CURRICULUM VITAE

Ravindra P. Joshi

Chairman, Department of Electrical and Computer Engineering, #224
Texas Tech University, Lubbock, TX 79409-3102
Tel: 806-834-7979 // FAX: 806-742-1281 // Email: ravi.joshi@ttu.edu

EDUCATION

Ph.D. Electrical Engineering, Arizona State University, (1988).
M. Tech. Electrical Engineering, Indian Institute of Technology, India, (1985).
B. Tech. Electrical Engineering, Indian Institute of Technology, India, (1983).

EXPERIENCE

9/25– Present Department Chair, Electrical & Computer Engineering, Texas Tech University

1/15– Present Professor, Electrical & Computer Engineering, Texas Tech University

05/01– 12/14 Professor, Electrical & Computer Engineering, Old Dominion University.

05/95–05/01 Associate Professor, Electrical & Comp. Engineering, Old Dominion University.

05/99 - 07/99 Visiting Scientist, Motorola Incorporated.

05/97 - 07/97 ASEE Summer Faculty Fellow, NASA Goddard Space Flight Center.

08/96 - 12/96 Visiting Scientist, Oak Ridge National Laboratory.

06/95 - 07/95 Air Force Summer Faculty Fellow, Philips Laboratory/AFRL.

08/89-05/95 Asst. Prof., Electrical & Computer Engineering, Old Dominion University.

05/88 - 07/89 Post Doctoral Research Fellow, Center for Solid State Electronics Research, Arizona State University.

08/85 - 05/88 Research Associate, Arizona State University.

07/83 - 07/85 Teaching Assistant, Indian Institute of Technology.

PROFESSIONAL ENGINEER

Registered in Texas, License No. 119803 // Registered in California, License No. E 22203

Registered in Virginia, License No. 0402048456 / Registered in Georgia, License No. PE043291

NATIONALITY: US citizen

CONSULTING ACTIVITIES

01/2016 – 2019	PepsiCo, USA – various locations and sites.
08/2009 – 2009	Air Force Research Laboratory, Albuquerque, NM.
08/2003 - 12/2007	Air Force Research Laboratory, San Antonio, TX.
05/1999 - 12/1999	Motorola Incorporated, AZ.
07/1999 – 07/2005	Sandia National Laboratories, NM.
08/1996 - 08/1997	Oak Ridge National Laboratory, TN.
07/1992 - 12/1992	Tetra Corp., NM.

PUBLICATIONS SUMMARY

- Journal Articles Published to Date: **228**
- Citations: **14,846** (http://scholar.google.com/citations?user=5m5bnQUAAAAJ&hl=en)
- **1** Book – *Ultrashort Electric Pulse Effects in Biology and Medicine* (Springer, New York, 2021), ISBN: 978-981-10-5113-5
- **8** Book Chapters
- (Conference Presentations and Proceedings Publications Ignored for Brevity)
- **1** Patent ("Modulation of Neuromuscular Functions with Ultrashort Electrical Pulses," US Patent Pub. No.: US2008/0228244 A1, 8139339)

AWARDS AND RECOGNITIONS SUMMARY (CHRONOLOGICAL)

- Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE) – **2025**
- Editor of Distinction, Springer Nature – **2025**
- Elected Fellow of the American Association for the Advancement of Science (AAAS) – **2024**
- IEEE William Dunbar Award – **2022** (1 international Award given once every 2 years)
- Fulbright Fellow award – **2019**
- Stanford University's list of 100,000 most-cited authors worldwide – (**2017** - present)
- NPSS Merit Award (**2017**) for ″significant and sustained contributions to bioelectrics and physics-based understanding of high field phenomena in pulsed power applications″
- Elected Fellow of the Institute of Engineering and Technology (IET, UK) – **2014**
- Elected Fellow of the Institute of Physics (IOP) – **2014**
- Elected Fellow of the Institution of Electronics & Telecommunication Engineers – **2014**
- Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE) -- **2008**

CHRONOLOGICAL INTERNATIONAL JOURNAL PUBLICATION LIST

(231 International, Peer-Reviewed Journal Publications to Date)

1. Q. Hu, A. Garner, and **R. P. Joshi**, "Cell Electroporation Modeled Using Voronoi Networks," in *Handbook of Electroporation*, edited by D. Miklavcic (Springer International Publishing AG, Cham, Switzerland, 2027), pp. ??-??, ISBN: 978-3-319-26779-1.

2. S. C. Shrestha, A. Garner, and **R. P. Joshi**, ″Evaluating Electron Photoemission Current from a Metal Emitter Based on the Lucky Drift Model,″ *Journal of Vacuum Science and Technology B* **44**, 064202 (2026).

3. C. Baker, A. V. Idesman, M. C. Baker, and **R. P. Joshi**, ″Modeling Electromagnetically Driven Thermoacoustic Pressure Wave Buildup in the Brain,″ *Biomedical Physics & Engineering Express* **12**, 055060 (2026).

4. D. Guo, Y. Pokhrel, S. Shrestha, and **R. P. Joshi**, ″Evaluating the Effect of Surface Workfunction Variability on Metal Emitter Array Current and Emittance For High Power Devices Based on a Patchwork Model,″ *J. Phys. D.* **59**, 045204 (2026).

5. A. E. Nezhad, T. T. Sabour, **R. P Joshi**, M. S. Javadi, and P. H. J. Nardelli, ″Robust Chance-constrained Scheduling of Medium-voltage Networks in the Presence of Distributed Energy Resources,″ *IEEE Access* **13**, 203501 (2025).

6. Y. Pokhrel, A. L. Garner, and **R. P. Joshi**, ″A Microscopic Study into the Role of Grain Boundaries in Field Assisted Protrusion Growth and Potential for Current Fluctuations in Electron Nanoemitters,″ *Journ. Appl. Physics* **138**, 143303(2025).

7. A. E. Nezhad, T. T. Sabour and **R. P Joshi**, M. S. Javadi, and P. H. J. Nardelli, ″Optimal Operation of Electric Vehicle Supply Equipment by Aggregators in Local Energy Community,″ *IEEE Access* **13**, 112867 (2025).

8. A Mishra and **R. P. Joshi**, ″Assessing Thresholds for Nerve Activation and Action Potential Block Using a Multielectrode Array to Minimize External Stimulation,″ *Bioengineering* **12**, 372 (2025).

9. A. E. Nezhad, T. T. Sabour and **R. P Joshi**, ″Coordinated TSO-DSO Operational Planning for Congestion Management in Day-ahead and Real-time Markets,″*Elsevier's e-Prime - Advances in Electrical Engineering, Electronics and Energy* **12**, 100981 (2025).

10. Y. M. Pokhrel, S. Portillo, and **R. P. Joshi**, ″Outgassing Reductions via Quasi-Isentropic Ramp Compression: A Molecular Dynamics Study in a Copper Anode,″ *Physics of Plasmas* **32**, 013512 (2025).

11. S. J. Wyss, W. Milestone, **R. P. Joshi**, and A. L. Garner, ″Maps of Membrane Pore Dynamics from Picosecond to Millisecond Pulse Durations,″ *IEEE Trans. Biomed. Engineering* **72**, 768 (2025).

12. C. Baker, A. Willis, W. Milestone, M. Baker, A. L. Garner, and **R. P. Joshi**, ″Numerical Assessments of Geometry, Proximity and Multi-Electrode Effects on Electroporation in

Mitochondria and the Endoplasmic Reticulum to Nanosecond Electric Pulses," *Scientific Reports* **14**, 23854 (2024).

13. M. S. Munsi, H. Chaoui, and **R. P. Joshi**, "Comprehensive Analysis of Fuel Cell Electric Vehicles: Challenges, Powertrain Configurations, and Energy Management Systems," *IEEE Access* **12**, 145459 (2024).

14. Y. M. Pokhrel, S. C. Shrestha, Y. Iqbal, S. Portillo, and **R. P. Joshi**, "Calculations for Preemptive Surface Adsorbate Drive Off to Minimize Plasma Formation During Operation of High-Power Microwave Sources," *Journ. Appl. Phys.* **136**, 043303 (2024).

15. Y. M. Pokhrel, Y. Iqbal, S. C. Shrestha, M. Sanati, and **R. P. Joshi**, "Coupled Monte Carlo Density Functional Theory Calculations of Cold and Laser Assisted Electron Field Emission from a Graphene Coated Copper Cathode," *Journ. Appl. Phys.* **135**, 223301 (2024).

16. M. Sokol, C. Baker, M. Baker, and **R. P. Joshi**, "Simple Model to Incorporate Statistical Noise Based on a Modified Hodgkin-Huxley Approach for External Electrical Field Driven Neural Responses," *Biomedical Physics & Engineering Express* **10**, 045037 (2024).

17. A. M. Loveless, S. J. Wyss, W. Milestone, **R. P. Joshi**, and A. L. Garner, "A Simplified Electrical-Based Model for Electroporation Dynamics," *IEEE Access* **12**, 8004 (2024).

18. C. Baker, W. Milestone, A. L. Garner, and **R. P. Joshi**, "Selective Electroporation of Tumor Cells Under AC Radiofrequency Stimulation – A Numerical Study," *IEEE Trans. Biomedical Engineering* **71**, 114 (2024).

19. W. Milestone, C. Baker, A. L. Garner, and **R. P. Joshi**, "Electroporation From Mitochondria to Cell Clusters: Model Development Toward Analyzing Electrically Driven Bioeffects Over a Large Spatial Range," *Journal of Applied Physics* **133**, 244701 (2023).

20. **R. P. Joshi**, A. L. Garner, and R. Sundararajan, "Review of Developments in Bioelectrics as an Application of Pulsed Power Technology," *IEEE Trans. Plasma Sci.* 51, 1682 (2023).

21. L. Diaz, A. A. Karkash, S. Alshahri, **R. P. Joshi**, E. Schamiloglu, and M. Sanati, "Importance of Surface Morphology on Secondary Electron Emission: A Case Study of Cu covered with Carbon, Carbon Pairs, or Graphitic-like Layers," *Scientific Reports (Nature Publishing Group)* **13**, 8260 (2023).

22. W. Milestone, Q. Hu, A. L. Garner and **R. P. Joshi**, "Sinusoidal RF Simulations for Optimized Electroporation Protocols," *Journ. Appl. Phys.* **133**, 174702 (2023).

23. M. Maille, N. C. Dennis, Y. M. Pokhrel, M. Sanati, and **R. P. Joshi**, "Simulation Studies of Secondary Electron Yield With Electron Transport From Cu (110) Surfaces Containing C_2, N_2, CO_2, or NO_2 Adsorbates," *Frontiers in Materials* **11**, 1145425 (2023), doi: 10.3389/fmats.2023.1145425.

24. L. Silvestre, J. Stephens, J. Dickens, J. Mankowski, A. Neuber, and **R. P. Joshi**, ″A 1D1V Continuum Vlasov–Poisson Multipactor Analysis From Onset to Saturation Across the Entire First-Order Multipactor Regime,″ *IEEE Trans. Plasma Sci.* **51**, 483 (2023).

25. M. Brown, W. Milestone, and **R. P. Joshi**, "Numerical Analysis for Suppression of Charge Growth Using Nested Grooves in Rectangular Waveguides," *Journal of Applied Physics* **132**, 213304 (2022).

