



## Srabanti Chowdhury

Professor of Electrical Engineering, Senior Fellow at the Precourt Institute for Energy and Professor, by courtesy, of Materials Science and Engineering

### CONTACT INFORMATION

- **Administrative Contact**

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### Bio

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#### BIO

Prof. Srabanti Chowdhury, affiliated with the Electrical Engineering department and (by courtesy) Materials Science and Engineering at Stanford University, specializes in the wideband gap (WBG) and ultra-wide bandgap (UWBG) materials and device engineering. Her research focuses on energy-efficient system architecture for power and RF applications, particularly emphasizing thermal management. She earned her M.S. in June 2008 and Ph.D. in December 2010 in Electrical and Computer Engineering from the University of California, Santa Barbara. In recognition of her outstanding work on diamond integration with GaN and SiC, resulting in very low thermal boundary resistances for thermal management, Prof. Chowdhury received the 2023 Technical Excellence Award from the Semiconductor Research Society (SRC). She is the recipient of the 2025 Quantum Device Award for her contribution to Vertical GaN devices and Phonon matching interfaces for thermal boundary resistance lowering.

Her achievements also include the 2020 Alfred P. Sloan Fellowship in Physics and the 2016 Young Scientist Award at the International Symposium on Compound Semiconductors (ISCS). Earlier in her career, she was honored with the DARPA Young Faculty Award, NSF CAREER Award, and AFOSR Young Investigator Program (YIP), all in 2015.

Her contributions to the field encompass 8 book chapters, 150 journal papers, 150 conference presentations, and 27 issued patents. Actively engaged in IEEE conference committees, including IRPS and VLSI Symposium, she serves on the executive committee of IEDM. Since 2021, she has been a senior fellow at the Precourt Institute for Energy at Stanford. Notably, she became an IEEE fellow in the batch of 2024 for her contributions to wide bandgap semiconductor devices and technology.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Senior Fellow, Precourt Institute for Energy
- Professor (By courtesy), Materials Science and Engineering

#### HONORS AND AWARDS

- Asian American Fellow, AASF (2025)
- Quantum Device Award, International Symposium of Compound Semiconductor (Japanese Society) (2025)
- IEEE Fellow, (Class of 2024), IEEE (2023)

- Advisor of the recipient of Lighting Talk Winner (Department of Energy, EFRC), Department of Energy/ EFRC (2023)
- Advisor of the recipient of the Best Paper Award (TECHCON 2023), SRC/TECHCON (2023)
- Technical Excellence Award, Semiconductor Research Corporation (2023)
- Advisor of the recipient of the Best Paper Award (TECHCON 2023), TECHCON (SRC) (2022)
- Sloan Research Fellow in Physics, Alfred P. Sloan Foundation (2020)
- Gabilan Fellow, Stanford University (2019)
- NAE Frontier of Engineering (symposium invitee and alumni), National Academy of Engineering (2019)
- William George and Ida Mary Hoover Faculty Fellow, Stanford University (2019)
- Advisor of student (Dong Ji) receiving Anil Kr. Jain award for best dissertation, Electrical and Computer Engineering, UC Davis (2018)
- IEEE Senior Member, Institute of Electrical and Electronics Engineers (IEEE) (2017)
- Advisor of student (Dong Ji) receiving Outstanding Student Abroad Award, Chinese Government (2016)
- Young Scientist Award, International Symposium on Compound Semiconductors (ISCS) (2016)
- Fulton Faculty Development Chair for outstanding research, Arizona State University (2015)
- NSF CAREER Award, National Foundation of Science (2015)
- Young Faculty Award (YFA), Defense Advanced Research Projects Agency (2015)
- Young Investigator Program Award, Air Force Office of Research (2015)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Advisory Committee, Microsystems Exploratory Council (MEC), for DARPA MTO (2024 - 2026)
- Member of the Technical Program Committee in various capacities, VLSI (2023 - present)
- Executive Committee Member, IEEE International Electron Devices Meeting (IEDM) (2018 - present)

