CURRICULUM VITAE

Saptarshi Das, Ph.D.

**Contact**

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**Academic Appointments**

|  |  |
| --- | --- |
| 2021 - Present | Associate Professor  Department of Engineering Science and Mechanics  Department of Materials Science and Engineering (by Courtesy)  Department of Electrical Engineering and Computer Science (by Courtesy)  Material Research Institute  Pennsylvania State University, USA |
| 2016 - 2021 | Assistant Professor  Department of Engineering Science and Mechanics  Material Research Institute  Pennsylvania State University, USA |
| 2015 - 2016 | Assistant Scientist  Nanoscience and Technology Division  Center for Nanoscale Materials (CNM)  Argonne National Laboratory, USA |
| 2013 - 2105 | Postdoctoral Scientist  Center for Nanoscale Materials (CNM)  Argonne National Laboratory, USA |

**Education**

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| PhD, 2013 | Electrical and Computer Engineering  Purdue University, USA |
| BE, 2007 | Electronic and Telecommunication Engineering  Jadavpur University, India |

**Awards and Honors**

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| 2022 | Outstanding Research Award - Penn State Engineering Alumni Society (PSEAS) |
| 2021 | Early CAREER Award - National Science Foundation (NSF) |
| 2021 | Outstanding Teaching Award - Penn State Engineering Alumni Society (PSEAS) |
| 2020 | Rustum And Della Roy Innovation In Materials Research Award |
| 2016 | Young Investigator Program (YIP) Award – Air Force Office of Scientific Research (AFOSR) |
| 2011 | Ph.D. Fellowship – International Business Machine (IBM) |

**Publications and Scholarly Work**

[Google Scholar](https://scholar.google.com/citations?user=oj0d2ywAAAAJ&hl=en) 09/2023

Citation =13004; h-index: 42;

1 TEDxPSU Talk (<https://www.youtube.com/watch?v=j-Ld1WPdKgY>)

1 Research Video (<https://www.youtube.com/watch?v=tvmZSGVk0ts&t=4s>)

5 PhDs Graduated

14 PhDs Being Supervised

6 MS Graduated

1 Book

1 Book Chapter

11 US Patents (Granted and Applied)

98 Journal Publications

28 Conference Presentations

12 Keynote/Plenary Talk

37 Invited Talks

66 Seminars/Workshops across Universities, National Labs, and Industries

8 Workshop/Symposium Organizers & Session Chairs

**Teaching**

ESC 597: Research Practices (F21)

ESC 597: Low Dimensional Nanoelectronics (F16, F17)

ESC 503: Low Dimensional Nanoelectronics (F18, F19, F20, F21)

ESC 313: Introduction to Principles, Fabrication Methods, and Applications of Nanotechnology (S17)

ESC 433: Research Experience for Undergraduates (F17, F18, F19)

ESC 419: Electronic Properties and Applications of Materials (S18, S19, S20, S21, S22, S23)

**Grants and Contracts Awarded**

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| *Energy-efficient hardware acceleration of stochastic computing for solving optimization*  *problems and implementing probabilistic neural networks*  Principal Investigator (PI)  Army Research Office (ARO)  $900,000  July 7, 2023 – July 6, 2026 |
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| *Add-On for Project: YIP Reconfigurable Artificial Synapses based on Two-Dimensional Materials for Neuromorphic Electronics*  Principal Investigator (PI)  University of Southern California (Subcontract) – Primary – Army Research Office (ARO)  $425,000  November 1, 2022 - October 31, 2024 |
| *Fabrication of Graphene Memristive Cross-bar Arrays*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $35,000  January 1, 2023 - September 30, 2023  *Two-dimensional memtransistor-based Chemisensor*  Principal Investigator (PI)  National Aeronautics and Space Administration (NASA)  $45,000  October 1, 2022 - September 30, 2023 |
| *Fabrication, Characterization, and Exploration of Nanomaterial-based Neuromorphic Hardware*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $34,000  January 1, 2022 - May 31, 2022 |
| *CAREER: Two-Dimensional Straintronic Field Effect Transistor*  Principal Investigator (PI)  National Science Foundation (NSF)  $500,000  March 1, 2021 - February 28, 2026 |
| *Energy Frontier Research Center (EFRC): Center for 3D Ferroelectric Microelectronics*  Co-Principal Investigator (Co-PI)  U.S. Department of Energy (DOE)  $10,000,000  August 1, 2020 - July 31, 2024 |
| *DTRA Interaction of Ionizing Radiation with Matter University Research Alliance (IIRM-URA)*  Co-Principal Investigator (Co-PI)  Defense Threat Reduction Agency (DTRA)  $54,000,000  August 1, 2020 - July 31, 2025 |
| *Gaussian Synapses for Probabilistic Neural Network*  Principal Investigator (PI)  Army Research Office (ARO)  $690,000  October 1, 2019 - September 30, 2022 |
| *Low Power Compact Non-Volatile Memory and In-Memory Compute Architectures enabled by 2D Piezoelectric Transistors*  Principal Investigator (PI)  Army Research Office (ARO) – Subcontract through Purdue University  $450,000  October 1, 2019 - September 30, 2022 |
| *Benchmarking Electronic, Sensing and Statistical Properties of 2D Films*  Principal Investigator (PI)  ATOMIC IUCRC  $120,000  July 15, 2018 - July 14, 2021  *Energy Efficient Computing from Devices to Architecture (E2CDA): Type II: 2D Electrostrictive FETs for Ultra-Low Power Circuits and Architectures*  Principal Investigator (PI)  National Science Foundation (NSF)  $400,000  October 1, 2016 - September 30, 2020  *Scalable Synthesis and Doping of 2D Semiconductors*  Co-Principal Investigator (Co-PI)  Semiconductor Research Consortium (SRC)  $415,000  June 1, 2017 - August 31, 2020  *Young Investigator Program (YIP): Investigation of Scalability and Reliability of Contacts to Two Dimensional Layered Semiconductors.*  Principal Investigator (PI)  Air Force Office of Scientific Research (AFOSR)  $360,000  February 1, 2017 – July 31, 2020  *Cleanroom Fabrication of Patterned Analog Nanomaterial Device*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $31,500  April 1, 2020 - July 31, 2020  *Graphene/2D materials growth and properties on Corning substrates*  Co – Principal Investigator (Co-PI)  Corning Incorporation  $260,000  June 1, 2016 - December 31, 2019  *Energy Efficient Computing from Devices to Architecture (E2CDA): Type II: 2D Electrostrictive FETs for Ultra-Low Power Circuits and Architectures*  Principal Investigator (PI)  Semiconductor Research Consortium (SRC)  $200,000  October 1, 2016 - September 30, 2019 |
| *Cleanroom Fabrication of Patterned Graphene Quantum Dot Devices*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $31,500.00  April 1, 2019 - July 19, 2019 |
| *Cleanroom Fabrication of Top-Gated Flexible Nanomaterial Devices*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $27,000.00  August 15, 2018 - June 30, 2019 |
| *Electroluminescent Cells Switched by Interdigitate Electrode*  Principal Investigator (PI)  PPG Industries  $50,000  November 6, 2017 - July 31, 2018 |
| *Cleanroom Fabrication of Graphene Devices*  Principal Investigator (PI)  Space and Naval Warfare Systems Command (SPAWAR)  $29,464.00  March 20, 2018 - May 4, 2018 |
| *Short Term Innovative Research (STIR): Excitonic Devices based on 2D Heterostructures for Room Temperature Superconductivity.*  Principal Investigator (PI)  Army Research Office (ARO)  $60,000  July 1, 2017 - March 31, 2018 |
| *Laboratory Directed Research and Development (LDRD): Top Down Fabrication of Large Area Monolayers of 2D Materials*  Principal Investigator (PI)  Argonne National Laboratory  $396,000  October 1, 2015 - September 30, 2017 |
| *Seed Grant: Flexible 2D - Tunneling Field Effect Transistor*  Principal Investigator (PI)  Army Research Laboratory (ARL)  $30,000  October 1, 2014 - September 30, 2015 |
| *Seed Grant: Bandgap Engineered Field Effect Transistor*  Principal Investigator (PI)  Army Research Laboratory (ARL)  $20,000 |