26. X. Qiu, B. Esser, I. Aponte, J. Mankowski, J. Dickens, and A. Neuber, and **R. P. Joshi**, "Assessing the Role of Photon Processes in Facilitating Radio-Frequency Breakdown of Air at Atmospheric Pressure in Millimeter Gap," *IEEE Transactions on Plasma Science* **50**, 4724 (2022).

27. T. Buntin, M. Abide, A. Neuber, J. Dickens, **R. P. Joshi**, and J. Mankowski, "Evaluation of Explosive Emission Carbon Fiber Cathodes for High-Power Microwave Devices," *IEEE Transactions on Plasma Science* **50**, 3459 (2022).

28. W. Milestone, S. Nikishin, and **R. P. Joshi**, "Density Dependent Effects on Pulse Compression in GaN Photodetectors Probed by Monte Carlo Studies," *MDPI Electronics* **11**, 2997 (2022).

29. M. Brown, L. Diaz, A. Aslan, M. Sanati, S. Portillo, E. Schamiloglu, and **R. P. Joshi**, "Carbon-Oxygen Surface Formation Enhances Secondary Electron Yield in Cu, Ag and Au: A coupled first-principles, Monte Carlo Analysis," *Scientific Reports (Nature Publishing Group)* **12**, 15808 (2022).

30. W. Milestone, Q. Hu, A. Loveless, A. Garner, and **R. P. Joshi**, "Modeling Coupled Single Cell Electroporation and Thermal Effects From Nanosecond Electric Pulse Trains," *Journ. Appl. Physics* **132**, 094701 (2022).

31. M. Brown, M. Sanati, and **R. P. Joshi**, "Combined First Principles-Monte Carlo Analyses to Evaluate the Effect of Surface Hydrogen on the Secondary Electron Yield of Nickel," *Journ. Appl. Physics* **131**, 103301 (2022).

32. S. N. Sami, R. Islam, S. Portillo, E. Schamiloglu, and **R. P. Joshi**, "Numerical Evaluations of Hydrogen Outgassing from Cesium Coated Carbon Fiber Electrodes," *Vacuum* **198**, 110869 (2022).

33. A.T. Hewitt, B. Esser, **R. P. Joshi**, J. Mankowski, J. Dickens, A. Neuber, R. Lee, J. Stephens, "Optically Activated, In-waveguide, Semiconductor Attenuators for the Controllable Isolation of Ka-band Microwaves," *IEEE Trans. Microwave Theory and Techniques* **70**, 2217 (2022).

34. L. Silvestre, J. Stephens, J. J. Mankowski, J. Dickens, A. A. Neuber, and **R. P. Joshi**, "A Continuum Approach for Multipactor Using the Vlasov-Poisson Analysis," *J. Phys D: Applied Physics* **55**, 045202 (2022).

35. S. N. Sami, R. Islam, and **R. P. Joshi**, "Atomistic Calculations of Thermal Conductivity in Films Made From Graphene Sheets for Electron Emitter Applications," *AIP Advances* **11**, 105310 (2021).

36. D. Guo, S. N. Sami, L. Diaz, S. Sanati, and **R. P. Joshi**, "Evaluation of Electron Currents from Cesium Coated Tungsten Emitter Arrays with Inclusion of Space Charge Effects, Workfunction Changes and Screening," *Journ. Of Vacuum Science and Technology B* **39**, 054201 (2021).

37. S. N. Sami, R. Islam, R. Khare, and **R. P. Joshi**, "Simulations of Hydrogen Outgassing from Carbon Fibers," *Journ. Applied Phys*. **129**, 213303 (2021).

38. S. J. Beebe, **R. P. Joshi**, K. H. Schoenbach, and S. Xiao, in *Ultrashort Electric Pulse Effects in Biology and Medicine* (Springer, New York, 2021), ISBN: 978-981-10-5113-5.

39. W. Milestone, D. Guo, M. Sanati, K. M. Dowling, S. Hue-Riege, L. F. Voss, A. Conway, and **R. P. Joshi**, "Monte Carlo Transport Analysis to Assess Intensity Dependent Response of a Carbon-Doped GaN Photoconductor," *Journ. Applied Phys*. **129**, 195703 (2021).

40. D. Guo, W. Milestone, and **R. P. Joshi**, "Many-Particle Based Evaluations for Maximum Current Output from Bimodal Electron Emitter Arrays," *Journ. Applied Phys*. **129**, 173301 (2021).

41. S. N. Sami, M. Sanati, and **R. P. Joshi**, "Simulations of Hydrogen Outgassing and Sticking Coefficients at a Copper Electrode Surface: Dependencies on Temperature, Incident Angle and Energy," *Physical Review Research* **3**, 013203 (2021).

42. X. Qiu, M. Saed, J. J. Mankowski, J. Dickens, A. Neuber, and **R. P. Joshi**, "Model Evaluations of Multipactor Suppression in Rectangular Waveguides Through Grooved Surfaces and a Static Magnetic Field," *AIP Advances* **11**, 025039 (2021).

43. Q. Hu and **R. P. Joshi**, "Continuum Analysis to Assess Field Enhancements for Tailoring Electroporation Driven by Monopolar or Bipolar Pulsing Based on Nonuniformly Distributed Nanoparticles," *Physical Review E* **103**, 022402 (2021).

44. S. N. Sami, L. Diaz, M. Sanati, and **R. P. Joshi**, "Simulations of Field Emission from Copper Electrodes with Inclusion of Oxygen Surface Layer and Work Function Changes Based on First-Principles Calculations," *Journ. Applied Physics* **128**, 223302 (2020).

45. X. Qiu, L. Diaz, M. Sanati, J. Mankowski, J. Dickens, A. Neuber, and **R. P. Joshi**, "Coupled Analysis to Probe the Effect of Angular Assignments on the Secondary Electron Yield (SEY) from Copper Electrodes," *Physics of Plasmas* **27**, 093511 (2020).

46. Q. Hu, **R. P. Joshi**, and D. Miklavcic, "Calculations of Cell Transmembrane Voltage Induced by Time Varying Magnetic Fields," *IEEE Trans. Plasma Sci.* **48**, 1088 (2020).

47. D. Guo, S. N. Sami, and **R. P. Joshi**, "Electron Emission from Metal Emitters Subject to a High Intensity Laser in the Presence of DC Electric Fields," *AIP Advances* **9**, 105302 (2019).

48. H. Nguyen, M. Sanati, and **R. P. Joshi**, "Probing Changes in Secondary Electron Yield from Copper Electrodes Due to Surface Defects and Changes in Crystal Orientation," *Journ. Appl. Phys.* **126**, 123301 (2019).

49. J. Acharjee and **R. P. Joshi**, "Numerical Evaluation of Hydrogen Outgassing from Copper Electrodes With Mitigation Based on a Tungsten Capping Layer," *Physics of Plasmas* **26**, 093504 (2019).

50. H. Qiu, X. Wang, **R. P. Joshi**, and W. Zhao, "Numerical Study to Probe Effects of Strain Energy on Pore Formation and Their Density Distribution," *IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology* **3**, 276 (2019).

51. M. Abide, J. Dickens, **R. P. Joshi**, A. Neuber, and J. Mankowski, "Simulation of an S-Band MILO with Adjustable Beam Dump," *Plasma* **2**, 138 (2019).

52. Q. Hu, L. Zhang, and **R. P. Joshi**, "Simulation of Poration by Shockwave Induced Multiple Nanobubble Collapse in Cell Membranes," *AIP Advances* **9**, 045006 (2019).

53. A. R. Chowdhury, S. Nikishin, J. Dickens, A, Neuber, **R. P. Joshi**, and R. Ness, "Numerical Studies into the Parameter Space Conducive to ″Lock-On″ in a GaN Photoconductive Switch for High Power Applications," *IEEE Trans. Dielectr. and Electrical Insulation* **26**, 469 (2019).

54. H. K. A. Nguyen, J. Mankowski, J. Dickens, A. Neuber, and **R. P. Joshi**, "Calculations of Multipactor Growth in Rectangular Waveguide," *IEEE Trans. Plasma Sci.* **47**, 1364 (2019).

55. X. Qiu, J. Mankowski, J. C. Dickens, A. A. Neuber, and **R. P. Joshi**, "Model Evaluations of Surface Modification by Energetic Incident Carbon Atoms on Graphene Coated Copper Electrodes," *Physics of Plasmas* **26**, 013501 (2019).

56. A. R. Chowdhury, R. Ness, and **R. P. Joshi**, "Assessing Lock-On Physics in Semi-Insulating GaAs and InP Photoconductive Switches Triggered by Sub-Bandgap Excitation," *IEEE Trans. Electr. Devices* **65**, 3922 (2018).

57. Q. Hu and **R. P. Joshi**, "Analysis of a Dual Shock-Wave and Ultrashort Electric Pulsing Strategy for Electro-Manipulation of Membrane Nanopores," *J. Phys. D* **51**, 285403 (2018).

58. A. R. Chowdhury, J. Dickens, A. Neuber, R. Ness, and **R. P. Joshi**, "Lock-On Physics in Semi-Insulating GaAs: Combination of Trap-to-Band Impact Ionization, Moving Electric Fields and Photon Recycling," *Journ. Appl. Phys.* **123**, 085703 (2018).

59. X. Qiu and **R. P. Joshi**, "Dynamic Analysis of Material Ejection from Cathodic Metal Nano-Tips Due to Local Heating and Field Generated Stress," *Physics of Plasmas* **25**, 022109 (2018).

60. H. Nguyen, J. Mankowski, J. C. Dickens, A. A. Neuber, and **R. P. Joshi**, "Calculations of Secondary Electron Yield of Graphene Coated Copper for Vacuum Electronic Applications," *AIP Advances* **8**, 015325 (2018).

61. H. Nguyen, J. Mankowski, J. C. Dickens, A. A. Neuber, and **R. P. Joshi**, "Monte Carlo Analysis of Field-Dependent Electron Avalanche Coefficients in Nitrogen at Atmospheric Pressure," *Physics of Plasmas* **24**, 124501 (2017).

62. Q. Hu and **R. P. Joshi**, "Comparative evaluation of transmembrane ion transport due to monopolar and bipolar nanosecond, high-intensity electroporation pulses based on full three-dimensional analyses," *Journ. Appl. Phys*. 122, 034701 (2017).

63. H. Nguyen, J. Mankowski, J. C. Dickens, A. A. Neuber, and **R. P. Joshi**, "Model Predictions for Atmospheric Air Breakdown by Radio-Frequency Excitation in Large Gaps," *Physics of Plasmas* **24**, 073505 (2017).

64. Z. Zhang, M. Giesselmann, J. Mankowski, J. Dickens, A. Neuber, and **R. P. Joshi**, "Evaluation of High Field and/or Local Heating Based Material Degradation of Nanoscale Metal Emitter Tips: A Molecular Dynamics Analysis," *Journ. Phys. D* **50**, 185202 (2017).

65. M. Janda, **R. P. Joshi**, L. Krasnoperov, Z. Machala, and S. M. Thagard, "Electrical Discharges", in the *Encyclopedia of Physical Organic Chemistry*, vol. 5 (John Wiley, N. York, 2017), pp. 2957-3010.