## **PROGRAM AFFILIATIONS**

- Stanford SystemX Alliance

## **Research & Scholarship**

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### **CURRENT RESEARCH AND SCHOLARLY INTERESTS**

Wide bandgap materials & devices for RF, Power and energy efficient electronics

## **Teaching**

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### **COURSES**

#### **2025-26**

- Power Semiconductor Devices and Technology: EE 218 (Win)
- Semiconductor Devices for Energy and Electronics: EE 116 (Spr)

#### **2024-25**

- Power Semiconductor Devices and Technology: EE 218 (Win)
- Semiconductor Devices for Energy and Electronics: EE 116 (Spr)
- Special Topics on Wide Bandgap Materials and Devices: EE 317 (Aut)

#### **2023-24**

- Power Semiconductor Devices and Technology: EE 218 (Win)

- Semiconductor Devices for Energy and Electronics: EE 116 (Spr)
- Special Topics on Wide Bandgap Materials and Devices: EE 317 (Aut)

#### 2022-23

- Semiconductor Devices for Energy and Electronics: EE 116 (Spr)
- Special Topics on Wide Bandgap Materials and Devices: EE 317 (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Malachi Hornbuckle, Jimin Kang, Katherine Liang, Dennis Rich, Zhechi Ye

#### Postdoctoral Faculty Sponsor

Zhengliang Bian, Ali Ebadi Yekta, Taiky Kim, Mete Muslu, Quoc Dat Tran

#### Doctoral Dissertation Advisor (AC)

Daniel Cudzich, Anna Kasperovich, Jeongkyu Kim, Junrui Lyu, Jackson Meng, Devansh Saraswat, Colin Shan, Nish Sinha, Matti Thurston, Jennifer Toy, Wiley Yu

#### Master's Program Advisor

Hayat Abdurahman, Nihar Ahire, Lindsay Falk, Abby Harris, Liam Harrison, Joseph Khamisy, Angelina Krinos, Andres Reyna

#### Doctoral (Program)

Ana Banzer Morgado, Hugo Chen, Jack Evans, Anna Kasperovich, Hannah Kleidermacher, Shreyas Muralidharan, Karna Nagalla, Christian Papachristodoulou, Judd Plutowski, Dennis Rich, Colin Shan, Jakob Stavehaug

## Publications

### PUBLICATIONS

- **Interfacial Thermal Transport in Top-Side Diamond Integrated AlGaIn/GaN High Electron Mobility Transistors.** *ACS applied materials & interfaces*  
Walwil, H., Malakoutian, M., Shoemaker, D. C., Woo, K., Soman, R., Lyu, J., Chumbes, E. M., DeJarld, M., Tahhan, M., Laroche, J., Chowdhury, S., Choi, S.  
2025
- **Enhanced Cooling of Multifinger GaN HEMTs via Topside Diamond Integration** *IEEE ELECTRON DEVICE LETTERS*  
Shoemaker, D. C., Woo, K., Song, Y., Malakoutian, M., Zivasatienraj, B., Srivastava, P., Wildeson, I., Chowdhury, S., Choi, S.  
2025; 46 (9): 1597-1600
- **Negative capacitance overcomes Schottky-gate limits in GaN high-electron-mobility transistors.** *Science (New York, N.Y.)*  
Khan, A. I., Kim, J. K., Sikder, U., Das, K., Rodriguez, T., Soman, R., Chowdhury, S., Salahuddin, S.  
2025: eadx6955
- **Integration of top-side low-temperature diamond on AlGaIn/GaN RF HEMT for device-level cooling** *APPLIED PHYSICS LETTERS*  
Soman, R., Malakoutian, M., Woo, K., Kim, J., Rodriguez, T., Martinez, R., DeJarld, M., Tahhan, M., Valliancourt, J., Chumbes, E. M., Laroche, J., Chowdhury, S.  
2025; 126 (21)
- **Systematic investigation of AlGaIn channels on AlN/sapphire substrates using metal-organic chemical vapor deposition (MOCVD): Toward higher crystallinity and lower surface roughness** *APL MATERIALS*  
Sena, H., Lawton Siukola Thurston, M., Meng, C., Chowdhury, S.  
2025; 13 (5)
- **Diamond thermal matrix demonstration for two-tier 3D integrated circuits** *APL MATERIALS*  
Malakoutian, M., Lyu, J., Kasperovich, A., Soman, R., Woo, K., Sinha, N., Sena, H., Chowdhury, S.