**Book and Book Chapters**

2. 2D Materials for Electronics, Sensors, and Devices; September 14, 2022, ELSEVIER ISBN: 9780128215050

1. 2D Materials for Nanoelectronics; April 5, 2016, CRC Press/Taylor & Francis Group ISBN 9781498704175

**Patents**

11. Monolithic Stochastic Computing Architecture for Energy Efficient Electronics. **S. Das,** S. Das.

*Patent Application Filed*

10. Ultra-steep Slope and High-performance Strain Effect Transistor. **S. Das,** S. Das.

*Patent Application Filed*

9. Stochastic Resonance based Sensors. **S. Das,** A. Dodda, A. Oberoi.

*Patent Application Filed*

8. An Ultra-low Power Biomimetic Collision Detector. **S. Das,** D. Jayachandran, A. Oberoi

*Patent Application Filed*

7. Gaussian Synapses for Probabilistic Neural Networks, **S. Das,** A. Sebastian.

***US Patent 11,636,324***

6. A Biomimetic 2D Transistor for Audiomorphic Computing, **S. Das,** A. Dodda, S. Das.

***US Patent 11,621,355***

5. Physically unclonable function using materials and devices. **S. Das,** A. Dodda

***US Patent 11,507,703***

4. Two Dimensional Electrostrictive Field Effect Transistor (2D-EFET), **S. Das**.

***US Patent 10,964,824***

3. Methods for Top-Down Fabrication of Wafer Scale TMDC, **S. Das,** M. K. Bera, M. R. Antonio and A. K. Roelofs.

***US Patent 9,809,903.***

2. All 2D, High Mobility, Flexible, Transparent Thin Film Transistor”, **S. Das,** A. V. Sumant and A. K. Roelofs.

***US Patent 9,548,394.***

1. Organic Ferroelectric Material Based Random Access Memory”, J. Appenzeller and **S. Das.**

***US Patent 9,190,135.***

**Journal Publications**

**2023**

98. Zhu, H., Nayir, N., Choudhury, T., Bansal, A., Huet, B., Zhang, K., Puretzky, A., Bachu, S., York, K., Mc Knight, T., Trainor, N., Oberoi, A., Wang, K., **Das, S.**, Makin, R., Durbin, S., Huang, S., Alem, N., Crespi, V., Van Duin, A., Step engineering for nucleation and domain orientation control in WSe2 epitaxy on c-plane sapphire. ***Nature Nanotechnology*** (accepted).

97. Ghosh, S., Zheng, Y., Subbulakshmi Radhakrishnan, S., Schranghamer, T. F., **Das, S**. A Graphene-Based Straintronic Physically Unclonable Function. ***Nano Letters***, 23 (11), 5171–5179, (2023).

96. Schranghamer, T. F., Sakib, N., Sadaf, M., Subbulakshmi Radhakrishnan, S., Pendurthi, R., Agyapong, A. D., Stepanoff, S. P., Torsi, R., Chen, C., Redwing, J. M., Robinson, J. A., Wolfe, D. F., Mohney, S. E., **Das, S**. Ultra-scaled Contacts to Monolayer MoS2 Field Effect Transistors. ***Nano letters***, 23 (8), 3426-3434, (2023).

95. Zheng, Y., Sen, D., Das, S., & **Das, S**. Graphene Strain-Effect Transistor with Colossal ON/OFF Current Ratio Enabled by Reversible Nanocrack Formation in Metal Electrodes on Piezoelectric Substrates. ***Nano Letters***, 23 (7), 2536-2543, (2023).

94. Wali, A., & **Das, S**. Hardware and Information Security Primitives Based on Two‐Dimensional Materials and Devices. ***Advanced Materials***, 35 (18), 2205365, (2023).

93. Jayachandran, D., Pannone, A., Das, M., Schranghamer, T. F., Sen, D., & **Das, S**. Insect-Inspired, Spike-Based, in-Sensor, and Night-Time Collision Detector Based on Atomically Thin and Light-Sensitive Memtransistors. ***ACS Nano***, 17, 2, 1068–1080, (2023).

92. Ravichandran, H., Zheng, Y., Schranghamer, T. F., Trainor, N., Redwing, J. M., & **Das, S**. A Monolithic Stochastic Computing Architecture for Energy Efficient Arithmetic. ***Advanced Materials***, 35 (2), 2206168, (2023).

**2022**

91. Das, S., & **Das, S**. An Ultra-steep Slope Two-dimensional Strain Effect Transistor. ***Nano Letters***, 22 (23), 9252-9259, (2022).

90. Dodda, A., Jayachandran, D., Pannone, A., Trainor, N., Stepanoff, S. P., Steves, M. A., Subbulakhshmi Radhakrishnan, S., Bachu, S., Ordonez, C. W., Shallenberger, J. R., Redwing, J. M., Knappenberger, K., Wolfe, D. E., & **Das, S**. Active pixel sensor matrix based on monolayer MoS2 phototransistor array. ***Nature Materials***, 21, 1379–1387, (2022). (**Cover Article**)

89. Dodda, A., Jayachandran, D., Pannone, A., Subbulakhshmi Radhakrishnan, S., Trainor, N., Redwing, J. M., & **Das, S**. A Bio-inspired and Low-power 2D Machine Vision with Adaptive Machine Learning and Forgetting. ***ACS Nano***, 16, 12, 20010–20020, (2022).

88. Subbulakshmi Radhakrishnan, S., Dodda, A., & **Das, S**. An All-in-One Bio-inspired Neural Network. ***ACS Nano***, 16, 12, 20100–20115, (2022).

87. Chakrabarti, S., Wali, A., Ravichandran, H., Kundu, S., Schranghamer, T. F., Basu, K., & **Das, S**. Logic Locking of Integrated Circuits Enabled by Nanoscale MoS2-Based Memtransistors. ***ACS Applied Nano Materials***, 5, 10, 14447-14455.