66. V. Meyers, A. R. Chowdhury, D. Mauch, J. C. Dickens, **R. P. Joshi**, and A. A. Neuber, "Studies of Intensity Dependent Near-Bandedge Absorption in Semi-Insulating SiC for Photoconductive Switch Applications," *Journ. Phys. D* **50**, 135104 (2017).

67. J. Song, A. L. Garner, and **R. P. Joshi**, "Effects of Thermal Gradients Created by Electromagnetic Fields on Cell Membrane Electroporation Probed by Molecular Dynamics Simulations," *Physical Review Applied* **7,** 024003 (2017).

68. A. R. Chowdhury, J. C. Dickens, A. A. Neuber, and **R. P. Joshi**, "Assessing the Role of Trap-to-Band Impact Ionization and Hole Transport on the Dark Currents of 4H-SiC Photoconductive Switches Containing Deep Defects," *Journ. Appl. Phys*. **120**, 245705 (2016).

69. Q. Hu and **R. P. Joshi**, "Cell Electroporation Modeled Using Voronoi Networks," in *Handbook of Electroporation*, edited by D. Miklavcic (Springer International Publishing AG, Cham, Switzerland, 2016), pp. 1-16, ISBN: 978-3-319-26779-1.

70. A. Majzoobi, **R. P. Joshi**, A. A. Neuber, and J. C. Dickens, "Numerical Assessment of the Role of Secondary Electron Emission on the Output Performance of Rising Sun Magnetrons with Axial Output," *IEEE Trans. Plasma Science* **10**, 2272 (2016).

71. A. Chowdhury, D. Mauch, **R. P. Joshi**, A. A. Neuber, and J. C. Dickens, "Contact Extensions Over a High-*k* Dielectric Layer for Surface Electric Field Mitigation in High Power 4H-SiC Photoconductive Switches," *IEEE Trans. Electron Devices* **63**, 3171 (2016).

72. J. Stephens, A. Fierro, S. Beeson, G. Laity, D. Trienekens, **R. P. Joshi**, J. C. Dickens, and A. A. Neuber, "Photoionization Capable, Extreme and Vacuum Ultraviolet Emission in Developing Low Temperature Plasmas in Air," *Plasma Sources Science and Technology* **25**, 025024 (2016).

73. A. Majzoobi, **R. P. Joshi**, A. A. Neuber, and J. C. Dickens, "Heating Based Model Analysis for Explosive Emission Initiation at Metal Cathodes," *AIP Advances* **5**, 127237 (2015).

74. A. Majzoobi, **R. P. Joshi**, A. Neuber, and J. Dickens, "Particle-in-Cell Based Parameter Study of 12-Cavity, 12-Cathode Rising-Sun Relativistic Magnetrons for Improved Performance," *AIP Advances* **5**, 107102 (2015).

75. H. Qiu, **R. P. Joshi**, A. Neuber, and J. Dickens, "A Model Study of the Role of Workfunction Variations in Cold Field Emission From Microstructures With Inclusion of Field Enhancements," *Semicond. Sci. Technol*. **30**, 105038 (2015).

76. R. Tiskumara, **R. P. Joshi**, D. Mauch, J. C. Dickens, and A. A. Neuber, "Analysis of High Field Effects on the Steady-State Current-Voltage Response of Semi-Insulating 4H-SiC for Photoconductive Switch Applications," *Journal of Applied Physics* **118**, 095701 (2015).

77. **R. P. Joshi** and H. Qiu, "Asymmetric Conduction in Biological Nanopores Created by High-Intensity, Nanosecond Pulsing: Inference on Internal Charge Lining the Membrane Based on a Model Study," *Journal of Applied Physics* **118**, 094701 (2015).

78. D. Nagulapally, **R. P. Joshi**, and A. K. Pradhan, "Simulation Study of HEMT Structures with HfO_2 Cap Layer for Mitigating Inverse Piezoelectric Effect Related Device Failures," *AIP Advances* **5**, 017103 (2015).

79. H. Qiu, **R. P. Joshi**, and A. K. Pradhan, "Simulation of Nanoparticle Based Enhancement of Cellular Electroporation for Biomedical Applications," *J. Appl. Phys*. **116**, 184701 (2014).

80. H. Qiu, S. Xiao, and **R. P. Joshi**, "Simulations of Voltage Transients Across Intracellular Mitochondrial Membranes Due to Nanosecond Electrical Pulsing," *IEEE Trans. Plasma Science*, **42**, 3113 (2014).

81. H. Qiu, S. Prasad, L. Ludeking, **R. P. Joshi**, and E. Schamiloglu, "Assessing the Role of Secondary Electron Emission on the Characteristics of 6-Cavity Magnetrons With Transparent Cathode Through Particle-in-Cell Simulations," *J. Appl. Phys.* **115**, 193303 (2014).

82. V. Sridhara and **R. P. Joshi**, "Evaluations of a Mechanistic Hypothesis for the Influence of Medium Ion Density on Electroporation Due to High-Intensity, Nanosecond Pulsing," *Biochimica et Biophysica Acta – Biomembranes* **1838**, 1793 (2014).

83. V. Sridhara and **R. P. Joshi**, "Numerical Study of Lipid Translocation Driven By Nanoporation Due to Multiple High-Intensity, Ultrashort Electrical Pulses," *Biochimica et Biophysica Acta – Biomembranes* **1838**, 902 (2014).

84. J. Song, **R. P. Joshi**, L. Fung, and R. K. Tripathi, "Evaluation of Current Coil Positioning for An Enhanced Hybrid Active Space-Radiation Bio-Shielding Concept," *Journal of Astrobiology and Outreach* **1**, 1000103/1-5, (2013) (http://dx.doi.org/10.4172/jao.1000103)

85. P. Maleeswaran, D. Nagulapally, **R. P. Joshi**, and A. Pradhan, "Leakage Current in High Dielectric Oxides: Role of Defect-Induced Energies," *Journ. Appl. Phys*. **113**, 184504 (2013).

86. **R. P. Joshi**, H. Qiu, and R. K. Tripathi, "Configuration Studies for Active Electrostatic Space Radiation Shielding," *Acta Astronautica* **88**, 138 (2013).

87. **R. P. Joshi**, H. Qiu, and R. K. Tripathi, "Evaluation of a Combined Electrostatic and Magnetostatic Configuration for Active Space-Radiation Shielding," *Advances in Space Research* **51**, 1784 (2013).

88. Q. Hu, Z. Zhang, H. Qiu, M. Kong, and **R. P. Joshi**, "Physics of Nanoporation and Water Entry Driven by a High-Intensity, Ultrashort Electrical Pulse in the Presence of Cellular Hydrophobic Interactions," *Physical Review E* 87, 032704/1-9 (2013).

89. **R. P. Joshi** and S. M. Thagard, "Streamer-like Electrical Discharges in Water: Part 1. Fundamental Mechanisms," *Plasma Chemistry and Plasma Processing* **33**, 1 (2013) **– *review article***.

90. **R. P. Joshi** and S. M. Thagard, "Streamer-like electrical discharges in water: Part II. Environmental applications," *Plasma Chemistry and Plasma Processing*, **33**, 17 (2013) **– *review article***.

91. M. A. Stelzer and **R. P. Joshi**, "Evaluation of Wave Energy Generation From Buoy Heave Response Based on Linear Generator Concepts," *Journal of Renewable and Sustainable Energy* **4**, 063137 (2012).

92. **R. P. Joshi** and Q. Hu, "Evolution Dynamics of Pore Sizes, Cell Volumes, Ionic Concentrations Following High-Voltage Pulsing," *IEEE Trans. Plasma Sci*. **40**, 2355 (2012).

93. J. T. Camp, Y. Jing, J. Zhuang, S. J. Beebe, J. Song, **R. P. Joshi** and K. H. Schoenbach, "Cell Death Induced by Subnanosecond Pulsed Electric Fields at Elevated Temperatures," *IEEE Trans. Plasma Sci*. **40**, 2334 (2012).

94. **R. P. Joshi** and Q. Hu, "Energy Based Model Analysis for Membrane Blebbing in

Response to a Nanosecond, High-Intensity, Electrical Pulse," *Journ. Appl. Phys*. **112**, 064703 (2012).

95. J. A. White, U. Pliquett, P. F. Blackmore, **R. P. Joshi**, K. H. Schoenbach, and J. F. Kolb, "Plasma Membrane Charging of Jurkat Cells by Nanosecond Pulsed Electric Fields," *European Biophysics Journal* **40**, 947 (2011).

96. **R. P. Joshi** and Q. Hu, "Case for Subnanosecond High-Intensity, Electrical Pulses to Biological Cells," *IEEE Trans. Biomedical Engineering* **58**, 2860 (2011).

97. **R. P. Joshi** and K. H. Schoenbach, "Electric Fields in Biological Cell and Membranes," ***invited*** Chapter in Book titled "Electromagnetic Fields in Biological Systems," *CRC Press*, Boca Raton, 2011, pp. 71-114 [ISBN: 9781439859995].

98. J. Song, **R. P. Joshi**, and K. H. Schoenbach, "Synergistic Effects of Local Temperature Enhancements on Cellular Responses in the Context of High-Intensity, Ultrashort Electric Pulses," *Med. Biol. Eng. Comput.* **49**, 713 (2011).

99. Q. Hu and **R. P. Joshi**, "Model Evaluation of Changes in Electrorotation Spectra of Biological Cells After nsPEF Electroporation," *IEEE Trans. Dielectr. Electr. Insulation* **17**, 1888 (2010).

100. **R. P. Joshi** and K. H. Schoenbach, "Bioelectric Effects of Intense, Ultrashort Electric Pulses," *Critical Reviews in Bio-Medical Engineering* **38**, 255 (2010) **– *review article***.

101. **R. P. Joshi** and J. Song "Model Analysis of Electric Fields Induced by High-Voltage Pulsing in Cylindrical Nerves," *IEEE Trans. Plasma Science* **38**, 2894 (2010).

102. **R. P. Joshi** and Q. Hu, "Analysis of Cell Membrane Permeabilization Mechanics and Pore Shape Due to Ultrashort Electrical Pulsing," *Medical and Biological Engineering and Computing*, **48**, 837 (2010).

103. J. Song, **R. P. Joshi**, and S. J. Beebe, "Cellular Apoptosis by Nanosecond, High-Intensity Electric Pulses: Model Evaluation into the Extrinsic Pathway and Pulsing Threshold," *Bioelectrochemistry* **79**, 179 (2010).

104. **R. P. Joshi**, A. Mishra, S. Xiao, and A. Pakhomov, "Model Study of Time-Dependent Muscle Response to Pulsed Electrical Stimulation," *Bioelectromagnetics* **31**, 361 (2010).

105. **R. P. Joshi**, J. Kolb, S. Xiao, and K. H. Schoenbach, "Aspects of Plasma in Water: Streamer Physics and Applications" *Plasma Processes and Polymers* **6**, 763 (2009) -- ***Invited paper***.

106. **R. P. Joshi**, J. Song, and V. Sridhara, "Aspects of Lipid Membrane Bio-Responses to Subnanosecond, Ultrahigh Voltage Pulsing," *IEEE Trans. Dielectr. and Electr. Insula.* **16**, 1243 (2009).

