N-Polar AlGaN/GaN HEMTs**
Source of Support: Raytheon/$60,000
PI: Rajan
Period of Performance: 4/2014-3/2105

RF13. Title: **Gift to Support Research on GaN Power Devices**
Source of Support: Texas Instruments/$75,000
PI: Rajan
Period of Performance: 2014

RF12. Title: **MURI: Extreme electron concentration oxide devices**
Source of Support: ONR/Rajan share: $1,000,000
OSU PI: Rajan (sub-contract from UCSB)
Period of Performance: 9/2012-9/2017

RF11. Title: **MURI: Devices and architectures for THz electronics - DATE**
Source of Support: ONR/$3.08 Million, Rajan share: $750,000
OSU PI: Rajan (sub-contract from Notre Dame)
Period of Performance: 9/2011-9/2016

RF10. Title: **Gift to Support Research on GaN Power Devices**
Source of Support: Texas Instruments/$75,000
PI: Rajan
Period of Performance: 2015

RF9. Title: **Investigation of high In-composition InGaN**
Source of Support: NSF/$432,414, Rajan share: 40%
PI: Rajan, co-PI: S. Ringel. R. Myers
Period of Performance: 9/2011-8/2014

RF8. Title: **MURI: Dielectric enhancements for innovative electronics (DEFINE)**
Source of Support: ONR/Rajan Share: $625,000
OSU PI: S. Ringel, Co-PI: Rajan
Period of Performance: 8/2010-10/2016

RF7. Title: **Center for high performance power electronics (CHPPE)**
Source of Support: Ohio Development Services Agency/$3,000,000, Rajan share: $60,000
PI: L. Xu, Co-PI: Rajan, J. Wang, W. Lu
Period of Performance: 7/2010-3/2015

RF6. Title: **I-SMART: Integrated curriculum for smart power engineering**
Source of Support: DOE/$2,499,939, Rajan share: $60,000
PI: J. Wang, Co-PI: Rajan and 10 others
Period of Performance: 5/2010-9/2013

RF5. Title: **Investigation of electron transport properties in N-polar AlGaN/GaN HEMTs**
Source of Support: AFRL/ONR/$140,000
PI: Rajan
Period of Performance: 7/2009-4/2011

RF4. Title: **High-performance graphene-based devices**
Source of Support: NSF/$350,000, Rajan share: 30%
PI: Rajan/N. Padture, co-PI: W. Windl
Period of Performance: 8/2009-7/2013

RF3. Title: **AlGaN/GaN 1-dimensional channel HEMT**
Source of Support: NSF/$339,348,
PI: Rajan
Period of Performance: 2/2009-12/2012

RF2. Title: **III nitride NEMS devices for chemical and biological sensing**
Source of Support: NSF/$371,000, Rajan share: 35%
PI: W. Lu, Co-PI: Rajan
Period of Performance: 10/2009-9/2012

RF1. Title: **MRI: Acquisition of a hybrid diamond/III-N synthesis cluster tool**
Source of Support: NSF/$421,323, Rajan share: 20%
PI: E.Johnston-Halperin, Co-PI: Rajan and 3 others
Period of Performance: 10/2009-9/2012