List of Publications of Dr. Manodipan Sahoo,
Associate professor, Department of Electronics Engineering, IIT(ISM), Dhanbad

International Journals – 26
International Conferences- 35
National Conference/Symposium- 5
Books/Book Chapters - 3
Total Publications- 69

Webpage: **https://sites.google.com/view/nanolab-iitdhanbad**

Book and Book Chapter:

1. Published a Book on **"Modelling and Simulation of CNT and GNR Interconnects"** in Lambert Academic Publishers **(2019).**

2. Published a Book Chapter on **"Modelling Interconnects for Future VLSI Circuit Applications"** in IET Book entitled **"VLSI and Post-CMOS Electronics: Devices, Circuits and Interconnects" (2019), DOI:** 10.1049/PBCS073G**.**

3. Published a Book Chapter on **"Hybrid Cu-Carbon as Interconnect Materials and Their Interconnect Models"** in the Book entitled **"Nano-Interconnect Materials and Models for Next Generation Integrated Circuit Design" (CRC Press, 2023).**

International Journals:

J26. S. Bardhan, **M. Sahoo**, J. Samanta, and H. Rahaman, "A Quasi-Ballistic Model For Short Channel Monolayer Graphene Field Effect Transistor Including Scattering Effects", IETE Journal of Research, *Taylor and Francis Publishers*, 2024, DOI: 10.1080/03772063.2024.2352154.

J25. N. K. Singh, and **M. Sahoo**, "Comparative Investigation of Different Doping Techniques in TMD Tunnel FET for Subdeca Nanometer Technology Nodes", Journal of Electronic Materials, May, 2023, DOI:10.1007/s11664-023-10505-8, Link: https://rdcu.be/ddEh2 .

J24. S. K. Dora, H. B. Mishra, **M. Sahoo**, "Low Complexity Implementation of OTFS Transmitter using Fully Parallel and Pipelined Hardware Architecture", Journal of Signal Processing Systems, pg. 1-10, 2023, DOI: https://doi.org/10.1007/s11265-023-01847-x.

J23. M. Kumari, N. K. Singh and **M. Sahoo**, "A detailed investigation of dielectric-modulated dual-gate TMD FET based label-free biosensor via analytical modelling", Nature Scientific Reports, 12:21115, 2022, DOI: https://doi.org/10.1038/s41598-022-24677-6, Link for the paper: https://rdcu.be/c09iE.

J22. B. Kumari, R. Y. Sharma and **M. Sahoo**, "Electro-Thermal Modeling and Reliability Analysis of Cu-Carbon Hybrid Interconnects for Beyond-CMOS Computing", *Applied Physics Letters*, 2022, DOI: https://doi.org/10.1063/5.0101329.

J21. N. K. Singh, M. Kumari and **M. Sahoo**, "All Region Analytical Modeling of 2-D Transition Metal Dichalcogenide FET by Considering effect of Fringing field and Region-wise Mobility", *Physica E: Low-dimensional Systems and Nanostructures, 2022, DOI:* https://doi.org/10.1016/j.physe.2022.115480.

J20. B. Kumari, P. Santosh, R. Y. Sharma and **M. Sahoo**, "Thermal-Aware Modeling and Analysis of Cu-Mixed CNT Nanocomposite Interconnects ", *IEEE Transactions on Nanotechnology, vol. 21, pp. 163-171, IEEE Publishers,* DOI: 10.1109/TNANO.2022.3160870.

J19. B. Kumari, R. Y. Sharma and **M. Sahoo**, "Performance and Reliability Improvement in Intercalated MLGNR Interconnects using Optimized Aspect Ratio ", *Nature Scientific Reports, 12:1475 (2022), DOI: 10.1038/s41598-022-05222-x,*
Link: https://rdcu.be/cFOQT.

J18. N. K. Singh and **M. Sahoo**, "Analytical Modeling of Short-Channel TMD TFET Considering Effect of Fringing Field and 2-D Junctions Depletion Regions", *IEEE Transactions on Electron Devices, IEEE Publishers, February, 2022, vol. 69, no. 2, pp. 843-850,* DOI: 10.1109/TED.2021.3135367.