107. K. H. Schoenbach, **R. P. Joshi**, S. J. Beebe, and Carl Baum, "A Scaling Law for Bioelectric Effects of Nanosecond Pulses," *IEEE Trans. Dielectr. and Electr. Insula.* **16**, 1224 (2009).

108. S. Xiao, **R. P. Joshi**, J. Kolb, and K. H. Schoenbach, "Nanosecond, Electrical Triggering of Water Switches," *IEEE Trans. Plasma Science* **26**, 1066 (2009).

109. Q. Hu, **R. P. Joshi**, and A. Beskok, "Model Study of Electroporation Effects on the Dielectrophoretic Response of Spheroidal Cells" *Journal of Applied Physics* **106**, 024701 (2009).

110. Q. Hu and **R. P. Joshi**, "Analysis of Intense, Subnanosecond Electrical Pulse-Induced Transmembrane Voltage in Spheroidal Cells With Arbitrary Orientation," *IEEE Trans. Biomedical Engineering* **56**, 1617 (2009).

111. Q. Hu and **R. P. Joshi**, "Transmembrane Voltage Analyses in Spheroidal Cells In Response to An Intense Subnanosecond Electrical Pulse," *Physical Review E* **79**, 011901 (2009).

112. J. F. Kolb, **R. P. Joshi**, S. Xiao, and K. H. Schoenbach, "Streamers in Water and Other Dielectric Liquids," *Journ. Phys. D: Applied Physics* **41**, 234007 (2008) – ***invited paper***.

113. G. Zhao, **R. P. Joshi**, S. Rogers, E. Schamiloglu, and H. P. Hjalmarson, "Simulation Studies for Non-Linear Transmission Line Based Ultra-Fast Rise Times and Waveform Shaping for Pulsed Power Applications," *IEEE Trans. Plasma Sci.* **36**, 2618 (2008).

114. **R. P. Joshi,** A. Mishra, and K. H. Schoenbach, "Model Assessment of Cell Membrane Breakdown in Clusters and Tissues Under High-Intensity Electric Pulsing," *IEEE Trans. Plasma Science* **36**, 1680 (2008).

115. H. L. Gerber, **R. P. Joshi**, and C. C. Tseng, "Using Bode Plots to Access Intracellular Coupling," *IEEE Trans. Plasma Sci.* **36**, 1659 (2008).

116. **R. P. Joshi** and A. Mishra, "Simulations of Distributed Voltages in Full-Body Bio-Models Using Symmetric Factorization with Massively Parallel Solvers in Response to External Pulsing," *IEEE Trans. Plasma Science* **36**, 1673 (2008).

117. K. H. Schoenbach, J. F. Kolb, S. Xiao, S. Katsuki, J. Minamitani, and **R. P. Joshi**, "Electrical Breakdown of Water in Microgaps," *Plasma Sources Science and Technology* **17**, 024010 (2008) **– *invited paper***.

118. K. H. Schoenbach, S. Xiao, **R. P. Joshi**, J. T. Camp, T. Heeren, J. F. Kolb, and S. J. Beebe, "The Effect of Intense Subnanosecond Electrical Pulses on Biological Cells," *IEEE Trans. Plasma Sci.* **36**, 414 (2008) **– *invited paper***.

119. G. Zhao, **R. P. Joshi**, and H. P. Hjalmarson, "Electrothermal Model Evaluation of Grain Size and Disorder Effects on Pulsed Voltage Response of Microstructured ZnO Varistors," *Journ. Amer. Ceramic Soc.* **91**, 1188-1193 (2008).

120. **R. P. Joshi**, F. Mbaye, P. Basappa, J. Sang-Dong, J. Kim, and J. C. Hall, "Simulation Studies of Internal Mechanisms In The Deflection of a Cantilever Cellulose Electroactive Polymer (EAP) Structure," *Journ. Appl. Phys.* **103**, 064912 (2008).

121. **R. P. Joshi**, A. Mishra, J. Song, A. Pakhomov, and K. H. Schoenbach, "Simulation Studies of Ultra-Short, High-Intensity Electric Pulse Induced Action Potential Block in Whole-Animal Nerves," *IEEE Trans. Biomedical Engineering* **55**, 1391 (2008).

122. A. G. Pakhomov, J. F. Kolb, J. A. White, **R. P. Joshi**, S. Xiao, and K. H. Schoenbach, "Long-Lasting Plasma Membrane Permeabilization in Mammalian Cells by Nanosecond Pulsed Electric Field (nsPEF)," *Bio-Electromagnetics Journal* **28**, 655 (2007).

123. N. Chen, A. L. Garner, G. Chen; Y. Jing, Y. Deng, R. J. Swanson, J. F. Kolb, R. J. Swanson, S. J Beebe, **R. P. Joshi**, and K. H Schoenbach, "Nanosecond Electric Pulses Penetrate the Nucleus and Enhance Speckle Formation," *Biochemical and Biophysical Research Communications* 364, 220 (2007).

124. K. H. Schoenbach, B. Hargrave, **R. P. Joshi**, J. F. Kolb, C. Osgood, R. Nuccitelli, A. Pakhomov, J. Swanson, M. Stacey, J. A. White, S. Xiao, J. Zhang, S. J. Beebe, P. Blackmore, and E. S. Buescher, "Bioelectric Effects of Intense Nanosecond Pulses," *IEEE Transactions on Dielectrics and Electrical Insulation* **14**, 1088 (2007) **– *invited paper*.**

125. A. L. Garner, G. Chen, N. Chen; V. Sridhara, J. F. Kolb, R. J. Swanson, S. J Beebe, **R. P. Joshi**, and K. H Schoenbach, "Ultrashort Electric Pulse Induced Changes in Cellular Dielectric Properties," *Biochemical and Biophysical Research Communications* **362**, 139 (2007).

126. G. Zhao, **R. P. Joshi**, V. K. Lakdawala, and H. Hjalmarson, "Electro-Thermal Simulation Studies for Pulse Induced Energy Absorption in Nano-Crystalline ZnO Varistors," *IEEE Trans. Dielectr. and Electr. Insulation* **14**, 1007 (2007).

127. **R. P. Joshi**, A. Mishra, J. Song, Q. Hu, K. H. Schoenbach, and A. Pakhomov, "Self-Consistent Analyses for Potential Conduction Block in Nerves by an Ultra-Short, High-Intensity Electric Pulse," *Phys. Rev. E* **75**, 061906/1-11 (2007).

128. A. G. Pakhomov, R. Shevin, J. A. White, J. F. Kolb, O. N. Pakhomova, **R. P. Joshi**, and K. H. Schoenbach, "Membrane Permeabilization and Cell Damage by Ultrashort Electric Field Shocks," *Archives of Biochemistry and Biophysics* **465**, 109 (2007).

129. **R. P. Joshi**, A. Nguyen, V. Sridhara, Q. Hu, R. Nuccitelli, and K. H. Schoenbach, "Simulations of Intra-Cellular Calcium Release Dynamics in Response to a High-Intensity, Ultra-Short Electric Pulse," *Phys. Rev. E* **75**, 041920/1-10 (2007).

130. U. Pliquett, **R. P. Joshi**, V. Sridhara, and K. H. Schoenbach, "High Electrical Field Effects on Cell Membranes," *Bioelectrochemistry* **70**, 275 (2007).

131. G. Zhao, **R. P. Joshi**, V. K. Lakdawala, E. Schamiloglu, and H. Hjalmarson, "Studies of TiO_2 Breakdown Under Pulsed Conditions," *J. Appl. Phys.* **101**, 026110 (2007).

132. J. Qian, **R. P. Joshi**, K. H. Schoenbach, J. R. Woodworth and G. Sarkisov, "Model Analysis of Self- and Laser-Triggered Electrical Breakdown of Liquid Water for Pulsed Power Applications," *IEEE Trans. Plasma Science* **34**, 1680 (2006) **– *invited paper***.

133. S. Xiao, J. Kolb, M. A. Malik, X. Lu, M. Laroussi, **R. P. Joshi**, K. H. Schoenbach, "Electrical Breakdown and Dielectric Recovery of Polar Liquids," *IEEE Trans. Plasma Science* **34**, 1653 (2006).

134. Q. Hu, S. Viswanadham, **R. P. Joshi**, J. Kolb, and K. H. Schoenbach, "Molecular Dynamics Analysis of High Electric Pulse Effects on Bilayer Membranes Containing DPPC and DPPS," *IEEE Trans. Plasma Science* **34**, 1405(2006).

135. A. Mishra, **R. P. Joshi**, K. H. Schoenbach, and C. D. Clarke III, "A Fast, Parallelized Computational Approach Based on Sparse LU Factorization for Predictions of Spatial and Time-Dependent Currents and Voltages in Full-Body Bio-Models," *IEEE Trans. Plasma Science* **34**, 1431 (2006) **– *invited paper***.

136. V. Sridhara, **R. P. Joshi**, and K. H. Schoenbach, "Microscopic Calculations of Local Lipid Membrane Permittivities and Diffusion Coefficients for Application to Electroporation Analyses," *Biochemical and Biophysical Research Comm*. **348**, 643 (2006).

137. W. Frey, J. A. White, R. O. Price, P. F. Blackmore, **R. P. Joshi**, R. Nuccitelli, S. J. Beebe, K. H. Schoenbach, and J. Kolb, "Plasma Membrane Voltage Changes During Nanosecond Pulsed Electric Field Exposure," *Biophysical Journal* **90**, 3608 (2006).

138. J. Qian, **R. P. Joshi**, E. Schamiloglu, J. Gaudet, J. R. Woodworth, and J. Lehr, "Analysis of the Polarity Effects in the Electrical Breakdown of Liquids," *J. Phys. D* **39**, 359 (2006).

139. Q. Hu, **R. P. Joshi**, and K. H. Schoenbach, "Simulations of Nanopore Formation and Phosphatidylserine Externalization in Lipid Membranes Subjected to a High-Intensity, Ultra-Short Electric Pulse," *Phys. Rev. E* **72**, 031902 (2005).

140. J. Qian, **R. P. Joshi**, J. Kolb, K. H. Schoenbach, J. Dickens, A. Neuber, H. Krompholz, E. Schamiloglu, and J. Gaudet, "Micro-Bubble Based Model Analysis of Liquid Breakdown Initiation By a Sub-Microsecond Pulse," *J. Appl. Phys.* **97**, 113304 (2005).

141. Q. Hu, S. Viswanadham, **R. P. Joshi**, K. H. Schoenbach, S. J. Beebe and P. F. Blackmore, "Simulations of Transient Membrane Behavior in Cells Subjected to a High-Intensity, Ultra-Short Electric Pulse," *Phys. Rev. E* **71**, 031914 (2005).

142. A. L. Garner, N. Chen, J. Yang, J. Kolb, R. J. Swanson, S. J. Beebe, **R. P. Joshi**, and K. H. Schoenbach, "Time Domain Dielectric Spectroscopy Measurements of HL-60 Cells Suspensions after Microsecond and Nanosecond Electrical Pulses", *IEEE Trans. Plasma Science* **32**, 2073 (2004).

143. **R. P. Joshi**, Q. Hu and K. H. Schoenbach, "Modeling Studies of Cell Response to Ultrashort, High-Intensity Electric Fields – Implications for Intracellular Manipulation", *IEEE Trans. Plasma Science* **32**, 1677 (2004).