86. Sebastian, A., Pendurthi, R., Kozhakhmetov, A., Trainor, N., Robinson, J. A., Redwing, J. M., & **Das, S.** Two-dimensional materials-based probabilistic synapses and reconfigurable neurons for measuring inference uncertainty using Bayesian neural networks. ***Nature Communications***, 13, 6139, (2022).

85. Zheng, Y., Ravichandran, H., Schranghamer, T. F., Trainor, N., Redwing, J. M., & **Das, S.** Hardware implementation of Bayesian network based on two-dimensional memtransistors. ***Nature communications***, 13, 5578, (2022).

84. Lei, Y., Zhang, T., Lin, Y. C., Granzier-Nakajima, T., Bepete, G., Kowalczyk, D. A., Lin, Z., Zhou, D., Schranghamer, T. F., Dodda, A., Sebastian, A., Chen, Y., Liu, Y., Pourtois, G., Kempa, T. J., Schuler, B., Edmonds, M. T., Quek, S. Y., Wurstbauer, U., Wu, S. M., Glavin, N. R., **Das, S.**, Dash, S. P., Redwing, J. M., Robinson, J. A., & Terrones, M. (2022). Graphene and Beyond: Recent Advances in Two-Dimensional Materials Synthesis, Properties, and Devices. ***ACS Nanoscience Au***, 2, 6, 450–485 (2022).

83. Das, S., & **Das, S.** Digital Keying Enabled by Reconfigurable Two‐dimensional Modulators. ***Advanced Materials***, 34 (43), 2203753, (2022).

82. Pendurthi, R., Jayachandran, D., Kozhakhmetov, A., Trainor, N., Robinson, J. A., Redwing, J. M., & **Das, S.** Heterogeneous integration of atomically thin semiconductors for non‐von Neumann CMOS. ***Small****,* 18(33), 2202590, (2022).

81. Dodda, A., Trainor, N., Redwing, J., & **Das, S.** All-in-one, bio-inspired, and low-power crypto engines for near-sensor security based on two-dimensional memtransistors. ***Nature Communications***, 13, 3587, (2022).

80. Austin, D., Miesle, P., Sessions, D., Motala, M., Moore, D. C., Beyer, G., Miesle, A., Sarangan, A., Sebastian, A., **Das, S.**, Puthirath, A. B., Zhang, X., Hachtel, J., Ajayan, P. M., Back, T., Stevenson, P. R., Brothers, M., Kim, S. S., Buskohl, P., Rao, R., Muratore, C., & Glavin, N. R. High Throughput Data-Driven Design of Laser-Crystallized 2D MoS2 Chemical Sensors: A Demonstration for NO2 Detection. ***ACS Applied Nano Materials***, 5, 5, 7549–7561.

79. Subbulakshmi Radhakrishnan, S., Chakrabarti, S., Sen, D., Das, M., Schranghamer, T., Sebastian, A., & **Das. S.** A Sparse and Spike-timing-based Adaptive Photo Encoder for Augmenting Machine Vision for Spiking Neural Networks. ***Advanced Materials***, 34, 48, 2202535, (2022).

78. Rai, S., Singh, V. K., Pendurthi, R., Nasr, J. R., **Das, S.**, & Srivastava, A. Unveiling the electrical and photo-physical properties of intrinsic n-type 2D WSe2 for high performance field-effect transistors. ***Journal of Applied Physics***, 131(9), 094301, (2022).

77. Sebastian, A., Das, S. & **Das, S**. An Annealing Accelerator for Ising Spin Systems Based on In-Memory Complementary 2D FETs. ***Advanced Materials***, 34 (4), 2107076, (2022).

76. **Das, S.** & Elias, A. L. Leaving defects out of 2D molybdenum disulfide. ***Nature Electronics***, 5 (1), 19-20, (2022).

**2021**

75. Oberoi, A., Dodda, A., Liu, H., Terrones, M., & **Das, S**. Secure Electronics Enabled by Atomically Thin and Photosensitive Two-Dimensional Memtransistors. ***ACS Nano***, 15, 12, 19815–19827, (2021).

74. **Das, S**, Sebastian, A., Pop, E., McClellan, C. J., Franklin, A. D., Grasser, T., Knobloch, T., Illarionov, Y., Penumatcha, A. V., Appenzeller, J., Chen, Z., Zhu, W., Asselberghs, I., Li, L., Avci, U. E., Bhat, N., Anthopoulos, T. D., & Singh, R. Transistors based on two-dimensional materials for future integrated circuits. ***Nature Electronics***, 4 (11), 786-799, (2021).

73. Wali, A., Ravichandran, H., & **Das, S**. A Machine Learning Attack Resilient True Random Number Generator Based on Stochastic Programming of Atomically Thin Transistors. ***ACS Nano***, 15 (11), 17804–17812, (2021).

72. Dodda, A., & **Das, S**. Demonstration of Stochastic Resonance, Population Coding, and Population Voting Using Artificial MoS2 Based Synapses. ***ACS Nano***, 15 (10), 16172–16182, (2021).

71. Kozhakhmetov,A., Stolz, S., Tan, A. M. Z., Pendurthi, R., Bachu, S., Turker, F., Alem, N., Kachian, J., **Das, S.**, Hennig, R. G., Gröning, O., Schuler, B., & Robinson, J. A. Controllable p‐Type Doping of 2D WSe2 via Vanadium Substitution. ***Advanced Functional Materials***, 31 (42), 2105252, (2021).

70. Schranghamer, T. F., Sharma, M., Singh, R., & **Das, S**. Review and comparison of layer transfer methods for two-dimensional materials for emerging applications. ***Chemical Society Reviews***, 50, 11032-11054, (2021).

69. Dodda, A., Subbulakshmi Radhakrishnan, S., Schranghamer, T. F., Buzzell, D., Sengupta, P., & **Das, S**. Graphene-based physically unclonable functions that are reconfigurable and resilient to machine learning attacks. ***Nature Electronics***, 4 (5), 364-374, (2021).

68. Subbulakshmi Radhakrishnan, S., Sebastian, Oberoi, A., Das, S., & **Das, S.** A biomimetic neural encoder for spiking neural network. ***Nature Communications***, 12 (1), 2143, (2021).

67. A., Sebastian, Pendurthi, R., A., Choudhury, T. H., Redwing, J. M., & **Das, S.** Benchmarking monolayer MoS2 and WS2 field-effect transistors. ***Nature Communications***, 12 (1), 693, (2021).

66. Wali, A., Kundu, S., Arnold, A. J., Zhao, G., Basu, K., & **Das, S**. Satisfiability Attack-Resistant Camouflaged Two-Dimensional Heterostructure Devices. ***ACS Nano***, 15 (2), 3453-3467, (2021).

