Biography

Dr. Basab Das, **Senior Member, IEEE** is an Assistant Professor in the Department of Electronics and Communication Engineering at Girijananda Chowdhury University, Guwahati. He earned his Ph.D. from the National Institute of Technology (NIT) Silchar, specializing in VLSI Physical Design, Semiconductor Devices, and Mixed-Signal Circuit Design. My research focus is on the simulation and modelling of advanced nanoelectronic devices, including Tunnel FETs (TFETs) and High Electron Mobility Transistors (HEMTs).

With expertise in industry-standard tools such as IC-Compiler, Star-RC, IC Validator, Prime Time, TCAD Sentaurus Synopsys, and Cadence Virtuoso, I have actively contributed to academic and applied research.

I have a strong academic presence, serving as a reviewer for prestigious journals such as *Silicon (Springer), Microelectronics (Elsevier),* and *IEEE Sensors*. I am also a senior member of IEEE and the IEEE Electron Devices Society. Beyond academics, actively engages in faculty development programs, student mentorship, and research collaborations in emerging semiconductor technologies.

Education

- **Ph.D. in Electronics & Communication Engineering** (Awarded in 2022) – National Institute of Technology (NIT), Silchar
- **M.Tech in Microelectronics & VLSI Design** – National Institute of Technology (NIT), Silchar
- **B.Tech in Electronics & Communication Engineering** – North Eastern Hill University, Meghalaya
- **Senior Secondary (AISSCE, CBSE)** – Kendriya Vidyalaya, Borjhar, Assam
- **Secondary Education (AISSE, CBSE)** – Kendriya Vidyalaya, Borjhar, Assam

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RESEARCH PUBLICATION

International Journal

1. J. Talukdar, M. Malvika, **B. Das**, G. Rawat, and K. Mummaneni, "Source engineered TFET for digital inverters application," Physica Scripta, vol. 99, no. 4, Mar. 2024.
2. **B. Das** and B. Bhowmick, “Dielectrically modulated ferroelectric-TFET (Ferro-TFET) based biosensors,” in Materials Science and Engineering: B, Vol. 298, pp. 116841(1-11), Sep. 2023. https://doi.org/10.1016/j.mseb.2023.116841.
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10. J. Talukdar, M. Malvika, **B. Das** and K. Mummaneni, "Sensitivity analysis of Non-uniform TFET with dual material source-based biosensor," 2022 IEEE International Symposium on Smart Electronic Systems (iSES), Warangal, India, 2022, pp. 597-600, doi: 10.1109/iSES54909.2022.00131.
11. J.Talukdar and **B.Das**, "An Improved TIQ Comparator based 3-bit Flash ADC," in *Proceedings of 1st International Conference on Electronics, Materials Engineering & Nano Technology (IEMENTECH 2017),* Science City, Kolkata, India, 28-29 April,2017. (***Participated and Presented***).
12. T.Kalita and **B.Das**, "*A 4 bit Quantum Voltage Comparator based flash ADC for low noise applications*," in *Proceedings of International Conference on Emerging Devices and Smart Systems (ICEDSS),*Namakkal, Tamil Nadu India, 4-5 March, 2016.
13. **Basab Das** and Brinda Bhowmick, "Arc shaped gate nanoscale AlGaN/GaN HEMT with high-k gate dielectric," in *Proceedings of 3rd International Conference on Recent Trends in Engineering & Technology (ICRTET' 2014)* (March 28-30, 2014), Elsevier Science & Technology, SNJB's Late Sau. K. B. Jain College of Engineering, Chandwad, India, March 28-30, 2014
14. Rupam Goswami, **Basab Das** , Brinda Bhowmick and Shanidul Haque, "A single gate nanoscale n-channel Silicon MOSFET with gate overlap Silicon Germanium region for improved I_{on}/I_{off} ratio," in *Proceedings of IEEE International Conference on Circuit, Power and Computing Technologies (ICCPCT 2014)*, Noorul Islam Centre for Higher Education, Kumaracoil, India, March 20-21, 2014.
15. **Basab Das** and Brinda Bhowmick, "Simulation study of gate dielectric arc-shaped gate MOSHEMT," in *Proceedings of International Conference on Recent Trends in Engineering Sciences' 2014 (ICRTES '14),* Nashik, India, March 15 – 16, 2014.
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18. Brinda Bhowmick, Rupam Goswami, and **Basab Das**, "A mathematical model for transmission in rectangular potential barriers," in *Proceedings of International Conference of Mathematical Computer Engineering 2013*, VIT University, Chennai, India, November 29-30, 2013.

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1. **B. Das**, "GaN channel Nanoscale MOSFET with silicon source and Drain and Silicon Germanium Bulk," *in Int. Journ. of Computer Sciences and Engineering (IJCSE,)*, Vol. 04, Issue. 07, Dec , 2016.

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1. **B. Das**, "GaN channel Nanoscale MOSFET with silicon source and Drain and Silicon Germanium Bulk," *in proceedings of National conference on Recent Innovative Trends in*

Engineering and Technology (NCRITET 2016), Guwahati, Assam.India, Nov. 11-12, 2016. (***Participated and Presented***).

Book Chapter

1. **B. Das**, H. Borah, and B. Bhowmick, "A detailed review on growth and evolution of TFET biosensor for biosensing application," in Handbook of Emerging Materials for Semiconductor Industry, Y. S. Song, L. R. Thoutam, S. Tayal, S. B. Rahi, and T. S. A. Samuel, Eds. pp 633–655, Jan.2024. Singapore: Springer, 2024. doi: 10.1007/978-981-99-6649-3_43.
2. **B. Das** and B. Bhowmick, " Effect of Noise and Temperature on the Performance of Ferro-Tunnel FET," In: R. Goswami, R., R. Saha (eds) Contemporary Trends in Semiconductor Devices. Lecture Notes in Electrical Engineering, vol 850, pp 31–57, Feb. 2022. Springer, Singapore. https://doi.org/10.1007/978-981-16-9124-9_3

For a complete list of publications, visit Dr. Das's Google Scholar