144. **R. P. Joshi**, F. Chen and W. R. Rogers, "Modeling Electrode-Based Stimulation of Muscle and Nerve by Ultra-Short Electric Pulses", *IEEE Trans. Plasma Science* **32**, 1687 (2004).

145. **R. P. Joshi**, J. Qian, G. Zhao, J. Kolb, K. H. Schoenbach, J. Gaudet and E. Schamiloglu, "Are Micro-Bubbles Necessary for the Breakdown of Liquid Water Subjected to a Sub-Microsecond Pulse ?," *J. Appl. Phys.* **96**, 5129 (2004).

146. **R. P. Joshi**, J. Qian, K. H. Schoenbach, and E. Schamiloglu, "Microscopic Analysis for Water Stressed by High Electric Fields in the Pre-Breakdown Regime," *J. Appl. Phys.* **96**, 3617 (2004).

147. S. Xiao, J. Kolb, S. Kono, S. Katsuki, **R. P. Joshi**, M. Laroussi, and K. H. Schoenbach, "High Power Water Switches: Postbreakdown Phenomena and Electrical Recovery", *IEEE Trans. Dielectrics and Electrical Insulation* **11**, 604 (2004).

148. S. J. Beebe, P. F. Blackmore, J. White, **R. P. Joshi**, and K. H. Schoenbach, "Nanosecond Pulsed Electric Fields Modulate Cell Function Through Intracellular Signal Transduction Mechanisms", *Physiological Measurement* **25**, 1077 (2004).

149. J. Gaudet, R. J. Barker, M. Gundersen, A. Kuthi, A. Neuber, J. Dickens, W. Nunnally, E. Schamiloglu, C. Christodoulou, S. Tyo, K. H. Schoenbach, **R. P. Joshi**, M. Laroussi, J. Kolb, and R. Vidmar, "Research Issues in Developing Compact Pulsed Power for High Peak Power Applications on Mobile Platforms", *Proc. IEEE* **92**, 1144 (2004) **– *invited paper***.

150. K. H. Schoenbach, **R. P. Joshi**, J. Kolb, N. Chen, M. Stacey, P. Blackmore, E. S. Buescher, and S. J. Beebe, "Ultrashort Electrical Pulses Open A New Gateway Into Biological Cells", *Proc. IEEE* **92**, 1122 (2004) **– *invited paper***.

151. N. Chen, K. H Schoenbach, J. F. Kolb, R. J. Swanson, A. L. Garner, J. Yang, **R. P. Joshi**, and S. J. Beebe, "Leukemia Cell Intracellular Responses to Nanosecond Electric Fields," *Biochemical and Biophysical Research Communications* **317**, 421 (2004).

152. **R. P. Joshi**, Q. Hu, K. H. Schoenbach, and S. J. Beebe, "An Energy-Landscape Model Analysis for Irreversibility and It's Pulse Width Dependence in Cells Subjected to a High-Intensity, Ultrashort Electric Pulse", *Phys. Rev. E* **69**, 051901 (2004).

153. **R. P. Joshi**, Q. Hu, and K. H. Schoenbach, "Dynamical Modeling of Cellular Response to Short-Duration, High-Intensity Electric Fields", *IEEE Trans. Dielectr. Electr. Insul.* **10**, 778 (2003) **– *invited paper***.

154. **R. P. Joshi**, S. Viswanadha, B. Jogai, P. Shah, and R. del Rosario, "Analysis of Dislocation Scattering on Electron Mobility in GaN High Electron Mobility Transistors (HEMTs)", *J. Appl. Phys.* **93**, 10046 (2003).

155. **R. P. Joshi**, S. Viswanadham, P. Shah, and R. del Rosario, "Monte Carlo Analysis of GaN-Based Gunn Oscillators for Microwave Power", *J. Appl. Phys.* **93**, 4836 (2003).

156. **R. P. Joshi**, J. Qian, S. Katsuki and K. H. Schoenbach, and E. Schamiloglu, "Electrical Conduction in Water Revisited: Roles of Field-Enhanced Dissociation and A Reaction-Based Boundary Condition", *IEEE Trans. Dielectrics & Electrical Insulation* **10**, 225 (2003).

157. J. Qian, **R. P. Joshi**, K. H. Schoenbach, E. Schamiloglu, and C. Christodoulou, "Percolative Model Of Electric Breakdown In Liquid Dielectrics", *IEEE Trans. Plasma Science* **30**, 1931 (2002).

158. **R. P. Joshi**, Q. Hu, K. H. Schoenbach, and S. J. Beebe, "Simulations of Electroporation Dynamics and Shape Deformations in Biological Cells Subjected to High Voltage Pulses", *IEEE Trans. Plasma Sci.* **30**, 1536 (2002).

159. **R. P. Joshi** and K. H. Schoenbach, "A Mechanism for Membrane Electroporation Irreversibility Under High-Intensity, Ultrashort Electrical Pulse Conditions", *Physical Review E* **66**, 052901 (2002).

160. **R. P. Joshi**, J. Qian and K. H. Schoenbach, "An Electrical Network Based Time-Dependent Model of Electrical Breakdown In Water", *J. Appl. Phys.* **92**, 6245 (2002).

161. T. Li, **R. P. Joshi**, and R. del Rosario, "Requirements for Low Intermodulation Distortion in GaN-AlGaN High Electron Mobility Transistors: A Model Assessment", *IEEE Trans. Electr. Dev.* **ED-49**, 1511 (2002).

162. G. Satyanadh, **R. P. Joshi** and N. Abedin, "Monte Carlo Calculations of the Impulse Response in Bulk InAs for Low Intensity Photon Avalanche Detection at 2 Micron Wavelengths", *Jap. Journ. Appl. Phys.* **41**, 5559 (2002).

163. **R. P. Joshi**, Q. Hu, K. H. Schoenbach, and H. P. Hjalmarson, "Improved Energy Model for Membrane Electroporation in Biological Cells Subjected to Electrical Pulses", *Phys. Rev. E* **65**, 041920 (2002).

164. **R. P. Joshi**, Q. Hu, K. H. Schoenbach, and H. P. Hjalmarson, "Theoretical Predictions of Electro-Mechanical Deformation of Cells Subjected to High Voltages For Membrane Electroporation", *Virtual Journal of Biological Physics Research - Membrane Biophysics* **3**, (2002).

165. N. Islam, E. Schamiloglu, A. Mar, F. Zutavern, G. Loubriel, and R. P. Joshi, "Characteristics of Trap-Filled GaAs Photoconductive Switches Used High Gain Pulsed Power Applications," in *Ultra-Wideband, Short-Pulse Electromagnetics 5*, edited by P. D. Smith and S. R. Cloude (Kluwer Academic Publishers, New York, 2002).

166. **R. P. Joshi**, Q. Hu, K. H. Schoenbach, and H. P. Hjalmarson, "Theoretical Predictions of Electro-Mechanical Deformation of Cells Subjected to High Voltages For Membrane Electroporation", *Phys. Rev. E* **65**, 021913 (2002).

167. **R. P. Joshi**, G. Satyanadh, N. Abedin, and U. Singh, "Monte Carlo Calculation of Electron Drift Characteristics and Avalanche Noise in Bulk InAs", *J. Appl. Phys.* **91**, 1331 (2002).

168. T. Li, **R. P. Joshi**, R. D. del Rosario, and C. Fazi, "Monte Carlo Based Analysis of Inter-Modulation Distortion Behavior in GaN-AlGaN HEMTs for Microwave Applications", *J. Appl. Phys.* **90**, 3030 (2001).

169. **R. P. Joshi**, Q. Hu, R. Aly, K. H. Schoenbach, and H. P. Hjalmarson, "Self-Consistent Simulations of Electroporation Dynamics in Biological Cells Subjected to Ultrafast Electrical Pulses", *Phys. Review E* **64**, 11913/01 (2001).

170. P. Kayasit, **R. P. Joshi**, N. Islam, E. Schamiloglu, and J. Schoenberg, "Transient and Steady State Simulations of Internal Temperature Profiles In High-Power Semi-Insulating GaAs Photoconductive Switches", *J. Appl. Phys.* **89**, 1411 (2001).

171. N. Islam, E. Schamiloglu, J. H. Schoenberg, and **R. P. Joshi**, "Switching - Compensation Mechanisms and the Response of High Resistivity GaAs Photoconductive Switches During High-Power Applications", *IEEE Trans. Plasma Science* **28**, 1512 (2000).

172. K. H. Schoenbach, **R. P. Joshi**, R. H. Stark, F. Dobbs, and S. J. Beebe, "Bacterial Decontamination of Liquids with Pulsed Electric Fields", *IEEE Trans. On Dielectrics and Electrical Insulation* **7**, 637 (2000).

173. **R. P. Joshi** and K. H. Schoenbach, "Electroporation Dynamics in Biological Cells Subjected to Ultrafast Electrical Pulses: A Numerical Simulation Study", *Phys. Rev. E* **62**, 1025 (2000).

174. P. Damayanthi, **R. P. Joshi** and J. McAdoo, "Calculations of Hole Transport Characteristics in Bulk GaSb", *J. Appl. Phys.* **88**, 817 (2000).

175. T. Li, **R. P. Joshi**, and C. Fazi, "Monte Carlo Evaluations of Degeneracy and Interface Roughness Effects on Electron Transport in AlGaN-GaN Hetero-Structures", *J. Appl. Phys.* **88**, 829 (2000).

176. **R. P. Joshi**, P. Neudeck, and C. Fazi, "Analysis of the Temperature Dependent SiC Thermal Conductivity for High Temperature Applications", *J. Appl. Phys.* **88**, 265 (2000).

177. P. Damayanthi, **R. P. Joshi**, and J. A. McAdoo, "Electron Mobility and Drift Velocity Calculations for Bulk GaSb Material", *J. Appl. Phys.* **86**, 5060 (1999).

178. **R. P. Joshi**, P. Kayasit, N. Islam, E. Schamiloglu, C. B. Fleddermann and J. Schoenberg, "Simulation Studies of Persistent Photoconductivity and Filamentary Conduction in Opposed Contact Semi-Insulating GaAs High Power Switches", *J. Appl. Phys.,* **86**, 3833 (1999).

179. N. Islam, E. Schamiloglu, C. B. Fleddermann, J. Schoenberg, and **R. P. Joshi**, "Analysis of High Voltage Operation of Gallium Arsenide Photoconductive Switches Used in High Power Applications", *J. Appl. Phys.* **86**, 1754 (1999).

180. L. Zheng, **R. P. Joshi**, and C. Fazi, "Dislocation Based Model Analysis for the Prebreakdown Reverse Characteristics of 4H-SiC p^+ n Diodes", *J. Appl. Phys.* **85**, 7935 (1999).

181. L. Zheng, **R. P. Joshi**, and C. Fazi, "Effects of Barrier Height Fluctuations and Electron Tunneling on the Reverse Characteristics of 6H-SiC Schottky Contacts", *J. Appl. Phys.* **85**, 3701 (1999).

182. **R. P. Joshi** and R. F. Wood, "Molecular Dynamics-Monte Carlo Simulations of Grain Boundary Electron Transport in n-Silicon", *J. Appl. Physics* **84**, 3197 (1998).