J17. B. Kumari, R. Kumar, R. Y.Sharma and **M. Sahoo**, "Design, Modeling and Analysis of Cu-Carbon Hybrid Interconnects", *IEEE Access, IEEE Publishers, vol. 9, pp. 113577 – 113584,* ***DOI:*** *10.1109/ACCESS.2021.3104299, 2021.*

J16. M. Kumari, N. K. Singh, M. Sahoo and H. Rahaman, "2-D Analytical Modeling and Simulation of Dual Material, Double Gate, Gate Stack engineered, Junctionless MOSFET based Biosensor with Enhanced Sensitivity", Silicon, Springer, July, 2021, pp. 1-12, DOI: https://doi.org/10.1007/s12633-021-01223-z

J15. M. Kumari, N. K. Singh, M. Sahoo and H. Rahaman, "Work function optimization for Enhancement of sensitivity of Dual Material(DM), Double gate(DG), Junctionless MOSFET based biosensor", Applied Physics A, Springer, January, 2021, DOI: https://doi.org/10.1007/s00339-020-04256-0.

J14. N. K. Singh, M. Kumari and M. Sahoo, "A Compact Short-Channel Analytical Drain Current Model of Asymmetric Dual-gate TMD FET in Subthreshold Region including Fringing Field effects", IEEE Access, *IEEE Publishers, November, 2020, vol. 8, no. 11, pp. 207982-207990,* DOI: 10.1109/ACCESS.2020.3038421.

J13. N. K. Singh and M. Sahoo, "Investigation on the Effect of Gate dielectric and other Device parameters on Digital Performance of Silicene Nanoribbon Tunnel FET", *IEEE Transactions on Electron Devices, IEEE Publishers, July, 2020, vol. 67, no. 7, pp. 2966-2973,* DOI: 10.1109/TED.2020.2992016.

J12. B. Kumari, and **M. Sahoo**, `` Performance and Signal Integrity Analysis of Intercalation Doped Multilayer Vertical Graphene Nanoribbon Interconnects", IET Circuits, Devices and Systems, *IET Publishers 2019,* DOI: https://doi.org/10.1049/iet-cds.2019.0072.

J11. S. Bardhan, **M. Sahoo** and, H. Rahaman, ``A Boltzmann Transport Equation Based Semiclassical Drain Current Model for Bilayer GFET Including Scattering Effects," IET Circuits, Devices and Systems, *IET Publishers 2019,* DOI: https://doi.org/10.1049/iet-cds.2018.5104.

J10. B. Kumari and **M. Sahoo**, `` Stability Analysis of Multilayer Vertical Graphene Nanoribbon Interconnects", IOP Science, Materials Research Express, DOI:https://iopscience.iop.org/article/10.1088/2053-1591/ab1b92, vol. 6, pp. 08560, 2019.

J9. B. Kumari and **M. Sahoo**, ``Performance and Power Optimization for Intercalation doped Multilayer Graphene Nanoribbon Interconnects", IETE Journal of Research, *Taylor and Francis Publishers*, 2019.
DOI: https://doi.org/10.1080/03772063.2019.1621214

J8. S. Bardhan, **M. Sahoo** and, H. Rahaman, `` Empirical Drain Current Model of Graphene Field-Effect Transistor for Application as a Circuit Simulation Tool," IETE Journal of Research, *Taylor and Francis Publishers*, 2019, DOI: https://doi.org/10.1080/03772063.2019.1620639

J7. S. Bardhan, **M. Sahoo** and, H. Rahaman, ``A Surface Potential Based Model for Dual Gate Bilayer GFET Including the Capacitive Effects", Journal of Circuits, Systems and Computers,*World Scientific Publishers*. **https://doi.org/10.1142/S0218126619502414**, 2019.

J6. **M. Sahoo**, and H. Rahaman, "Analysis of Crosstalk Induced Effects in Multilayer Graphene Nanoribbon Interconnects", *Journal of Circuits, Systems, and Computers*, *World Scientific Publishers*, Vol. 26, No. 6 (2017) 1750102, pp. 1-21, https://doi.org/10.1142/S021812661750102X, 2017.

J5. **M. Sahoo**, and H. Rahaman, "Modeling and Analysis of Crosstalk Induced Overshoot/Undershoot Effects in Multilayer Graphene Nanoribbon Interconnects and Its Impact on Gate Oxide Reliability", Microelectronics Reliability (2016), Elsevier Publishers, Vol.63, August 2016, pp. 231–238, https://doi.org/10.1016/j.microrel.2016.06.017.

J4. **M. Sahoo**, P. Ghosal, and H. Rahaman, "Modeling and Analysis of Crosstalk Induced Effects in Multiwalled Carbon Nanotube Bundle Interconnects: An ABCD Parameter Based Approach", *IEEE Transactions on Nanotechnology*, *IEEE*, Vol. 14, no. 2, pp. 259–274, March 2015, https://doi.org/10.1109/TNANO.2014.2388252.