65. Kozhakhmetov, A., Stolz, S., Tan, A. M. Z., Pendurthi, R., Bachu, S., Turker, F., Alem, N., Kachian, J., **Das, S.**, Hennig, R. G., Gröning, O., Schuler, B., Robinson, J. A. Controllable p‐Type Doping of 2D WSe2 *via* Vanadium Substitution. ***Advanced Functional Materials***, 2105252, (2021).

64. Chubarov, M., Choudhury, T. H., Hickey, D. R., Bachu, S., Zhang, T., Sebastian, A., Bansal, Zhu, H., Trainor, N., **Das, S.**, Terrones, M., Alem, M., & Redwing, J. M. Wafer-Scale Epitaxial Growth of Unidirectional WS2 Monolayers on Sapphire. ***ACS Nano***, 2021, 15, 2, 2532–2541, (2021).

**2020**

63. Liu, H., Grasseschi, D., Dodda, A., Fujisawa, K., Olson, D., Kahn, E., Zhang, F., Zhang, T, Lei, Y., Branco, R. B. N., Elías, A. L., Silva, R. C., Yeh, Y., Maroneze, C. M., Seixas, L., Hopkins, P., **Das, S.**, de Matos, C. J. S., & Terrones, M. Spontaneous chemical functionalization via coordination of Au single atoms on monolayer MoS2. ***Science Advances***, 6 (49), eabc9308, (2020).

62. Kozhakhmetov, A., Schuler, B., Tan, A. M. Z., Cochrane, K. A., Nasr, J. R., El‐Sherif, H., Bansal, A., Vera, A., Bojan, V., Redwing, J. M., Bassim, J., **Das, S.**, Hennig, R. G., Weber‐Bargioni, A., Robinson, J. A. Scalable Substitutional Re‐Doping and its Impact on the Optical and Electronic Properties of Tungsten Diselenide. ***Advanced Materials***, 32 (50), 2005159, (2020).

61. Zhang, F., Zheng, B., Sebastian, A., Olson, D. H., Liu, M., Fujisawa, K., Pham, Y. T. H., Jimenez, V.O., Kalappattil, V., Miao, L., Zhang, T., Pendurthi, R., Lei, Y., Elías, A. L., Wang, Y., Alem, N., Hopkins, P. E., **Das, S.**, Crespi, V. H., Phan, M., & Terrones, M. Monolayer Vanadium‐Doped Tungsten Disulfide: A Room‐Temperature Dilute Magnetic Semiconductor. ***Advanced Science***, 7 (24), 2001174, (2020).

60. Schranghamer, T. F., Oberoi, A., & **Das, S**. Graphene memristive synapses for high precision neuromorphic computing. ***Nature Communications***, 11 (1), 5474, (2020).

59. Nasr, J. R., Simonson, N., Oberoi, A., Horn, M. W., Robinson, J. A., & **Das, S.** Low-Power and Ultra-Thin MoS2 Photodetectors on Glass. ***ACS Nano***, 14 (11), 15440-15449, (2020).

58. Arnold, A. J., Schulman, S. D., & **Das, S.** Thickness Trends of Electron and Hole Conduction and Contact Carrier Injection in Surface Charge Transfer Doped 2D Field Effect Transistors. ***ACS Nano***, 14 (10), 13557-13568, (2020).

57. Jayachandran, D., Oberoi, A., Sebastian, A., Choudhury, T. H., Shankar, B., Redwing, J. M., & **Das, S.** A Low Power Biomimetic Collision Detector Based on In-memory MoS2 Photodetector. ***Nature Electronics***, 3 (10), 646-655, (2020).

56. Dodda, A., Oberoi, A., Sebastian, A., Choudhury, T. H., Redwing, J. M., & **Das, S.** Stochastic resonance in MoS2 photodetector. ***Nature Communications***, 11 (1), 4406 (2020).

55. Thakuria, N., Schulman, D., **Das, S.**, Gupta, S. K. 2-D Strain FET (2D-SFET) Based SRAMs—Part I: Device-Circuit Interactions. ***IEEE Transactions on Electron Devices***, 67 (11), 4866-4874, (2020).

54. Thakuria, N., Schulman, D., **Das, S.**, Gupta, S. K. 2D Strain FET (2D-SFET)-Based SRAMs—Part II: Back Voltage-Enabled Designs. ***IEEE Transactions on Electron Devices***, 67 (11), 4875-4883, (2020).

53. Singh, V. K., Pendurthi, R., Nasr, J. R., Mamgain, H., Tiwari, R. S., **Das, S.**, & Srivastava, A. Study on the Growth Parameters Electrical and Optical Behaviors of 2D Tungsten Disulfide. ***ACS Applied Materials & Interfaces***, 12(14), 16576-16583, (2020) .

52. Ghosh, A., Noble, J., Sebastian, A., **Das, S.**, & Liu, Z. Digital Holography for Non-Invasive Quantitative Imaging of Two-Dimensional materials. ***Journal of Applied Physics***, 127(8), 084901, (2020).

51. Sengupta, P., & **Das, S.** Photon-assisted heat engines in the THz regime. ***Journal of Applied Physics***, 127(2), 024305, (2020).

**2019**

50. Kozhakhmetov, A., Nasr, J. R., Fu, Z., Xu, K., Briggs, N., Addou, R., Wallace, R., Fullerton-Shirey, S. K., Terrones, M. M., **Das, S.**, & Robinson, J. A. (2019). Scalable BEOL compatible 2D tungsten diselenide. ***2D Materials***, 7(1), 015029, (2019).

49. Sebastian, A., Pannone, A., Radhakrishnan, S. S., & **Das, S.** Gaussian synapses for probabilistic neural networks. ***Nature Communications,*** 10(1), 4199, (2019).

48. Das, S., Dodda, A., & **Das, S.** A biomimetic 2D transistor for audiomorphic computing. ***Nature Communications***, 10 (1), 3450, (2019).

47. Alameri, D., Nasr, J. R., Karbach, D., Liu, Y., Divan, R., **Das, S.**, & Kuljanishvili, I. Mask-free patterning and selective CVD-growth of 2D-TMDCs semiconductors. ***Semiconductor Science and Technology***, 34 (8), 085010, (2019).

46. Zhang, F., Lu, Y., Schulman, D. S., Zhang, T., Fujisawa, K., Lin, Z., Lei, Y., Elias, A. L., **Das, S.**, Sinnott, S., & Terrones, H. Carbon doping of WS2 monolayers: Bandgap reduction and p-type doping transport. ***Science Advances***, 5 (5), eaav5003, (2019).

45. Wali, A., Dodda, A., Wu, Y., Pannone, A., Reddy, L. K., Ozdemir, S. K., Ozbolat, I. T., & **Das, S.** Biological physically unclonable function. ***Communications Physics***, 2 (1), 39, (2019).

44. Zhang, X., Zhang, F., Wang, Y., Schulman, D. S. Zhang, T., Bansal, A., Alem, N., **Das, S.**, Crespi, V. H., Terrones, H., & Redwing, J. M. Defect-Controlled Nucleation and Orientation of WSe2 on h-BN: A Route to Single-Crystal Epitaxial Monolayers. ***ACS Nano***, 13 (3), 3341-3352, (2019).