2025; 13 (4)

- **Integration of 150 nm gate length N-polar GaN MIS-HEMT devices with all-around diamond for device-level cooling** *APPLIED PHYSICS EXPRESS*  
Soman, R., Malakoutian, M., Kim, J., Akso, E., Hatui, N., Wurm, C., Mishra, U., Chowdhury, S.  
2025; 18 (4)
- **A review of GaN RF devices and power amplifiers for 5G communication applications** *FUNDAMENTAL RESEARCH*  
Lu, H., Zhang, M., Yang, L., Hou, B., Martinez, R., Mi, M., Du, J., Deng, L., Wu, M., Chowdhury, S., Ma, X., Hao, Y.  
2025; 5 (1): 315-331
- **A review of GaN RF devices and power amplifiers for 5G communication applications.** *Fundamental research*  
Lu, H., Zhang, M., Yang, L., Hou, B., Martinez, R. P., Mi, M., Du, J., Deng, L., Wu, M., Chowdhury, S., Ma, X., Hao, Y.  
2025; 5 (1): 315-331
- **Robust Pareto Transistor Sizing of GaN HEMTs for Millimeter-Wave Applications** *IEEE ACCESS*  
Martinez, R., Boyd, S., Chowdhury, S.  
2025; 13: 34105-34114
- **The evolving experience of academic women in engineering.** *Communications engineering*  
Chowdhury, S., Woo, K., Sinha, N.  
2024; 3 (1): 113
- **Lossless Phonon Transition Through GaN-Diamond and Si-Diamond Interfaces** *ADVANCED ELECTRONIC MATERIALS*  
Malakoutian, M., Woo, K., Rich, D., Mandia, R., Zheng, X., Kasperovich, A., Saraswat, D., Soman, R., Jo, Y., Pfeifer, T., Hwang, T., Aller, H., Kim, et al  
2024
- **Probing the Thermal and Electrical Properties of Ultrawide Bandgap Nitrogen-Polar AlGaIn Heterostructures** *ADVANCED FUNCTIONAL MATERIALS*  
Noshin, M., Kwon, H., Khan, A., Alaei, S. P., Meng, C., Asheghi, M., Suzuki, Y., Salahuddin, S., Goodson, K., Chowdhury, S.  
2024
- **Simultaneous drive-in of Mg and disassociation of Mg-H complex in Ga<sub>2</sub>O<sub>3</sub> by oxygen annealing achieving remarkable current blocking** *APPLIED PHYSICS LETTERS*  
Zeng, K., Bian, Z., Sinha, N., Chowdhury, S.  
2024; 124 (21)
- **Control of Schottky barrier height in diamond using UV-generated ozone and its effect on barrier inhomogeneity and temperature dependent properties** *DIAMOND AND RELATED MATERIALS*  
Woo, K., Malakoutian, M., Saraswat, D., Bian, Z., Hardy, A., Muehle, M., Grotjohn, T. A., Chowdhury, S.  
2024; 145
- **From wide to ultrawide-bandgap semiconductors for high power and high frequency electronic devices** *JOURNAL OF PHYSICS-MATERIALS*  
Woo, K., Bian, Z., Noshin, M., Martinez, R., Malakoutian, M., Shankar, B., Chowdhury, S.  
2024; 7 (2)
- **10 MHz-Switching on GaN Trench CAVET up to 300°C Operation Enabled by High Channel Mobility** *IEEE ELECTRON DEVICE LETTERS*  
Wen, X., Shankar, B., Lee, K., Kasai, H., Noshin, M., Chun, J., Nakazato, Y., Chowdhury, S.  
2024; 45 (4): 653-656
- **Assessment and Comparison of Measurement-Based Large-Signal FET Models for GaN HEMTs** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*  
Martinez, R., Iwamoto, M., Xu, J., Gillease, C., Cochran, S., Culver, M., Cognata, A., Wagner, N. S., Pahl, P., Chowdhury, S.  
2024
- **Compact Model Parameter Extraction via Derivative-Free Optimization** *IEEE ACCESS*  
Martinez, R., Iwamoto, M., Woo, K., Bian, Z., Tinti, R., Boyd, S., Chowdhury, S.  
2024; 12: 123224-123235