183. **R. P. Joshi**, H. Jalali, and J. Gaudet, "Effects of Transverse Doping Variations on the Transient Response of High Power Silicon Avalanche Shaper Devices", *IEEE Trans. Elec. Dev.* **ED-45**, 1761 (1998).

184. **R. P. Joshi** and R. F. Wood, "Simulations of Electron Transport Across a Charged Grain Boundary in n-Silicon Bicrystals", *J. Appl. Phys.* **83**, 5543 (1998).

185. **R. P. Joshi**, "Simulations of Quantized Inversion Layer Electron Transport In 6H-SiC MOS Structures", *Appl. Phys. Lett.* **72**, 2156 (1998).

186. **R. P. Joshi** and C. Fazi, "Simulations of Deep Level Related Conductivity in SiC Diodes Subject to Ultrafast, High Voltage Reverse Biasing Pulses", *Electronics Letters* **33**, 2162 (1997).

187. K. T. Tsen, **R. P. Joshi**, and D. K. Ferry, "Subpicosecond Time-Resolved Raman Studies of Non-Equilibrium Excitations in Wide Bandgap GaN", *Physica Status Solidi B* **204**, 106 (1997).

188. K. T. Tsen, **R. P. Joshi**, A. Salvador, A. Botchkarev, and H. Morkoc, "Quantitative Assessment of the Effects of Carrier Screening on the Average Electric Field in a GaAs-Based p-i-n Nanostructure Under Subpicosecond Laser Excitation", *J. Appl. Phys.* **81**, 406 (1997).

189. **R. P. Joshi** and A. Srivastava, "Effects of Grain Boundary Scattering on the Electron Drift Velocity Behavior in Diamond Films: A Monte Carlo Analysis", *Appl. Phys. Lett.* **69**, 1786 (1996).

190. K. T. Tsen, **R. P. Joshi**, D. K. Ferry, A. Botchkarev, B. Sverdlov, A. Salvador, and H. Morkoc, "Non-Equilibrium Electron Distributions and Phonon Dynamics in Wurtzite GaN", *Appl. Phys. Lett.* **68**, 2990 (1996).

191. **R. P. Joshi** and J. Mcadoo, "Picosecond Dynamic Response of Nanoscale LT-GaAs etal-Semiconductor-Metal (MSM) Photodetectors", *Appl. Phys. Lett.* **68**, 1972 (1996).

192. **R. P. Joshi**, "Monte Carlo Calculations of the Temperature and Field Dependent Electron Transport Parameters for 4H-SiC", *J. Appl. Phys*. **78**, 5518 (1995).

193. **R. P. Joshi** and D. K. Ferry, "Calculations of the Temperature and Field Dependent Electronic Mobility in β-SiC", *Solid State Electronics* **38**, 1911 (1995).

194. **R. P. Joshi**, S. Pathak, and J. Mcadoo, "Evaluation of Hot Electron and Thermal Effects on the Dynamic Characteristics of Single-Transit SiC IMPATT Diodes", *J. Appl. Phys.* **78**, 3492 (1995).

195. K. H. Schoenbach, **R. P. Joshi**, F. Peterkin, and R. L. Druce, "Supralinear Photoconductivity of Copper Doped Semi-Insulating Gallium Arsenide", *J. Appl. Phys.* **77**, 5208 (1995).

196. **R. P. Joshi**, "Theoretical Analysis for the Transient Response of Graded $Al_xGa_{1-x}N$ Sub-Micron Photodetectors", *J. Appl. Phys.* **74**, 4434 (1994).

197. **R. P. Joshi**, A. N. Dharamsi and J. Mcadoo, "Simulations for the High-Speed Response of GaN Metal-Semiconductor-Metal Photodetectors", *Appl. Phy. Lett.* **64**, 3611 (1994).

198. **R. P. Joshi**, K. H. Schoenbach, and P. K. Raha, "Impact of Field-Dependent Electronic Trapping Across Coulomb Repulsive Potentials on Low Frequency Charge Oscillations", *J. Appl. Phys.* **75**, 4016 (1994).

199. **R. P. Joshi**, "Temperature Dependent Electron Mobility in GaN: Effects of Space Charge and Interface Roughness Scattering", *Appl. Phys. Lett.* **64**, 223 (1994).

200. A. N. Dharamsi and **R. P. Joshi**, "Characteristics of Photostrictively Produced Optoacoustic Pulses", *J. Acoustic Soc. Am.* **95**, 234 (1994).

201. **R. P. Joshi** and A. N. Dharamsi, "Simulation of Ultrafast Electromagnetic Radiation Transients from Laser Excited Semiconductors", *J. Appl. Phys.* **74**, 3215 (1993).

202. **R. P. Joshi**, "Microscopic Calculations of Density and Field-Dependent Electronic Trapping via Attractive Coulomb Centers", *J. Appl. Phys.* **74**, 1810 (1993).

203. **R. P. Joshi**, K. H. Schoenbach, C. Molina, and W. Hofer, "Studies of Electron-Beam Penetration and Free Carrier Generation in Diamond Films", *J. Appl. Phys.* **74**, 1568 (1993).

204. K. T. Tsen, **R. P. Joshi** and H. Morkoc, "Direct Measurements of Electron-Optical Phonon Scattering Rates in Ultrathin GaAs-AlGaAs Multiple Quantum Well Structures", *Applied Physics Letters* **62**, 2075 (1993).

205. **R. P. Joshi**, M. K. Kennedy, K. H. Schoenbach, and W. W. Hofer, "Studies of High Field Conduction in Diamond for E-Beam Controlled Switching", *J. Appl. Phys.* **72**, 4781 (1992).

206. **R. P. Joshi**, R. O. Grondin, and S. El-Ghazaly, "Ultrafast Field-Dependent Response of Bandedge Photogenerated Electrons in Quantum Wells", *IEEE J. Quantum Electronics* **28**, 2456 (1992).

207. **R. P. Joshi**, "Intersubband Relaxation Dynamics in Ternary/Binary Quantum Wells: Role of the Electron-Phonon Interaction", *J. Appl. Phys.* **71**, 3827 (1992).

208. **R. P. Joshi**, "Quantum Corrections to Ultrafast Thermalization in Binary/Ternary Double Heterostructures", *Appl. Phys. Lett.* **59**, 1572 (1991).

209. **R. P. Joshi** and D. K. Ferry, "Effects of Multi-Ion Scattering on Electron Velocities in Bulk GaAs", *Semiconductor Science and Technology* **7**, B319-B321 (1992) – ***invited paper***.

210. A. M. Kriman, **R. P. Joshi**, M. J. Kann, and D. K. Ferry, "Exchange Effects in Hot Plasmas in Quantum Wells and Bulk Semiconductors", *Semiconductor Science and Technology* **7**, B243-B247 (1992).

211. K. M. Connolly, S. M. El-Ghazaly, R. O. Grondin, and **R. P. Joshi**, "Dynamic Simulation of a Photoconductive Switching Experiment", *Semiconductor Science and Technology* **7**, B199-B201 (1992).

212. **R. P. Joshi**, A. M. Kriman, M. J. Kann, and D. K. Ferry, "Quantum Molecular Dynamics Treatment of Electronic Relaxation of High Density Plasmas in Two-Dimensional Structures", *Appl. Phys. Lett.* **58**, 2369 (1991).

213. R. Vaidyanathan and **R. P. Joshi**, "Simulations for an Improved Heterostructure Gunn Oscillator Based on Transit Region Doping Variations", *IEE Electr. Lett.* **27**, 1555 (1991).

214. A. N. Dharamsi and **R. P. Joshi**, "An Approximate Rate Equation Analysis for Bleaching and Excitation of Thermoluminescence", *J. Phys. D* **24**, 982 (1991).

215. **R. P. Joshi** and D. K. Ferry, "Effect of Multi-Ion Screening on the Electronic Transport in Doped Semiconductors: A Molecular Dynamics Study", *Phys. Rev. B* **43**, 9734 (1991).

216. A. M. Kriman, D. K. Ferry, M. J. Kann, and **R. P. Joshi**, "Molecular Dynamics Extensions of Monte Carlo Simulation in Semiconductor Device Modeling", *Computer Phys. Communications* **67**, 119 (1991) – ***invited paper***.

217. A. M. Kriman, M. J. Kann, D. K. Ferry, and **R. P. Joshi**, "The Role of Exchange Interactions in the Short-Time Relaxation of a High Density Electron Plasma", *Phys. Rev. Lett.* **65**, 1619 (1990).

218. **R. P. Joshi**, R. O. Grondin, and D. K. Ferry, "Monte Carlo Simulation of Electron-Hole Thermalization in Photoexcited Bulk Semiconductors", *Phys. Rev. B* **42**, 5685 (1990).

219. **R. P. Joshi**, A. M. Kriman, and D. K. Ferry, "Monte Carlo Study of Minority Electronic Transport in InGaAs: Phonon Mode Splitting and Dynamically Screened Electron-Hole Interactions", *J. Appl. Physics* **68**, 4322 (1990).

220. **R. P. Joshi**, S. El-Ghazaly, and R. O. Grondin, "Anisotropy Effects on the Electronic Transport in Photoexcited Bulk GaAs", *Journal of Applied Physics* **67**, 7388 (1990).

221. **R. P. Joshi**, K. T. Tsen, and D. K. Ferry, "Monte Carlo Study of the Transient Expansion of Photo-Generated Plasma in Semiconductors - Nonequilibrium Phonon Effects", *Phys. Rev. B* **41**, 9899 (1990).

222. S. El-Ghazaly, **R. P. Joshi**, and R. O. Grondin, "Electromagnetic and Transport Considerations in Subpicosecond Photoconductive Switch Modelling", *IEEE Trans. Mic. Theory Tech.* **38**, 629 (1990) **– *invited paper***.

223. **R. P. Joshi** and R. O. Grondin, "Hot Phonon and Electron-Hole Scattering Effects on the Transient Transport of Photogenerated Electrons in GaAs," *J. Appl. Phys.* **66**, 4288 (1989).

224. **R. P. Joshi** and R.O. Grondin, "A Self-Consistent Monte Carlo Method for the Transient Response of Laser Excited Photoconductive Circuits," *Solid State Electr.* **32**, 1813 (1989).

225. A. M. Kriman, **R. P. Joshi**, B.S. Haukness, and D. K. Ferry, "Geometric Effects of Scattering in Microstructures," *Solid State Electronics* **32**, 1597 (1989).

226. Y. Lu, **R. P. Joshi**, S. El-Ghazaly and R. O. Grondin, "Time Domain Finite Difference Study of Hot Carrier Transport in GaAs on a Subpicosecond Scale", *Solid State Electronics* **32**, 1297 (1989).

227. **R. P. Joshi** and R. O. Grondin, "Monte Carlo Analysis of the High Field Hole Diffusion Coefficients in GaAs," *Applied Physics Letters* **54**, 2438, 1989.

228. K. T. Tsen, **R. P. Joshi**, D. K. Ferry, and H. Morkoc, "Time Resolved Raman Scattering of Non Equilibrium LO Phonons in GaAs Quantum Wells," *Phys. Rev. B* **39**, 1446 (1989).