43. Arnold, A. J., Shi, T., Jovanovic, I., & **Das, S.**, Extraordinary Radiation Hardness of Atomically Thin MoS2. ***ACS Applied Materials & Interfaces*,** 11 (8), 8391-8399, (2019).

42. Nasr, J. R., & **Das, S.** Seamless Fabrication and Threshold Engineering in Monolayer MoS2 Dual‐Gated Transistors via Hydrogen Silsesquioxane. ***Advanced Electronic Materials***, 5 (4), 1800888, (2019).

41. Dodda, A., Wali, A., Wu, Y., Pannone, A., Reddy, K. L., Raha, A., Ozdemir, K. S., Ozbolat, T. I., & **Das, S.** Biological One‐Way Functions for Secure Key Generation. ***Advanced Theory and Simulations***, 2 (2), 1800154 (2019).

40. Sebastian, A., Zhang, F., Dodda, A., Rawding, D., Liu, H., Zhang, T., Terrones, M., & **Das, S.** Electrochemical Polishing of Two-Dimensional Materials. ***ACS Nano***, 13 (1), 78–86, (2019).

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**2014**

16. Gulotty, R., **Das, S.**, Liu, Y., & Sumant, A. V. Effect of hydrogen flow during cooling phase to achieve uniform and repeatable growth of bilayer graphene on copper foils over large area. ***Carbon***, 77, 341-350, (2014).

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**2013**

9. **Das, S.**, & Appenzeller, J. WSe2 field effect transistors with enhanced ambipolar characteristics. ***Applied Physics Letters***, 103(10), 103501, (2013).

8. **Das, S.**, & Appenzeller, J. Where Does the Current Flow in Two-Dimensional Layered Systems? ***Nano Letters***, 13(7), 3396–3402, (2013). ***(LEAST Center Best Paper Award)***

7. **Das, S.**, & Appenzeller, J. Screening and interlayer coupling in multilayer MoS2. ***physica status solidi (RRL)-Rapid Research Letters***, 7(4), 268-273, (2013). **(**[***Journal Cover Article***](http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291862-6270/homepage/cover/2013_7_04.html)**)**

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5. **Das, S.**, & Appenzeller, J. On the scaling behavior of organic ferroelectric copolymer PVDF-TrFE for memory application. ***Organic Electronics***, 13(12), 3326-3332, (2012).

**2011**

4. Smith, J. T., **Das, S.**, & Appenzeller, J. Broken-Gap Tunnel MOSFET: A Sub-60mV/decade Transistor with a Constant Inverse Subthreshold Slope. ***IEEE Electron Device Letters***, 32(10), 1367-1369, (2011).

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**Conference Proceedings**

28. Pendurthi, R., Jayachandran, D., Kozhakhmetov, A., Choudhury, T.H., Robinson, J. A., Redwing, J. M., **Das, S**. A Synergistic Hardware Neural Network With Enhanced Learning and Accurate Inference Enabled by Programmable and Complementary 2D FETs. 6th International Conference on Emerging Electronics, Bangalore, India, December 2022.

27. Subbulakshmi Radhakrishnan, S., Dodda, A., **Das, S.** Integration of two-dimensional memtransistors for near sensor, compute, and storage. 6th International Conference on Emerging Electronics, Bangalore, India, December 2022.

26. Ravichandran, H., Zheng, Y., Schranghamer, T. F., Trainor, N., Redwing, J. M., **Das, S**. A Monolithic Stochastic Computing Architecture for Energy Efficient Arithmetic. 6th International Conference on Emerging Electronics, Bangalore, India, December 2022.

25. H. Ravichandran, D. Sen, A. Wali, T. Schranghamer, N. Trainor, J. Redwing, and **Das, S**. A Secure Random Key Generator Based on Integrated Circuits Enabled by Atomically Thin Two-dimensional Materials. 6th International Conference on Emerging Electronics, Bangalore, India, December 2022.

24. D. Sen, S. S. Radhakrishnan, S. Chakrabarti, M. Das, T. Schranghamer, A. Sebastian, and **Das, S**. Spike-Timing Based Adaptive Photo Encoder Considering Monolayer MoS2 Based Memtransistors. 64th Electronic Materials Conference, Columbus, Ohio, USA, June 2022.

23. A. Wali, H. Ravichandran, and **Das, S**. A Machine Learning Attack Resilient True Random Number Generator Based on Stochastic Programming of Atomically Thin Transistors. 64th Electronic Materials Conference, Columbus, Ohio, USA, June 2022.

22. S. Das and **S. Das**. Digital Keying Enabled by Reconfigurable 2D Modulators. 64th Electronic Materials Conference, Columbus, Ohio, USA, June 2022.

21. Dodda, A., Jayachandran, D., Pannone, A., Zheng, Y., **Das, S**. A Low-power, Bio-inspired Adaptive Machine Vision based on Atomically Thin Memtransistors. 64th Electronic Materials Conference, Columbus, Ohio, USA, June 2022.

20. Dodda, A., Trainor. N, Redwing, J.M., & **Das, S.** Near Sensor Security based on Multifunctional MoS2 FETs. 64th Electronic Materials Conference, Columbus, Ohio, USA, June 2022.

19. S. Das and **S. Das**. An Ultra-steep Slope Two-dimensional Strain Effect Transistor. 80th Device Research Conference, Columbus, Ohio, USA, June 2022.

18. Pendurthi, R., Jayachandran, D., Kozhakhmetov, A., Trainor, N., Robinson, J. A., Redwing, J. M., **Das, S.** Heterogeneous Integration of Atomically Thin Semiconductors for Non‐von Neumann CMOS. 80th Device Research Conference, Columbus, Ohio, USA, June 2022.

17. Dodda, A., Trainor. N, Redwing, J.M., & **Das, S**. “Near Sensor Security based on Multifunctional MoS2 FETs”. 80th Device Research Conference, Columbus, Ohio, USA, June 2022.

16. M. Das, D. Jayachandran, A. Pannone, D. Sen, T. Schranghamer and **Das, S**. An insect-inspired, spike-based, in-sensor, collision detector based on atomically thin, light-sensitive memtransistors. 80th Device Research Conference, Columbus, Ohio, USA, June 2022.

15. Thakuria, N., Saha, A. K., Thirumala, S. K., Schulman, D., **Das, S.** & Gupta, S. K. Polarization-induced Strain-coupled TMD FETs (PS FETs) for Non-Volatile Memory Applications. 78th Device Research Conference (DRC), Ohio (Virtual), June 2020

14. Jayachandran, D., Oberoi, A., Choudhury, T. H., Redwing, J. M. , & **Das, S.** (June 2020). An Ultra-low-power Biomimetic Collision Detector. 78th Device Research Conference (DRC), Ohio (Virtual), June 2020.

13. Thakuria, N., Schulman, D. S., **Das, S.,** & Gupta, K. S. 2-Transistor Schmitt Trigger based on 2D Electrostrictive Field Effect Transistors. 76th Device Research Conference (DRC), Santa Barbara, June, (2018).