- **Efficient Ultra-Dense 3D IC Power Delivery and Cooling Using 3D Thermal Scaffolding**  
Rich, D., Srimani, T., Malakoutian, M., Chowdhury, S., Mitra, S., ACM  
ASSOC COMPUTING MACHINERY.2024
- **Cooling future system-on-chips with diamond inter-tiers** *CELL REPORTS PHYSICAL SCIENCE*  
Malakoutian, M., Kasperovich, A., Rich, D., Woo, K., Perez, C., Soman, R., Saraswat, D., Kim, J., Noshin, M., Chen, M., Vaziri, S., Bao, X., Shih, et al  
2023; 4 (12)
- **A systematic study on the efficacy of low-temperature GaN regrown on  $\alpha$ -GaN to suppress Mg out-diffusion** *FRONTIERS IN MATERIALS*  
Lee, K., Wen, X., Nakazato, Y., Chun, J., Noshin, M., Meng, C., Chowdhury, S.  
2023; 10
- **Development of 300-400 °C grown diamond for semiconductor devices thermal management** *MRS ADVANCES*  
Malakoutian, M., Soman, R., Woo, K., Chowdhury, S.  
2023
- **Growth and mobility characterization of N-polar AlGaIn channel high electron mobility transistors** *APPLIED PHYSICS LETTERS*  
Noshin, M., Wen, X., Soman, R., Xu, X., Chowdhury, S.  
2023; 123 (6)
- **Overview of Wide/Ultrawide Bandgap Power Semiconductor Devices for Distributed Energy Resources** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*  
Mazumder, S. K., Voss, L. F., Dowling, K. M., Conway, A., Hall, D., Kaplar, R. J., Pickrell, G. W., Flicker, J., Binder, A. T., Chowdhury, S., Veliadis, V., Luo, F., Khalil, et al  
2023; 11 (4): 3957-3982
- **Demonstration of N-Polar AlGaIn High Electron Mobility Transistors With 375 mA/mm Drive Current** *IEEE ELECTRON DEVICE LETTERS*  
Noshin, M., Soman, R., Chowdhury, S.  
2023; 44 (7): 1072-1075
- **Scaling Study on High-Current Density Low-Dispersion GaN Vertical FinFETs** *IEEE ELECTRON DEVICE LETTERS*  
Jeong, S., Lee, K., Chun, J., Soman, R., Chowdhury, S.  
2023; 44 (5): 841-844
- **High Current Density Trench CAVET on Bulk GaN Substrates with Low-Temperature GaN Suppressing Mg Diffusion** *CRYSTALS*  
Wen, X., Lee, K., Nakazato, Y., Chun, J., Chowdhury, S.  
2023; 13 (4)
- **Linearity Performance of Derivative Superposition in GaN HEMTs: A Device-to-Circuit Perspective** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Martinez, R., Munzer, D. J., Shankar, B., Murmann, B., Chowdhury, S.  
2023
- **Benchmarking Measurement-Based Large-Signal FET Models for GaN HEMT Devices**  
Martinez, R., Iwamoto, M., Xu, J., Pahl, P., Chowdhury, S., IEEE  
IEEE.2023: 69-72
- **On extracting the maximum power density at high frequencies from Gallium Nitride and related materials**  
Malakoutian, M., Chowdhury, S., IEEE  
IEEE.2023: 128-131
- **Electric field mapping of wide-bandgap semiconductor devices at a submicrometer resolution**  
Cao, Y., Pomeroy, J. W., Wang, J., Fay, P., Shankar, B., Chowdhury, S., Kuball, M.  
edited by Fujioka, H., Morkoc, H., Schwarz, U. T.  
SPIE-INT SOC OPTICAL ENGINEERING.2023
- **Thermal Scaffolding for Ultra-Dense 3D Integrated Circuits**  
Rich, D., Kasperovich, A., Malakoutian, M., Radway, R. M., Hagiwara, S., Yoshikawa, T., Chowdhury, S., Mitra, S., IEEE  
IEEE.2023