J3. **M. Sahoo**, and H. Rahaman, "Modeling of Crosstalk Induced Effects in Copper-Based Nanointerconnects: An ABCD Parameter Matrix-Based Approach", *Journal of Circuits, Systems, and Computers*, *World Scientific Publishers*, Vol. 24, no. 2, pp. 1-22, 2015, https://doi.org/10.1142/S0218126615400071.

J2. **M. Sahoo**, P. Ghosal, and H. Rahaman, "Performance Modeling and Analysis of Carbon Nanotube Bundles for Future VLSI Circuit Applications", *Journal of Computational Electronics, Springer Publications*, Vol. 13, no. 3, pp. 673-688, 2014, https://doi.org/10.1007/s10825-014-0587-7.

J1. **M. Sahoo**, H. Rahaman, and Bhargab B. Bhattacharya, "On the Suitability of Single-Walled Carbon Nanotube Bundle Interconnects for High-Speed and Power-Efficient Applications", *Journal of Low Power Electronics, American Scientific Publishers*, Vol. 10, no. 3, pp. 191-206, September 2014, https://doi.org/10.1166/jolpe.2014.133.

International Conferences:

C35. M. Kumari, and **M. Sahoo**, "Sensitivity Enhancement of TMD MOSFET-Based Biosensor by Modeling and Optimization of Back Gate Parameters", IEEE VLSID, January 2024, DOI: 10.1109/VLSID60093.2024.00007.

C34. S. K. Dora, H. B. Mishra, M. Sahoo and K. Yadav, "Hardware Implementation of OTFS Modulation Using CORDIC Algorithm", IEEE SPCOM (Accepted).

C33. M. Kumari, and **M. Sahoo,** "Sensitivity Enhancement of TMD MOSFET-Based Biosensor by Optimization of Back Gate Parameters and Noise Analysis", IEEE CODEC, December 2023, DOI: 10.1109/CODEC60112.2023.10466064.

C32. S. K. Dora, R. K. Yadav, **M. Sahoo** and H. B. Mishra, "VLSI Architecture for Low Complexity Zero Forcing Equalizer in OTFS Modulation", IEEE ELEXCOM, August 2023, DOI: 10.1109/ELEXCOM58812.2023.10370165.

C31. N. K. Singh, R. Shankar, S. Verma, and **M. Sahoo**, "Design of low-power and high-performance 10 nm SRAM using Electrostatically doped TMD TFET", IEEE ISDCS 2023, May, 2023, pp. 1-6, **DOI:** 10.1109/ISDCS58735.2023.10153525.

C30. M. Kumari, and **M. Sahoo**, "Impact of Process Induced Strain on the Sensitivity of Charge Plasma Doped TMD TFET Biosensor", 6th IEEE ICEE, Bangalore, December, 2022, pp. 1-6, DOI: 10.1109/ICEE56203.2022.10118170.

C29. B. Kumari, R. Sharma and **M. Sahoo**, "Stability Analysis of Nanoscale Copper-Carbon Hybrid Interconnects", *IEEE ECTC*, pp. 1-6, July 2022, **DOI:** 10.1109/ECTC51906.2022.00158.

C28. B. Kumari, S. Pandranki, **M. Sahoo**, R. Sharma, "Copper-MWCNT Composite: A Solution to Breakdown in Copper Interconnects", *2021 IEEE 21st International Conference on Nanotechnology*, July 2021, **DOI:** 10.1109/NANO51122.2021.9514276.

C27. B. Kumari, R. Kumar, **M. Sahoo** and R. Sharma, "Performance Analysis of Self Heated Multilayer Vertical Graphene Nanoribbon Interconnects", *Proceedings of the 71st IEEE Electronic Components and Technology Conference, Lake Buena Vista*, May 2021, **DOI:** 10.1109/ECTC32696.2021.00256.

C26. P. Howladar, K. Mondal, **M. Sahoo**, "Machine Learning based Supraventricular Tachycardia Detection Model of ECG signal", International Conference on Data Analytics & Management, Jaipur, June, 2021 **(Got Best Paper award).**

C25. P. Howladar, **M. Sahoo**, "Machine Learning based Ventricular Tachycardia Detection of ECG Signal", 8th International Conference on Microelectronics, Circuits & Systems, Kolkata, May, 2021 **(Got Best Paper award).**

C24. R. Kumar, B. Kumari, S. Kumar, **M. Sahoo** and R Y. Sharma, "Temperature and Dielectric Surface Roughness dependent Performance Analysis of Cu-Graphene Hybrid Interconnects", *Proceedings of the IEEE Electrical Design of Advanced Packaging and Systems (EDAPS)*, Shenzhen, China, December 2020.