12. Schulman, D. S., Arnold, A. J., & **Das, S.** Steep slope 2D strain field effect transistor: 2D-SFET. International Symposium on VLSI Technology, Systems and Application (VLSI-TSA), Taiwan, April, (2018).

11. Rai, A., Thoutam, L. R., Zhang, W., Kovi, K. K., Banerjee, S., **Das, S.** Effects of High-Energy X-Ray Radiation on MoS2 FETs. American Physical Society (APS), Baltimore, March, (2016).

10. Thoutam, L. R., Wang, Y., Xiao, Z., **Das, S.**, Luican-Mayer, A., Divan, R., Crabtree, G. W., & Kwok, W. K. Magnetoresistance Anisotropy in WTe2. American Physical Society (APS), Baltimore, March, (2016).

9. **Das, S.**, & Roelofs, A. Bandgap Engineering in Phosphorene. Material Research Society (MRS), Boston, December (2014).

8. **Das, S.**, Gulotty, R., Sumant, A., Roelofs, A. All 2D Thin Film Transistor on Flexible Substrate. International Conference on Physics of Semiconductors, Austin, August, (2014).

7. R. Gulotty, **Das, S.**, Y. Liu, & A. Sumant, “Controlled, Repeatable, Fast CVD Growth of Uniform Single and Bilayer Graphene on Copper Foils over Large Area. New Diamond and Nano Carbon Conference (NDNC), Chicago, May, (2014).

6. **Das, S.**, Sumant, A., & Roelofs, A. High Performance Thin Film Transistor Using Graphene and 2D Layered Materials. New Diamond and Nano Carbon Conference (NDNC), Chicago, May, (2014).

5. **Das, S.**, Gulotty, R., Sumant, A., & Roelofs, A. Graphene Contact to WSe2. New Diamond and Nano Carbon Conference (NDNC), Chicago, May, (2014).

4. **Das, S.**, & Roelofs, A. Electrostatically Doped WSe2 Logic Inverter. Device Research Conference, Santa Barbara, June, (2014).

3. Prakash, A., **Das, S.**, Mehta, R., Chen, Z., & Appenzeller, J. Ionic Gated WSe2 Transistor: Towards Transparent Schottky Barriers. Device Research Conference, Santa Barbara, June, (2014).

2. **Das, S.**, & Appenzeller, J. Evaluating the Scalability of Multilayer MoS2 Transistors. Device Research Conference, Notre Dame, (June 2013).

1. **Das, S.**, & Appenzeller, J. An All Graphene Low Noise Amplifier. IEEE Radio Frequency Integrated Circuits Symposium (RFIC), June, (2011).

**Keynote/Plenary Addresses**

12. **Das, S.**, Compound Semiconductor Week (CSW), Jeju, South Korea. “Emerging 2D memtransistors for bio-inspired Computing”. Invited. (May 2023). International.

11. **Das, S.**, 3rd IEEE International Conference on VLSI device, Circuit, and System (IEEE VLSI DCS), Kolkata, India (Virtual), "Bio-inspired Devices for Sensing, Computing, Storage, and Security based on 2D Materials," published in proceedings, Invited. (February 2022). International.

10. **Das, S.**, GrapheneforUS2022 Online International Conference, USA (Virtual), "Bio-inspired and Ultra-low-power Multifunctional Devices based on Two-dimensional (2D) Materials," published in proceedings, Invited. (April 2022). International.

9. **Das, S.**, International Conference on Machine Intelligence and Soft Computing (ICMISC-2021), India (Virtual), "Bio-inspired Hardware for Edge Computing," published in proceedings, Invited. (September 2021). International.

8. **Das, S.** “Smart Sensors and Computing Devices for Hardware Artificial Neural Networks”. 5th International Conference on Electronics, Materials Engineering and Nano-Technology (IEMENTech), Kolkata, India, September, (2021). (Virtual)

7. **Das, S.** “Smart Sensors and Computing Devices for Hardware Artificial Neural Networks”. 4th International Conference on Smart Technologies in data science and Communication (SMART-DSC), Vijayawada, India, February, (2021). (Virtual)

6. **Das, S.** “Novel Hardware for Neuromorphic and Biomimetic Computing”. 2nd International Conference on machine intelligence and soft computing (ICMISC), VFSTR University, Guntur, India, September, (2020). (Virtual)

5. **Das, S.** “2D Materials for Biomimetic and Neuromorphic Computing”. 9th International Symposium on Embedded computing & system Design (ISED), Amritapuri, India, December, (2019).

4. **Das, S.** “2D Materials for Ubiquitous Electronics”. Global Summit and Expo on Nanotechnology & Material Science, Rome, Italy, August, (2018).

3. **Das, S.** “Energy Efficient Electronic based on 2D Materials”. Workshop on Programmable and Wearable Molecular Composites (PAWMC). Pennsylvania State University, State College, March, (2017).

2. **Das, S.** “The Next Transistor”. Nanotechnology: Science and Application in Advanced Materials and Beyond (NSAAMB), Banaras Hindu University, December, (2016).

1. **Das, S.** “Graphene Electronics: Progress and Prospect”. Carbon, State College, July, (2016).

**Invited Talks**

37. **Das, S.**, Materials Research Society (MRS) Spring Meeting & Exhibit, San Fransisco, USA. "Two-dimensional Materials for Energy-Efficient Computing," published in proceedings, Invited. (April 2023). International.

36. **Das, S.**, Neuromorphic Materials, Devices, Circuits and Systems (NeuMatDeCaS), (Virtual), "Advances in Two-dimensional (2D) Devices and Their Applications for Neuromorphic Edge Computing," published in proceedings, Invited. (January 2023). International.

35. **Das, S.**, 6th IEEE International Conference on Emerging Electronics (ICEE), Bangalore, India, "An insect-inspired collision detector based on atomically thin and light-sensitive 2D memtransistors," published in proceedings, Invited. (December 2022). International.

34. **Das, S.**, IEEE EDS Mini-colloquium, Indian Institute of Technology, Kanpur, India, "Bio-inspired Devices for Sensing, Computing, Storage, and Hardware Security," published in proceedings, Invited. (December 2022). International.

33. **Das, S.**, International Symposium on Semiconductor Material and Devices (ISSMD), Kalinga Institute of Industrial Technology, Bhubaneswar, India, "Bio-inspired Devices for Sensing, Computing, Storage, and Hardware Security based on Two-dimensional (2D) Materials," published in proceedings, Invited. (December 2022). International.

32. **Das, S.**, 9th Flatlands beyond graphene congress (FLATLANDS), Lanzarote, Spain, "Bio-inspired Devices for Sensing, Computing, Storage, and Hardware Security," published in proceedings, Invited. (September 2022). International.

31. **Das, S.**, TechConnect, Washington DC, USA, "An insect-inspired and low-power collision detector based on atomically thin and light-sensitive 2D memtransistors," published in proceedings, Invited. (June 2022). International.