- **On the Scope of GaN-Based Avalanche Photodiodes for Various Ultraviolet-Based Applications** *FRONTIERS IN MATERIALS*  
Ji, D., Chowdhury, S.  
2022; 9
- **A discussion on various experimental methods of impact ionization coefficient measurement in GaN** *AIP ADVANCES*  
Ji, D., Zeng, K., Bian, Z., Shankar, B., Gunning, B. P., Binder, A., Dickerson, J. R., Aktas, O., Anderson, T. J., Kaplar, R. J., Chowdhury, S.  
2022; 12 (3)
- **A di/dt Triggered Self-Powered Unidirectional DC Circuit Breaker for both GaN and SiC platform for 400 V DC Applications**  
Shankar, B., Martinez, R., Zuk, P., Chowdhury, S., IEEE  
IEEE.2022
- **Record-Low Thermal Boundary Resistance between Diamond and GaN-on-SiC for Enabling Radiofrequency Device Cooling.** *ACS applied materials & interfaces*  
Malakoutian, M., Field, D. E., Hines, N. J., Pasayat, S., Graham, S., Kuball, M., Chowdhury, S.  
2021
- **Demonstration of Monolithic Polycrystalline Diamond-GaN Complementary FET Technology for High-Temperature Applications** *ACS APPLIED ELECTRONIC MATERIALS*  
Ren, C., Malakoutian, M., Li, S., Ercan, B., Chowdhury, S.  
2021; 3 (10): 4418-4423
- **A perspective on the electro-thermal co-design of ultra-wide bandgap lateral devices** *APPLIED PHYSICS LETTERS*  
Choi, S., Graham, S., Chowdhury, S., Heller, E. R., Tadjer, M. J., Moreno, G., Narumanchi, S.  
2021; 119 (17)
- **Oxidation Behavior of InAlN during Rapid Thermal Annealing** *PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE*  
Thron, A. M., Gao, J., Ercan, B., Laurent, M. A., Chowdhury, S., van Benthem, K.  
2021
- **Diamond-Incorporated Flip-Chip Integration for Thermal Management of GaN and Ultra-Wide Bandgap RF Power Amplifiers** *IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY*  
Shoemaker, D., Malakoutian, M., Chatterjee, B., Song, Y., Kim, S., Foley, B. M., Graham, S., Nordquist, C. D., Chowdhury, S., Choi, S.  
2021; 11 (8): 1177-1186
- **Vertical GaN Power Devices: Device Principles and Fabrication Technologies-Part I** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Fu, H., Fu, K., Chowdhury, S., Palacios, T., Zhao, Y.  
2021; 68 (7): 3200-3211
- **Vertical GaN Power Devices: Device Principles and Fabrication Technologies-Part II** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Fu, H., Fu, K., Chowdhury, S., Palacios, T., Zhao, Y.  
2021; 68 (7): 3212-3222
- **Development of Polycrystalline Diamond Compatible with the Latest N-Polar GaN mm-Wave Technology** *CRYSTAL GROWTH & DESIGN*  
Malakoutian, M., Ren, C., Woo, K., Li, H., Chowdhury, S.  
2021; 21 (5): 2624-2632
- **Polycrystalline diamond growth on beta-Ga2O3 for thermal management** *APPLIED PHYSICS EXPRESS*  
Malakoutian, M., Song, Y., Yuan, C., Ren, C., Lundh, J., Lavelle, R. M., Brown, J. E., Snyder, D. W., Graham, S., Choi, S., Chowdhury, S.  
2021; 14 (5)
- **Electro-Thermal Investigation of GaN Vertical Trench MOSFETs** *IEEE ELECTRON DEVICE LETTERS*  
Chatterjee, B., Ji, D., Agarwal, A., Chan, S. H., Chowdhury, S., Choi, S.  
2021; 42 (5): 723-726
- **Study on Avalanche Uniformity in 1.2KV GaN Vertical PIN Diode with Bevel Edge-Termination**  
Zeng, K., Chowdhury, S., Gunning, B., Kaplar, R., Anderson, T., IEEE  
IEEE.2021
- **On impact ionization and avalanche in gallium nitride** *APPLIED PHYSICS LETTERS*