229. S. Chamoun, **R. P. Joshi**, R. O. Grondin, K. Meyer, and G. Mourou, "Theoretical & Experimental Investigations of Subpicosecond Photoconductivity," *Journal of Applied Physics* **66**, 236 (1989).

230. **R. P. Joshi** and D. K. Ferry, "Hot Phonon Effects and Intersubband Relaxation Processes in Photoexcited GaAs Quantum Wells," *Phys. Rev B* **39**, 1180 (1989).

231. D. K. Ferry, M. A. Osman and **R. P. Joshi**, "Ultrafast Relaxation of Hot Photoexcited Carriers in GaAs", *Solid State Electronics* **31**, 401, 1988 **– *invited paper***.

BOOKS AND BOOK CHAPTERS

(1) S. J. Beebe, **R. P. Joshi**, K. H. Schoenbach, and S. Xiao, in Ultrashort Electric Pulse Effects in Biology and Medicine (Springer, New York, 2021), ISBN: 978-981-10-5113-5.

(2) **R. P. Joshi** and K. H. Schoenbach, "Electric Fields in Biological Cell and Membranes," ***invited*** Chapter in Book titled "Electromagnetic Fields in Biological Systems," *CRC Press*, Boca Raton, 2011, pp. 71.-114 [ISBN: 9781439859995]

(3) **R. P. Joshi** and D. C. Stoudt, "Photoconductive Switches", in the IEEE / Wiley Encyclopedia Of Electrical and Electronics Engineering (John Wiley, N. York, March 1999), Vol. 16, pp. 239-257.

(4) **R. P. Joshi** and C. Fazi, "Computer Model Simulation of SiC Diode Reverse-Bias Instabilities Due to Deep Energy Impurity Levels", Materials Science Forum, edited by G. Pensl, H. Morkoc, B. Monemar, and E. Janzen, (Trans. Tech. Publishers, Switzerland, 1998).

(5) **R. P. Joshi** and P. K. Raha, "Monte Carlo Simulations of Temperature Dependent Mobility in GaN," Silicon Carbide and Related Materials, edited by M. Spencer, R. Devaty, J. Edmond, M. Asif Khan, R. Kaplan, and M. Rahman (IOP Publishers, Bristol, 1994).

(6) K. H. Schoenbach, T. Tessnow, and **R. P. Joshi**, "Spatially Resolved E-Beam Induced Transient Spectroscopy for Deep Centers in Wide Band Semiconductors," Silicon Carbide and Related Materials, edited by M. Spencer, R. Devaty, J. Edmond, M. Khan, and R. Kaplan (IOP Publishers, Bristol, 1994).

(7) **R. P. Joshi**, K. M. Connolly, S. El-Ghazaly, and R. O. Grondin, "Photoconductive Switch Simulation with Absorbing Boundary Conditions", in Computational Electronics: Semiconductor Transport and Device Simulation, edited by K. Hess, J. P. Leburton, and U. Ravaioli, Kluwer Academic Pub., Boston 1991.

(8) D. K. Ferry, A. M. Kriman, M. J. Kann, and **R. P. Joshi**, "Extensions of the Monte Carlo Simulation in Semiconductors to Fast Processes", in Monte Carlo Simulations of Semiconductors and Semiconductor Devices, edited by K. Hess, Kluwer Academic Publishers, Boston, July 1991.

JOURNAL MANUSCRIPTS (ACCEPTED OR UNDER REVIEW)

1. S. C. Shrestha, P. Ghosh, and **R. P. Joshi**, ″Evaluations of crystallographic work-function anisotropy on electron photoemission from copper nanoemitters,″ submitted for publication, October 2026.

2. S. Beeram and **R. P. Joshi**, ″Evaluating the Influence of Interconnectivity Between Biological Cells on Electroporation for Biomedical Applications″ submitted for publication, October 2026.

3. D. Guo and **R. P. Joshi**, ″Crystallographic work-function anisotropy and source-current localization in curved tungsten field emitters,″ submitted for publication, October 2026.

4. A. Ray, I. Song, T. Hoshi, A. Bernussi, **R. P. Joshi**, H. M. Kwon, and T. Kim, ″Temperature-Driven Transition From Persistent Trapping to Thermally Enhanced Recovery in GaN HEMTs From 4 to 600K,″ *accepted for publication*, to appear January 2027.

RESEARCH PAPERS PRESENTED AT PROFESSIONAL MEETINGS

(Over 250; details not given here for brevity, but available on request).

SCIENCE CITATIONS

Over **14,846** citations (http://scholar.google.com/citations?user=5m5bnQUAAAAJ&hl=en).

[Google Scholar h-index: 59 // Google Scholar i10-index: 231]

GRANTs AWARDED (TTU)

Over $5 Million personal share & over $ 35 Million in collaborative grants from various federal sources within the US.

Too many to enumerate, but sources include the following:

US Federal: US Air Force Office of Scientific Research; US Office of Naval Research, US Army, Army Research Laboratories, Sandia National Laboratories, Oak Ridge National Laboratories, Lawrence Livermore (DoE), Thomas Jefferson National Accelerator Facility (DoE), National Science Foundation (NSF), National Institutes of Health (NIH), DEFENSEWERX, Pantex (DoE).

State Funding: Commonwealth of Virginia, Governor's fund from State of Texas, Virginia Center for Innovative Research

Industry Support: PepsiCo, Motorola, Siemens Corporation, Landmark Communications..

HONORS AND AWARDS

- Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE) – 2025
- Editor of Distinction, Springer Nature – 2024
- Elected Fellow of the American Association for the Advancement of Science (AAAS) – 2024
- IEEE William Dunbar Award (2022) – 1 international Award given once every 2 years ("For contributions to the science of electrical breakdown of liquids and biological applications of pulsed high voltage")
- President's Excellence in Research Professorship (TTU, 2022)
- President's Excellence in Research Professorship (TTU, 2019)

. Fulbright Research Scholar Award (2019)

. TTU Barnie Rushing Jr. Faculty Distinguished Research Award (2019)

. Stanford University's list of 100,000 most-cited authors worldwide (2017 - present)

. NPSS Merit Award (2017) for ″significant and sustained contributions to bioelectrics and physics-based understanding of high field phenomena in pulsed power applications″

. Accreditation Board for Engineering and Technology (ABET) Evaluator (since 2014)

. Elected Fellow of the Institute of Engineering and Technology (IET, UK) – 2014

. Elected Fellow of the Institute of Physics (IOP) – 2014

. Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE) -- 2008

. Elected Fellow of the Institution of Electronics & Telecommunication Engineers – 2014

. Most Influential Paper Citation Award. Bioelectromagnetics Journal (2013)

. Model Partnership Award (ODU-Ocean Lakes High School, Virginia Beach, 2013)

. IEEE Distinguished Lecturer (2012)

. Winner – Shining Star Award, Student Affairs, Old Dominion University (2010, 2011)

. Designated Eminent Scholar, Old Dominion University (2010)

. ODU Doctoral Mentor Award (2008)

. ODU University Professor (2007)

. ODU Nominee for Virginia SCHEV Outstanding Faculty Award (2006)

. Outstanding Teaching Award, Batten College of Engr. & Tech., ODU (2006)

. Martin Black Prize -- Institute of Physics & Engineering in Medicine (2005)

. Rufus Tonelson Award for Research, Teaching & Service, ODU (2004)

. Outstanding Teaching Award, Dept. of Electrical & Computer Engr., ODU, 2003

. Certificate of Appreciation, Air Force Research Laboratory, San Antonio, TX (2003)

. 18th Annual Research Award, Old Dominion University (2002)

. Who's Who in American Education (since 2007)

. United Who's Who Among Professionals (UWW – 2002)

. Research Excellence Award, Dept. of Electrical & Computer Engr., ODU (2002)

. Who's Who in Engineering Education (WWEE – 2002)

. Research Excellence Award, College of Engineering, ODU (2001)

. Listed in Marquis Who's Who in America (Science & Engineering, since 1996)

. Listed in Who's Who Among America's Teachers (since Oct. 1996)

. Listed in American Men and Women of Science (since 1995)

. Most Inspiring Faculty Award (College of Engineering), ODU, 1990.

. National Talent Scholarship, India, (1977).

. National Merit Award, India, (1977).

PATENTS

A. Pakhomov, K. Schoenbach, J, Kolb and R. P. Joshi, "Modulation of Neuromuscular Functions with Ultrashort Electrical Pulses," US Patent Pub. No.: US2008/0228244 A1, 8139339.

PROFESSIONAL RECOGNITION AND SERVICE

. Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE) – **2025**
. Guest Editor, Special Issue on "Charge transport mechanism in energy materials," Scientific Reports – 2025-2026
. Editor of Distinction, Springer Nature – 2025
. Office of Naval Research (ONR) for Directed Energy Research (2022-Present)
. National Science Foundation Graduate Research Fellowship Program (2022 – 2023)
. Fulbright US Scholars Program Reviewer in Electrical Engineering (2022-Present)
. Graduate Programs Reviewer in Electrical Engineering (US Universities 2018-2019)
. Senior Editor, IEEE Transactions on Plasma Science 2018-Present
. Editorial Board – Scientific Reports 2023-Present
. Editorial Board – Plasma (http://www.mdpi.com/journal/plasma/editors) 2017-Present
. Advisory Panel of Journal of Physics D: Applied Physics (2017-2018)
. Adhoc Committee to improve IEEE Transactions on Plasma Science (2016-2017)
. Accreditation Board for Engineering and Technology (ABET) Evaluator (since 2014)
. Professional Engineer (PE) -- Registered in Texas, No. 119803.
. Professional Engineer (PE) -- Registered in Virginia, No. 0402048456

. Elected Fellow of the American Association for the Advancement of Science (AAAS) – 2024
. Elected Fellow of the Institute of Physics (IOP) in 2014.
. Elected Fellow of the Institute of Engineering and Technology (IET, UK) – 2014
. Elected Fellow of the Institution of Electronics &Telecommunication Engineers – 2014
. Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 2008 for: "Contributions to bio-electrics and simulation of cellular responses to pulsed power excitation."
. IEEE Distinguished Lecturer (2012).
. Guest Editor, Editor, IEEE Trans. Plasma Science (2014; 2012; 2011; 2008; 2004).
. Board Member -- IEEE Committee on Pulsed Power Technology (2010-2016).
. Reviewer -- Air Force Office of Scientific Research (2011, 2013)
. Reviewer -- National Science Foundation (2012, 2013), and NSF IUCRC (2016, 2018, 2019) and NSF GSRP (2022)
. Reviewer -- US Fulbright Program (2022 , 2004))
. Organizing Committee -- 2010 IEEE International Conference on Plasma Science.
. Session Chair – Compact Pulse Power and Applications, for 2010 IEEE International Conference on Plasma Science (ICOPS).
. Elected Board Member (IEEE Society on Dielectrics and Electrical Insulation, 2009-2011 term)
. Organizing Committee -- SPIE Conference on Nano-, Bio-, Info-Tech Sensors (2010)
. Executive Committee -- Chair, Publications and Publicity Committee for IEEE Conference on Electrical Insulation and Dielectric Phenomena (Oct. 2009)

. Executive Committee -- Chair, Publications and Publicity Committee for IEEE Conference on Electrical Insulation and Dielectric Phenomena (Quebec City, Canada, Oct. 26-29, 2008)

. Session Organizer: "Medical, Environmental, and Biological Applications" for the Intl. Conf. on Plasma Science (Albuquerque, NM, 2006) and "Medical, Environmental, and Biological Applications" for the Intl. Conf. on Pulsed Power (Chicago, IL, 2011).