C23. K. Sable and **M. Sahoo,** ``Electrical and Thermal Analysis of Cu-CNT Composite TSV and GNR Interconnects", Accepted in *International Symposium on Devices, Circuits and Systems (ISDCS)*, Howrah, March, 2020.

C22. N. K. Singh and **M. Sahoo**, ``Investigation of Silicene Nanoribbon Tunnel FET for Low power Digital VLSI circuit application with variation of Device parameters", Accepted in X International Conference on Communication, Circuits and Systems (ICCCAS, 2018) held in Chengdu, China during December 22-24, 2018.

C21. P. Jha, B. Kumari and **M. Sahoo**, ``Investigation on the Impact of Various Intercalation doping on the Signal Integrity in ML-GNR Interconnects", Accepted in X International Conference on Communication, Circuits and Systems (ICCCAS, 2018) held in Chengdu, China during December 22-24, 2018.

C20. B. Kumari and **M. Sahoo**, ``Width Optimization of Intercalation doped Multilayer Graphene Nanoribbon Interconnects", *2018 International Symposium on Devices, Circuits and Systems (ISDCS)*, Howrah, 2018, pp. 1-5, https://doi.org/10.1109/ISDCS.2018.8379653.

C19. B. Kumari and **M. Sahoo**, ``Thickness Optimization of Intercalation doped Multilayer Graphene Nanoribbon Interconnects", IEEE ICDCS-2018, March, 2018.

C18. M. Kumari, **M. Sahoo** and J. Kumar, ``Modelling and Optimization of Double barrier AlGaAs/GaAs/AlGaAs Resonant Tunneling Diode for THz applications", Accepted in 4th IEEE ICEE, 2018 to be held in Bangalore in December, 2018 **(Got Best Poster award).**

C17. **M. Sahoo**, and H. Rahaman, "Impact of Mutual Inductance on the Crosstalk Induced Effects in Single-Walled Carbon Nanotube Bundle Interconnects", *IEEE* ICDCS,KarunyaUniversity,2016,pp.286-290,
https://doi.org/10.1109/ICDCSyst.2016.7570585

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C15. S. Bardhan, **M. Sahoo** and H. Rahaman, ``A Verilog-A based Semiclassical Model for Dual Gated Graphene Field-Effect Transistor", *IEEE* ICDCS, Karunya University, 2016, pp. 37-42, https://doi.org/10.1109/ICDCSyst.2016.7570619

C14. M. Sahoo and H. Rahaman,"Modeling of Crosstalk induced Overshoot/Undershoot effects in Multilayer Graphene Nanoribbon Interconnects", *IEEE EICT, Khulna University*,December,2015, pp. 416-421, https://doi.org/10.1109/EICT.2015.7391988.

C13. S. Bardhan, **M. Sahoo** and H. Rahaman,``Analytical Drain Current Model for Graphene Metal-Oxide semiconductor Field-Effect Transistor", *IEEE EICT, Khulna University*, December, 2015, pp. 422-427,https://doi.org/10.1109/EICT.2015.7391989.

C12. M. Sahoo, P. Ghosal, and H. Rahaman, "An ABCD Parameter Based Modeling and Analysis of Crosstalk Induced Effects in Multiwalled Carbon Nanotube undle Interconnects", *IEEE 27th International Conference on VLSI Design*, IIT Bombay, India, pp. 433-438, Jan. 5–9, 2014,https://doi.org/10.1109/VLSID.2014.81.

C11. M. Sahoo, and H. Rahaman, "Modeling of Crosstalk Induced Effects in Nanoscale Copper Interconnects", *IEEE EICT*, KUET, Bangladesh, pp. 1–6, Feb. 13–15, 2014,https://doi.org/10.1109/EICT.2014.6777811.

C10. M. Sahoo, and H. Rahaman, "An ABCD Parameter Based Modeling and Analysis of Crosstalk Induced Effects in Multilayer Graphene Nano Ribbon Interconnects", *IEEE ISCAS*, Melbourne, Australia, pp. 1138-1142, June 1–5, 2014, https://doi.org/10.1109/ISCAS.2014.6865341.

C9. M. Sahoo, and H. Rahaman, "Impact of Line resistance variations on Crosstalk delay and noise in Multilayer Graphene Nano Ribbon Interconnects", *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, NITK Surathkal, India, pp. 94–98, Dec. 15–17, 2014,https://doi.org/10.1109/ISED.2014.27.

C8. S. A. Mandal, S. Pal, **M. Sahoo,** P. Mondal and H. Rahaman, ``A New Feedback Circuit Based Charge-pump for a Wide-range and Low-jitter DLL suitable for PET Imaging Applications", Proceedings of *IEEE ICDCS*, India, 2014, pp. 1-5, https://doi.org/10.1109/ICDCSyst.2014.6926125.