- Ji, D., Chowdhury, S.  
2020; 117 (25)
- **Designing Beveled Edge Termination in GaN Vertical p-i-n Diode-Bevel Angle, Doping, and Passivation** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Zeng, K., Chowdhury, S.  
2020; 67 (6): 2457–62
  - **60 A/W high voltage GaN avalanche photodiode demonstrating robust avalanche and high gain up to 525K** *APPLIED PHYSICS LETTERS*  
Ji, D., Ercan, B., Benson, G., Newaz, A. M., Chowdhury, S.  
2020; 116 (21)
  - **Design and Fabrication of Ion-Implanted Moat Etch Termination Resulting in 0.7 m<sup>2</sup>/1500 V GaN Diodes** *IEEE ELECTRON DEVICE LETTERS*  
Ji, D., Li, S., Ercan, B., Ren, C., Chowdhury, S.  
2020; 41 (2): 264–67
  - **Experimental Determination of Velocity-Field Characteristic of Holes in GaN** *IEEE ELECTRON DEVICE LETTERS*  
Ji, D., Ercan, B., Chowdhury, S.  
2020; 41 (1): 23–25
  - **Hydrogen-terminated diamond FET and GaN HEMT delivering CMOS inverter operation at high-temperature**  
Ren, C., Malakoutian, M., Li, S., Chowdhury, S., IEEE  
IEEE.2020
  - **Robust avalanche in GaN leading to record performance in avalanche photodiode**  
Ji, D., Ercan, B., Benson, G., Newaz, A. M., Chowdhury, S., IEEE  
IEEE.2020
  - **Demonstration of GaN Impact Ionization Avalanche Transit-Time (IMPATT) Diode**  
Ji, D., Ercan, B., Zhuang, J., Gu, L., Rivas-Davila, J., Chowdhury, S., IEEE  
IEEE.2020
  - **A Study on the First-Derivative Output Properties of GaN Static Induction Transistor with Submicrometer Fin Width** *PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS*  
Chun, J., Li, S., Malakoutian, M., Ji, D., Chowdhury, S.  
2019
  - **A Study on the Growth Window of Polycrystalline Diamond on Si<sub>3</sub>N<sub>4</sub>-coated N-Polar GaN** *CRYSTALS*  
Malakoutian, M., Laurent, M. A., Chowdhury, S.  
2019; 9 (10)
  - **Experimental determination of impact ionization coefficients of electrons and holes in gallium nitride using homojunction structures** *APPLIED PHYSICS LETTERS*  
Ji, D., Ercan, B., Chowdhury, S.  
2019; 115 (7)
  - **A Demonstration of Nitrogen Polar Gallium Nitride Current Aperture Vertical Electron Transistor** *IEEE ELECTRON DEVICE LETTERS*  
Rajabi, S., Mandal, S., Ercan, B., Li, H., Laurent, M. A., Keller, S., Chowdhury, S.  
2019; 40 (6): 885–88
  - **Gate Stability and Robustness of In-Situ Oxide GaN Interlayer Based Vertical Trench MOSFETs (OG-FETs)**  
Ruzzarin, M., Borga, M., Zaroni, E., Meneghini, M., Meneghesso, G., Ji, D., Li, W., Chan, S. H., Agarwal, A., Gupta, C., Keller, S., Mishra, U. K., Chowdhury, et al  
IEEE.2019
  - **Experimental Determination of Hole Impact Ionization Coefficient and Saturation Velocity in GaN**  
Ji, D., Ercan, B., Chowdhury, S., IEEE  
IEEE.2019
  - **Processing of GaN vertical devices: Static Induction Transistors**