. Judge-- IEEE Best Student Paper Contest, IEEE International Conference on Pulsed Power and Plasma Science (Albuquerque, NM, 2007 and Norfolk, VA, 2010).

. Organizing Committee -- 2007 IEEE International Conference on Pulsed Power and Plasma Science (PPPS).

. Elected Board Member (IEEE Society on Dielectrics and Electrical Insulation, 2006-2008 term)

. Session Organizer ("Medical, Environmental, and Biological Applications") for the 2006 Intl. Conf. On Plasma Science (Michigan).

. Organizing Committee (SPIE Conf. on Ultrafast Electronics, San Jose, 2000)

. Session chair (IEEE Southeast Conference, 1991).

. Member of the American Physical Society and Biomedical Engineering Society

. Member of the American Vacuum Society (AVS)

. Technical Reviewer for following journals: IEEE Transactions on Electron Devices; IEEE Transactions on Plasma Science; Journal of Applied Physics and Applied Physics Letters; Physica Status Solidi; Solid State Electronics; Solid State Sciences; Microelectronics Reliability; Journal of Computational Electronics; Physical Review B & E; Physical Review Applied; Journal of Biological Physics; Physical Review Letters, Journal of Physics D, Journal of Bio-Electromagnetics, Biophysical Journal, Critical Reviews in Biomedical Engineering, Bioelectrochemistry Journal, Reviews of Scientific Instruments, Journal of American Ceramic Society, New Journal of Physics, Microwave Review, Journal of Mathematics and Computers in Simulation, IEEE Transactions on Dielectrics and Electrical Insulation; Plasma Sources Science and Technology; Journal of Theoretical and Applied Physics; Biochimica et Biophysica Acta – Biomembranes, IEEE Transactions on Radiation and Plasma Medical Sciences, IEEE Transactions on Radiation and Plasma Medical Sciences; BioMed Research International.

. Technical Reviewer: Air Force Office of Scientific Research (2011, 2013); National Science Foundation (2012, 2013), and NSF IUCRC (2016, 2018, 2019) and NSF GSRP (2022); US Fulbright Program (2022); National Institutes of Health (NIH); US Civilian Research & Development Foundation for Former Soviet Union; US Department of State; Whittaker Foundation; Virginia Center for Innovative Research; Israel Science Foundation ; Agence Nationale Recherche (ANR -- France's National Research Agency); Czech Science Foundation (GACR).

. Book Reviewer for J. Wiley & Sons, Prentice Hall, Oxford University Press, and Addison-Wesley.

UNIVERSITY-RELATED SERVICE ACTIVITY (Texas Tech University)

Chair, Electrical and Computer Engineering Department (2025 – Present)
Chair, ECE Faculty Search Committee for Bio-engineering Position (2024-2025)
Departmental Committee on new Engineering Technology Program (2024-Present)
College Faculty Research Awards Committee, 2018-Present
College Undergraduate Curriculum Committee, 2024
Associate Chair – Assessment and Recruitment (2023-2024)
Chair, Public Relations Committee, ECE Department, Texas Tech Univ. (2017-2019)
ABET Co-ordinator for Electrical Engineering programs (2015 - Present)
Whitcare College of Engineering Institutional Effectiveness (IE) committee (2018)

UNIVERSITY-RELATED SERVICE ACTIVITY (Old Dominion University)

ECE Departmental Undergraduate Committee (2013-Present)
University Eminent Scholar's Committee (2013-Present)
Committee G of University Faculty Senate - Nominations (2009-2012)
Committee H of the University Faculty Senate – Nominations (1998-1999; 2002-2012)
University Honorary Degrees Committee (2001-Present)
College Promotion & Tenure Committee (2010-2012)
ODU "University Professor" Committee (2009 – 2011)
ODU Research and Scholarship Subcommittee of Strategic Plan Task Force (2009)
ODU Morgan Named Professor Committee (2009)
ODU Provost Search Committee (2007)
University Faculty Senate Committee F-Tenure and Promotion (2007-2011)
Center for Bio-Electrics Research Faculty Search Committee (2007)
Computer Science Department-Chair Search Committee (2006-2007)
ECE Departmental Graduate Committee (2006-2013)
University Faculty Senate Committee D-Scholarly Activities (2005-2010)
University Student Conduct Committee (2001-2006)
University Self-Study Committee (1999-2000)
University Library Committee (1996-2000)
University Students Who's Who Selection Committee (1994-2000)
College Awards and Recognitions Committee (2010-2011)
College Promotion & Tenure Committee (2003-2008)
College Scholarship Committee (1992-2003)
College Task Force on Distance Education (1998)

Departmental Coordinator for Web-site Development & Maintenance (2006-2008)
Departmental Promotion & Tenure Committee (1996-Present)
Departmental ABET Preparation Team (2003)
Departmental Recruiting Committee (2000)
Departmental Graduate Committee (1999-Present)
Departmental Undergraduate Committee (1998-99)
Department Physical Electronics Committee (1990-1998)

STUDENT SUPERVISION AND MENTORING

Over 60 graduate students mentored and led to successful completion

Recent students enrolled (#) or graduated

(1) Norman Kausar, PhD student, starting August 2026.
(2) #Tasmiah Afrin, PhD student, starting August 2026.
(3) #Bahareh Rezaei, PhD student, currently enrolled, expected completion August 2027.
(4) #Pramit Ghosh, MS student, currently enrolled, expected completion May 2027.
(5) #Yue Zeng, MS student, currently enrolled, expected completion December 2026.
(6) #Sai P. Beeram, PhD student, currently enrolled, expected completion December 2027.
(7) #Tanuja Nath, MS student, currently enrolled, expected completion December 2026.
(8) #Matthew Farris, MS student, "Simulation Studies for Enhancement of GaN/AlGaN Based HEMT Device Performance via Manipulation of Trap Occupancies".
(9) #Sabyasachi Chakraborty Shrestha, PhD student completed December 2026, "A Multiphysics Modeling Framework for High-Field Electron Emission from Metallic Emitters".
(10) M. Arafat Hossain, MS student completed December 2025, "An FEM Model of Cell Membrane Electroporation in Single and Multiple Aggregates of Biological Cells for Electrochemotherapy Applications".
(11) Ali Esmaeelnezhad, PhD completed August 2025 "Day-Ahead Operational Strategies for Distribution and Transmission Systems".
(12) Sabyasachi Chakraborty Shrestha, MS completed May 2025 "Wigner Function Monte Carlo Implementation for Modeling of Electron Emission from Copper Cathodes".
(13) Yagnya M. Pokhrel, PhD completed May 2025, "Innovative Computational Strategies for Minimizing Plasma Formation, and Reducing Outgassing in High-Power Microwave (HPM) Devices".
(14) Alyson Willis, MS completed May 2025, "Numerical Assessments of Subcellular Electroporation Driven by Ultrashort Electric Pulses".
(15) Matthew Sokol, MS completed December 2024, "Development of Simple Model to Incorporate Statistical Noise on the Basis of a Modified Hodgkin-Huxley Approach for Neural Responses".
(16) Ali Esmaeelnezhad, MS completed December 2024 "Day-Ahead Operational Strategies for Distribution and Transmission Systems".
(17) Kelsey Gatlin, MS completed August 2024, "Multiphysics Based Parameterized Numerical Study of Pressure Wave Generation in Head Models Induced by Incident Electromagnetic Radiation".
(18) Cody Baker, MS completed May 2024, "Development of a Finite Element Method Based Model of Thermoacoustic Pressure Wave Generation in Spherical Geometries due to Microwave".
(19) Yagnya M. Pokhrel, MS completed May 2024, "Molecular Dynamics Analysis of Outgassing With Self-Consistent Temperature Calculations for High Power Devices".
(20) William Milestone, PhD completed May 2023, "Self-Consistent Analysis of Microsecond Irreversible Electroporation with Cellular Heating in Individual and Cell Clusters".
(21) Raul Perez, MS completed December 2022, "Simulation Studies of Frequency-Dependent Action Potentials in Cell Axons".
(22) Sayeed Sami, PhD completed May 2022, ″Studies of Field Emission Current Density and Outgassing in Copper and Carbon Fiber Electrodes Based on Microscopic Material Models″.

(23) Luke Silvestre, MS completed December 2021, "A Continuum Approach for Multipactor Using the Vlasov-Poisson Analysis".

(24) Sayeed Sami, MS completed December 2021, "Molecular Dynamics Simulations of Outgassing from Copper Electrodes".

(25) William Milestone, MS completed May 2021, "Monte Carlo Analysis of Carrier Dynamics in GaN Photoconductive Switches for Pulses in the 100 GHz Range".

(26) Dong Guo, PhD completed August 2021, "Simulations for Electron Emission and Maximum Current Output from Metal Emitter Arrays".

(27) Yi Yi, MS completed May 2021, "Simulations for Bio-Impedance in Cancer Tissues".

(28) Xiaoli Qiu, PhD completed December 2020, "Studies on Secondary Electron Yield and Multipactor Mitigation in Rectangular Waveguides based on Monte Carlo Methods".

(29) Animesh Chowdhury, PhD completed May 2019, "Investigating Possibility of Lock-On in a Photo-Conductive Semiconductor Switch (PCSS) for High Power Applications".

(30) Hieu Nguyen, PhD completed May 2019, "Simulation Studies of Breakdown and Charge Growth in Pulsed Power Systems Driven by Microwave Excitation".

(31) Joy Acharjee, MS completed May 2019, "Numerical Studies of Hydrogen Outgassing from Copper Electrodes".

(32) Ze Zhang, MS completed December 2017, "Studies on Explosive Emission and Material Degradation of Nanoscale Metal Emitter Tips Based on Molecular Dynamics Analysis".

POST-DOCTORAL AND VISITING RESEARCHERS

- Aamer Al Ali.
- Xiaoqian Hu.
- Jun Qian.
- Qin Hu.

COURSES TEAGHT AND DEVELOPED (D)

- Probability, Random Processes, and Statistics
- Nanoelectronics: Material Physics, Devices and Applications (D)
- Bio-Electrics for Engineers (D)
- Electromagnetic Theory
- Solid State Devices
- Engineering Analysis
- Numerical Methods and Mathematical Modeling for Engineers
- Biostatistics: Fundamentals and Applications (D)
- Semiconductor Characterization (D)
- Applied Non-Linear Optics (D)
- Advanced Semiconductor Devices & Modeling (D)
- Semiconductor Optoelectronic Devices
- Physical Electronics
- Gaseous Electronics
- Quantum Electronics & Lasers
- Signals and Systems
- Circuit Theory

TEACHING RELATED AWARDS

Barnie Rushing Distinguished Faculty Award (2019)
Shining Star Award (2010, 2011)
Doctoral Mentor Award (2008)
University Professor (2007)
Outstanding Teaching Award (2006)
Tonelson Faculty Award (2004)
Who's Who in American Education (since– 2007)
Listed in Who's Who Among America's Teachers (1996, 1997)
Most Inspiring Faculty Award (1990)