30. **Das, S.**, Gordon Research Conference, Manchester, USA, "Two-Dimensional Devices for Bio-Inspired Applications," published in proceedings, Invited. (June 2022). International.

29. **Das, S.**, 31st IEEE Microelectronics Design and Test Symposium (MDTS), IEEE, USA (Virtual), "Sensing, Computing, Storage, and Hardware Security Devices based on Two-dimensional (2D) Materials," Invited. (May 2022). International.

28. **Das, S.**, International Workshop on Physics of Semiconductor Devices (IWPSD), IIT Delhi, India (Virtual), "2D Materials and devices for sensing, compute, storage, and security," published in proceedings, Invited. (December 2021). International.

27. **Das, S.** “Biomimetic Sensors and Computing Devices for Hardware Artificial Intelligence”. 3rd International Symposium on Memory Devices for Abundant Data Computing - Hardware for Artificial Intelligence (AI) - Memory Takes Center Stage, The Hong Kong Polytechnic University, Hong Kong, May, (2021). (Virtual)

26. **Das, S.** “2D Material-based Smart Sensors and Computing Devices for Hardware Artificial Intelligence”. 8th Graphene and Beyond Workshop, Penn State University, University Park, USA, May, (2021). (Virtual)

25. **Das, S.** “Novel Devices for Biomimetic Computing and Sensing”. 5th International Conference on Emerging Electronics (ICEE), Bengaluru, India, December (2020). (Virtual)

24. **Das, S.** “Quantum materials and devices”. Vaibhab Summit, India, October, (2020). (Virtual)

23. **Das, S.** “2D Materials for Biomimetic and Neuromorphic Computing”. International Workshop on Physics of Semiconductor Devices (IWPSD), Kolkata, India, December, (2019).

22. **Das, S.** “Nanofabrication and Characterization of Novel Devices Based on 2D Materials”. 63rd International Conference of Electron, Ion, and Photon Beam Technology and Nanofabrication (EIPBN), Minneapolis, May, (2019).

21. **Das, S.** “2D Materials for Cryptography”. 235th Electrochemical Society Meeting (ECS), Dallas, May, (2019).

20. **Das, S.** “2D Material - A New Perspective”. 4th International Conference on Emerging Electronics (ICEE), Bengaluru, India, December (2018).

19. **Das, S.** “2D Materials for Ubiquitous Electronics”. Grapchina, Xian, China, September (2018).

18. **Das, S.** “A Steep Slope 2D Strain Field Effect Transistor - 2D-SFET”. International Workshop on Acoustic Transduction Materials and Devices, Pennsylvania State University, June (2018).

15. **Das, S.** Anomalous Corrosion of Bulk 2D Materials Leading to Stable Monolayers. Electrochemical Society (ECS), Seattle, May, (2018).

14. **Das, S.** 2D Materials for Ubiquitous Electronics. IEEE Electron Devices Technology and Manufacturing Conference (EDTM), Kobe, Japan, March, (2018).

13. **Das, S.** 2D Materials for Ubiquitous Electronics. International Workshop on Physics of Semiconductor Devices (IWPSD), New Delhi, India, December, (2017).

12. **Das, S.** 2D Materials for Integrated Anticorrosion Electronics. Grapchina, Nanjing, China, September, (2017).

11. **Das, S.** 2DEFET - A novel beyond Boltzmann transistor. Device Research Conference, Notre Dame, June, (2017).

10. **Das, S.** Dynamic Bandgap Engineering in 2D Materials for Beyond Boltzmann Devices. Electrochemical Society (ECS), New Orleans, May, (2017).

9. **Das, S.** An Insight into 2D Transistors and Their Potential Applications. Graphene and Beyond Workshop, State College, May, (2017).

8. **Das, S.** Two-dimensional Materials for Next Generations of Electronic Devices. The Metal Society (TMS), San Diego, February, (2017).

7. **Das, S.** Importance of Contact Engineering for 2D Materials. American Vacuum Society (AVS), Nashville, November, (2016).

6. **Das, S.** 2D Materials for Next Generation Electronics. International Workshop on Flexible and Printable Electronics (IWFPE), Jionju, South Korea, November (2016).

5. **Das, S.** The Emerging Era of 2D Materials. Grapchina, Qingdao, China, September, (2016).

4. **Das, S.** The Emerging Era of 2D Materials. Society for Information Display (SID), San Francisco, May, (2016).

3. **Das, S.** 2D Thin Film Transistor for Flexible Electronics. Nanotechnology for Defense (NT4D), Los Angeles, November, (2015).

2. **Das, S.** Promise of 2D Materials beyond Graphene. ECS Spring, Chicago, May, (2015).

1. **Das, S.** Nanoelectronics with 2D Layered Semiconductors. SPIE, San Diego, August, (2014).