Chowdhury, S., Chun, J., IEEE  
IEEE.2019

- **Structural and chemical transitions in diamond/dielectric/ Si heterostructures** *ACTA MATERIALIA*  
Mandia, R., Malakoutian, M., Woo, K., Roldan, M. A., Chowdhury, S., Smith, D. J.  
2025; 292
- **A Hybrid Physical ASM-HEMT Model Using a Neural Network-Based Methodology**  
Martinez, R., Iwamoto, M., Morgado, A., Li, Y., Tinti, R., Xu, J., Gillease, C., Cochran, S., Shankar, B., Schmidt, E., Song, Z., Wagner, N., Pahl, et al  
IEEE.2024: 38-41
- **Compound Semiconductors** *PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE*  
Xing, G., Mi, Z., Chowdhury, S.  
2023; 220 (8)
- **Impact of Diamond Passivation on  $f(T)$  and  $f(max)$  of mm-wave N-Polar GaN HEMTs** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Zhou, X., Malakoutian, M., Soman, R., Bian, Z., Martinez, R., Chowdhury, S.  
2022
- **Low Thermal Budget Growth of Near-Isotropic Diamond Grains for Heat Spreading in Semiconductor Devices** *ADVANCED FUNCTIONAL MATERIALS*  
Malakoutian, M., Zheng, X., Woo, K., Soman, R., Kasperovich, A., Pomeroy, J., Kuball, M., Chowdhury, S.  
2022
- **Nanoporous GaN on p-type GaN: A Mg out-diffusion compensation layer for heavily Mg-doped p-type GaN.** *Nanotechnology*  
Lee, K. J., Nakazato, Y., Chun, J., Wen, X., Meng, C., Soman, R., Noshin, M., Chowdhury, S.  
2022
- **Vertical Ga<sub>2</sub>O<sub>3</sub> MOSFET With Magnesium Diffused Current Blocking Layer** *IEEE ELECTRON DEVICE LETTERS*  
Zeng, K., Soman, R., Bian, Z., Jeong, S., Chowdhury, S.  
2022; 43 (9): 1527-1530
- **A study on MOCVD growth window for high quality N-polar GaN for vertical device applications** *SEMICONDUCTOR SCIENCE AND TECHNOLOGY*  
Soman, R., Noshin, M., Chowdhury, S.  
2022; 37 (9)
- **A Study on the Impact of Dislocation Density on Leakage Current in Vertical GaN-on-GaN p-n Diodes** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Li, S., Ercan, B., Ren, C., Ikeda, H., Chowdhury, S.  
2022
- **A systematic study of the regrown interface impurities in unintentionally doped Ga-polar c-plane GaN and methods to reduce the same** *SEMICONDUCTOR SCIENCE AND TECHNOLOGY*  
Noshin, M., Soman, R., Xu, X., Chowdhury, S.  
2022; 37 (7)
- **Current Transient Spectroscopic Study of Vacancy Complexes in Diamond Schottky p-i-n Diode** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Chaudhuri, S. K., Malakoutian, M., Kleppinger, J. W., Dutta, M., Koeck, F. A., Nemanich, R. J., Chowdhury, S., Mandal, K. C.  
2022
- **2.8 kV Avalanche in Vertical GaN PN Diode Utilizing Field Plate on Hydrogen Passivated P-Layer** *IEEE ELECTRON DEVICE LETTERS*  
Bian, Z., Zeng, K., Chowdhury, S.  
2022; 43 (4): 596-599
- **A study on sub-bandgap photoexcitation in nitrogen- and boron-doped diamond with interdigitated device structure** *APPLIED PHYSICS LETTERS*  
Woo, K., Malakoutian, M., Reeves, B. A., Chowdhury, S.  
2022; 120 (11)

- **Study of Avalanche Behavior in 3 kV GaN Vertical P-N Diode Under UIS Stress for Edge-termination Optimization**  
Shankar, B., Bian, Z., Zeng, K., Meng, C., Martinez, R., Chowdhury, S., Gunning, B., Flicker, J., Binder, A., Dickerson, J., Kaplar, R., IEEE  
IEEE.2022
- **Study of Avalanche Behavior in 3 kV GaN Vertical P-N Diode under UIS Stress for Edge-termination Optimization**  
Shankar, B., Bian, Z., Zeng, K., Meng, C., Martinez, R., Chowdhury, S., Gunning, B., Flicker, J., Binder, A., Dickerson, J., Kaplar, R., IEEE  
IEEE.2022
- **Diamond Integration on GaN for Channel Temperature Reduction**  
Malakoutian, M., Xu, R., Ren, C., Pasayat, S., Sayed, I., Pop, E., Chowdhury, S., IEEE  
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