C7. S. Chakraborty, **M. Sahoo** and H. Rahaman, **``**A 1.8 V 64.9 uW 54.1 dB SNDR 1st Order Sigma-Delta Modulator Design Using Clocked Comparator Based Switched Capacitor Technique", *IEEE Asia Symposium and Exhibit on Quality Electronic Design (ASQED)*, 2013, pp. 220-226, https://doi.org/10.1109/ASQED.2013.6643591.

C6. M. Sahoo, P. Ghosal, and H. Rahaman, "An ABCD Parameter Based Modeling and Analysis of Crosstalk Induced Effects in Single-Walled Carbon Nanotube Bundle Interconnects", *IEEE/ACM Asia Symposium and Exhibit on Quality Electronic Design (ASQED)*, Penang, Malaysia, pp. 264-273, Aug. 26–28, 2013, https://doi.org/10.1109/ASQED.2013.6643598.

C5. M. Sahoo, and H. Rahaman, "Modeling of Crosstalk Delay and Noise in Single-walled Carbon Nanotube Bundle Interconnects", *IEEE INDICON*, IIT Bombay, India, pp.

1–6, Dec. 13–15, 2013, https://doi.org/10.1109/INDCON.2013.6725907. **(Got Best Paper Award)**

C4. M. Sahoo, H. Rahaman and B. B. Bhattacharya, "Impact of Inductance on the Performance of Single Walled Carbon Nanotube Bundle Interconnects", *4th IEEE International Symposium on Electronic System Design (ISED)*, NTU, Singapore, pp. 16- 20, Dec. 12–13, 2013,https://doi.org/10.1109/ISED.2013.10.

C3. M. Sahoo and H. Rahaman, "Performance Analysis of Multiwalled Carbon Nanotube Bundles", *33rd IEEE International Scientific Conference Electronics and Nanotechnology (ELNANO)*, NTUU, Ukraine, pp. 200-204, Apr. 16–19, 2013, https://doi.org/10.1109/ELNANO.2013.6552004.

C2. M. Sahoo, P. Ghosal, and H. Rahaman, "Efficient and Compact Electrical Modeling of Multi Walled Carbon Nanotube Interconnects", *3rd IEEE International Symposium on Electronic System Design (ISED)*, Bengal Engineering and Science University, Shibpur Howrah, India, pp. 236-240, Dec. 19–22, 2012, https://doi.org/10.1109/ISED.2012.24.

C1. S. A. Kannan**, M. Sahoo**, S. Dwivedi, B. Amrutur and N. Bhat, ``Optimal Power and Noise Allocation for Analog and Digital Sections of a Low Power Radio Receiver", *ACM/IEEE ISLPED*, India, August, 2008, pp. 271-276, https://doi.org/10.1145/1393921.1393993.

National Conferences/Symposium:

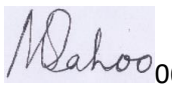
NC5. B. Kumari and **M. Sahoo**, ``Impact of Width on the Performance of Intercalation Doped MLGNR Interconnects", INUP Familiarization workshop, IISc, Bangalore, November, 2017.

NC4. I. Das, **M. Sahoo**, P. Roy and H. Rahaman, ``A 45 uW 13 pJ/conv-step 7.4 ENOB 40 kS/s SAR ADC for Digital Microfluidic Biochip Applications", International Symposium on VLSI Design and Test (VDAT) 2014, PSG College of Technology, Coimbatore, https://doi.org/10.1109/ISVDAT.2014.6881068.

NC3. M. Guha, A. Sengupta, **M. Sahoo** and H. Rahaman, "Effect of Defects on Performance and Signal Integrity of Multilayer GNR Interconnects", INUP Familiarization Workshop on Compact Modeling, IISc, August, 2014.

NC2. M. Sahoo and B. Amrutur, ``Comparison of OpAmp Based and Comparator Based Switched Capacitor Filter," *International Symposium on VLSI Design and Test (VDAT)*, 2012, Kolkata, Springer LNCS, vol. 7373, pp. 180-189, https://doi.org/10.1007/978-3-642-31494-0_21.

NC1. M. Sahoo, and H. Rahaman, "Analytical Modeling of Crosstalk Effects in Coupled Copper Interconnects in Deep Sub Micron Technology", IEEE *CODEC*, IRPE, Calcutta University, India, pp. 1-4, Dec. 17–19, 2012, https://doi.org/10.1109/CODEC.2012.6509212.



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