**Seminars and Workshops**

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| **#** | **Dates** | **Seminar** |
| 66 | 05/2023 | Molecular Foundry and Lawrence Berkeley National Laboratory |
| 65 | 04/2023 | Graphene Council Webinar (Virtual) |
| 64 | 02/2023 | Imec, Belgium (Virtual) |
| 63 | 01/2023 | Humboldt University, Berlin, Germany |
| 62 | 01/2023 | Meghnad Saha Institute of Technology, India (Virtual) |
| 62 | 01/2023 | Indian Institute of Technology, Kharagpur, Materials Science Seminar, India |
| 61 | 01/2023 | Indian Institute of Technology, Kharagpur, Physics Colloquium, India |
| 59 | 12/2022 | Indian Institute of Information Technology, Design and Manufacturing, IEEE EDS Summer School on "Emerging Devices and Circuits to Mimic Biologically Plausible Neuronal Functionalities for Neuromorphic Computing, India |
| 58 | 12/2022 | Indian Institute of Technology, Indian School of Mines, Workshop on Emerging Nanomaterial-Based Devices for Future VLSI Applications, India |
| 57 | 12/2022 | Indian Institute of Technology, SIGMA Xi Lecture, India (Virtual) |
| 56 | 11/2022 | imec, 2D Devices Seminar, Belgium |
| 55 | 10/2022 | Penn State University, ESM Seminar, USA |
| 54 | 09/2022 | University of Delaware, ECE Seminar, USA |
| 53 | 09/2022 | Materials Science Institute of Madrid | CSIC Seminar, Madrid, Spain |
| 52 | 05/2022 | McMaster University, Brockhouse Institute for Materials Research Workshop on “Future Directions of Advanced Materials", Canada (Virtual), |
| 51 | 04/2022 | Texas A&M University, Integrated Cognitive and Autonomous Multi-Sensor Systems Workshop, USA |
| 50 | 03/2022 | Penn State University, Materials Spotlight Series, USA (Virtual) |
| 49 | 03/2022 | Penn State University, 2DCC Webinar, USA (Virtual) |
| 48 | 01/2022 | Wayne State University, ECE Seminars, USA (Virtual) |
| 47 | 01/2022 | King Abdullah University of Science and Technology (KAUST), IEEE EDS Workshop on Memory Based Applications, Saudi Arabia (Virtual) |
| 46 | 11/2021 | IIT Indore, IEEE Nanotechnology Council Student Chapter, India (Virtual) |
| 45 | 11/2021 | Centurion University Webinar, India (Virtual) |
| 44 | 10/2021 | Purdue University Colloquium, USA (Virtual) |
| 43 | 07/2021 | Rice University Colloquium, USA (Virtual) |
| 42 | 04/2021 | Rochester Institute of Technology, USA (Virtual) |
| 41 | 03/2021 | Wayne State University Colloquium, USA (Virtual) |
| 40 | 11/2020 | Center for Nanotechnology Education and Utilizatio, Penn State USA (Virtual) |
| 39 | 10/2020 | Meghnad Saha Institute of Technology, India (Virtual) |
| 38 | 10/2020 | Massachusetts Institute of Technology, Cambridge, USA (Virtual) |
| 37 | 10/2020 | AFOSR Workshop on GHz-THz Electronics, USA (Virtual) |
| 36 | 02/2020 | Center for Neural Engineering, Penn State, USA |
| 35 | 12/2019 | Army Research Laboratory, Adelphi, USA |
| 34 | 04/2019 | Penn State University Electrical Engineering Colloquium, USA |
| 33 | 12/2018 | Banaras Hindu University, India |
| 32 | 12/2018 | Indian Institute of Technology, Banaras, India |
| 31 | 12/2018 | Indian Institute of Technology, Delhi, India |
| 30 | 12/2018 | Los Alamos National Laboratory, USA |
| 29 | 12/2017 | S. N. Bose National Centre for Basic Sciences, India |
| 28 | 12/2017 | Meghnad Saha Institute of Technology, India |
| 27 | 09/2017 | Two-Dimensional Crystal Consortium, Webinar, USA |
| 26 | 07/2017 | AFOSR Workshop on GHz-THz Electronics, USA |
| 25 | 06/2017 | AFOSR and DTRA Workshop on Radiation Damage Effects, USA |
| 24 | 12/2016 | Indian Institute of Technology, Kanpur, India |
| 23 | 09/2016 | Tsinghua University, Beijing, China |
| 22 | 09/2016 | Pennsylvania State University, University Park, USA |
| 21 | 08/2016 | Jadavpur University, Kolkata, India |
| 20 | 07/2016 | Amrita University, Amritapuri, India |
| 19 | 02/2016 | Corning Inc., Corning, USA |
| 18 | 12/2015 | Indian Institute of Engineering Science and Technology, Shibpur, India |
| 17 | 08/2015 | Intel Inc., Hillsboro, USA |
| 16 | 02/2015 | National Institute for Standards and Technologies, Gaithersburg, USA |
| 15 | 02/2015 | Auburn University, Auburn, USA |
| 14 | 11/2014 | Northwestern University, Evanston, USA |
| 13 | 10/2014 | Illinois Institute of Technology, Chicago, USA |
| 12 | 10/2014 | University of Chicago, Chicago, USA |
| 11 | 09/2014 | University of Notre Dame, South Bend, USA |
| 10 | 02/2014 | Army Research Laboratory, USA |
| 9 | 01/2014 | IBM T. J. Watson Research Center, Yorktown Heights, USA |
| 8 | 01/2014 | Stanford University, Stanford, USA |
| 7 | 01/2014 | Boston University, Boston, USA |
| 6 | 01/2014 | Massachusetts Institute of Technology, Cambridge, USA |
| 5 | 11/2013 | State University of New York, Buffalo, USA |
| 4 | 11/2013 | Cornell University, Ithaca, USA |
| 3 | 10/2013 | University of Texas, Austin, USA |
| 2 | 10/2013 | University of California, San Diego, USA |
| 1 | 09/2013 | University of Illinois, Urbana Champaign, USA |

**Conference Committees**

Technical Program Committee Chair (Emerging Devices Track), 8th IEEE Electron Device Technology and Manufacturing (EDTM), Bangalore, India (March 2024).

Technical Program Committee Vice Chair, 81st Device Research Conference (DRC), Santa Barbara, USA, (June 2023).

Technical Program Committee, Chair (2D Track), 6th IEEE International Conference of Emerging Electronics (ICEE), Bangalore, India. (December 2022).

Technical Program Committee Member, 80th Device Research Conference (DRC), Ohio, USA, (June 2022).

Technical Program Committee Member, 6th IEEE Electron Device Technology and Manufacturing (EDTM), Oita, Japan (March 2022). (Virtual)

Technical Program Committee Member, 79th Device Research Conference (DRC), USA, (June 2021). (Virtual)

Technical Program Committee Member, Annual International Symposium on Reliability Physics (IRPS), USA, (March 2021) (Virtual)

Technical Program Committee Member, 5th IEEE Electron Device Technology and Manufacturing (EDTM), Chengdu, China (March 2021). (Virtual)

Technical Program Committee Member, 78th Device Research Conference (DRC),Ohio, USA, (June 2020). (Virtual)

Technical Program Sub-Committee (Materials) Chair, 4th IEEE Electron Device Technology and Manufacturing (EDTM), Penang, Malaysia (March 2020).

International Advisory Committee Member, International Seminar cum Research Colloquium on MEMS based Sensors and Smart Nanostructured Devices, Kolkata, India. (December 2019).

Technical Program Committee Member, International Workshop on Physics of Semiconductor Devices (IWPSD), Kolkata, India, (December 2019).

Workshop Organizer on Emerging Electronic, Optoelectronic and Mechanical Devices based on van der Waals 2D Materials – Argonne National Laboratory. (May 2019).

Technical Program Committee Member, 3rd IEEE Electron Device Technology and Manufacturing, Singapore, (March 2019).

Technical Program Committee Member, Very Large-Scale Integrated Circuit Design, Delhi, India, (January 2019).

Technical Program Committee Member, International Conference on Emerging Electronics, Bengaluru, India, (December 2018).

Technical Program Committee Member, Global Summit and Expo on Nanotechnology and Materials, Rome, Italy, (August 2018).

Organizer and Technical Committee Member, Carbon. State College, Pennsylvania USA. (July 2016).

Workshop Organizer on 2D Heterostructure Devices – Argonne National Laboratory. (May 2016).

Focus Topic Organizer, American Physical Society, Division of Material Physics, Baltimore, Maryland USA. (March 2016).

**Journal Reviewer**

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| Nature | Nature Electronics | Nano Letters |
| Nature Nanotechnology | ACS Nano | Advanced Materials |
| Nature Communications | Small | Advanced Functional Materials |
| IEEE Transactions on Electron Devices | Carbon | IEEE Electron Device Letters |
| ACS Applied Materials and Interfaces | Nanoscale | Applied Physics Letters |
| Chemistry of Materials | 2D Materials | Chemical Communications |
| Journal of Physics Condensed Matter | Journal of Applied Physics | Advanced Material Interfaces |
| ACS Omega | Advanced Electronic Materials | Scientific Reports |
| IEEE Transactions on Nanotechnology |  |  |