

# CURRICULUM-VITAE

## **Dr. BHUBON CHANDRA MECH**

Assistant Professor, Electronics Engg.

Defence Institute of Advanced Technology, Pune

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Google Scholar Id: <https://scholar.google.com/citations?user=imVZaiAAAAAJ&hl=en>



## Research Interests

- Microelectronic Devices, FPGA and ES design
- Emerging two dimensional materials, heterojunction structures for nanoscale FET in VLSI and Digital Logic circuit applications.
- Nanoscale FETs for Low power Application.
- Machine learning and AI for microelectronic devices

## Academic Profile

2014-2020 : **Ph.D. (Specialization: Nanoelectronics and VLSI Engineering)**

Topic: Analog and RF Performance of Nanoscale FETs with Emerging Channel Materials

Institution: **Indian Institute of Technology (ISM), Dhanbad, Jharkhand, India**

CGPA: **9.66/10**

2008-2012 : **B.Tech, Electronics & Communication Engineering**

Institution: **Tezpur Central University, Tezpur, Assam, India**

Percentage: **78.20**

## Teaching/ Research Experience

- Designation** : **Assistant Professor** (January 2022 to present)  
**Organization** : Department of Electronics Engineering  
Defence institute of Advanced Technology, Pune
- Designation** : **Assistant Professor** (Sept 2021 to Dec 2021)  
**Organization** : Department of Electronics Engineering  
SJCIT, Bangalore
- Designation** : **Post doctoral Fellow** (December 2020 to Aug 2021)  
**Organization** : Department of Electrical Engineering  
IIT Gandhinagar, Palaj, India
- Designation** : **Assistant Professor** (June 2019 to November 2020)  
**Organization** : Department of Electronics & Communication Engineering  
Christ (Deemed to be University) Bangalore, India
- Designation** : **Research Scholar** (Jan 2014 to April 2019)  
**Organization** : Department of Electronics & Communication Engineering  
IIT(ISM) Dhanbad

## Software Proficiency

<b>Programming Languages</b>	: C, C++, Python, MATLAB, Fortran, VHDL.
<b>Scientific Software Packages</b>	: Xilinx, Cadence, NanoTCAD ViDES, Atomistix ToolKit, Quantum Espresso, Wannier 90, Silvaco ATLAS, Synopsys TCAD Intellisuite, Coventor Ware.
<b>Operating System /Miscellaneous</b>	: Linux and Windows, Microsoft office, Origin.

## Practical Exposure / Workshop Attended/ Project Experience

- Attended INUP Hands-on Training on “**Nanofabrication technologies**”, organized by Centre for Nano Science and Engineering (CeNSE), IISc, Bengaluru, June 13-23, 2017.
- Attended short course on “**Modeling, simulation and characterization of Nano-Transistors**”, organized by Department of Electrical Engineering, IIT, Kanpur, October 26-30, 2015.
- Attended INUP Familiarization Workshop on “**Nanofabrication technologies**”, organized by Centre of Excellence in Nanoelectronics, IIT, Bombay, May 27-29, 2015.
- Completed a “**MATLAB Certificate course**” organized by Computer Centre, IIT (ISM), Dhanbad, March 09-13, 2015.
- Completed B. Tech final year project on “**Application of Cantilever Resonator (MEMS) for Radio Frequency Filtering and its development**” at Tezpur Central University, Tezpur, Assam, June 2011-May 2012 (1 year).

## Served as a Reviewer

- 1. IEEE Transactions on Electron Devices; 2. IEEE Transactions on Device & Materials Reliability; 3. IEEE Access, USA; 4. IET Nanobiotechnology, UK.

## Membership of Professional Bodies

- 1. Professional member of Institute of Electrical and Electronics Engineers (IEEE). 2. Society of Photographic Instrumentation Engineers (SPIE). 3. The Optical Society of America (OSA) since 2014.

## Publication List

### A. List of Papers published in International SCI / SCI-Expanded/ Scopus indexed Journals

1. Md Akram Ahmad, Pankaj Kumar, **Bhubon C. Mech** *et. al.*, “Trade-off analysis between gm/ID and fTof GNR-FETs with single-gate and double-gate device structure,” **Scientific Reports**, vol. 14, pp. 14:10218, May 2024. (**Impact factor: 4.996**) doi: 10.1038/s41598-024-59908-5
2. Pankaj Kumar,, Kalyan Koley, **Bhubon C. Mech** *et. al.*, “Analog and RF performance optimization for gate all around tunnel FET using broken-gap material,” **Scientific Reports**, vol. 12, pp. 12:18254, October 2022. (**Impact factor: 4.996**) doi: 10.1038/s41598-022-22485-6
3. Ashish Maurya , Kalyan Koley , **Bhubon C. Mech** *et. al.*, “Investigation of Source Region’s Random Doping Fluctuation Effects on Analog and RF Performance in all-Si DG-TFET,” **IEEE Transactions on Electron Devices**, vol. 69, 9, pp. 5330-5336, September 2022. (**Impact factor: 3.22**) doi: 10.1109/TED.2022.3193992
4. Md Akram Ahmad, **Bhubon Chandra Mech** and Jitendra Kumar, “Impact Analysis of Vacancy Defects on

Analog/RF Performance Parameters of GNR FET,” **MICRO AND NANOSTRUCTURES**, vol. 171, pp. 207428, November 2022. (**Impact factor: 3.22**) doi: 10.1016/j.micrna.2022.207428

5. **Bhubon Chandra Mech**, Kalyan Koley, and Jitendra Kumar, “Ge-GaAs-Ge Heterojunction MOSFETs for Mixed-Signal Applications,” **IEEE Transactions on Electron Devices**, vol. 67, 9, pp. 3585-3591, September 2020. (**Impact factor: 3.22**) doi: 10.1109/TED.2020.3006821
6. **Bhubon Chandra Mech**, Kalyan Koley, and Jitendra Kumar, “The Understanding of SiNR and GNR TFETs for Analog and RF Application With Variation of Drain-Doping Molar Fraction,” **IEEE Transactions on Electron Devices**, vol. 65, 10, pp. 4694-4700, October 2018. (**Impact factor: 3.22**) doi: 10.1109/TED.2018.2867443
7. **Bhubon Chandra Mech** and Jitendra Kumar, “Effect of high-K dielectric on the performance of Si, InAs and CNT FET,” **IET Micro & Nano Letters**, vol. 12, pp. 624-629, March 2017. (**Impact factor : 0.975**) doi: 10.1049/mnl.2017.0088.

## **B. List of Book chapters published**

1. **Bhubon Chandra Mech** and Jitendra Kumar, “Study of effect of high-k dielectric gate oxide on the performance of SB-GNRFETs,” **Advances in Electronics, Communication and Computing, Lecture Notes in Electrical Engineering, Springer**, Singapore, vol. 443 , pp. 415-420, Oct 2017. (**Impact factor: 0.23**) doi: 10.1007/978-981-10-4765-7\_44.

## **C. List of Papers published in International Conference Proceedings**

1. M. Khobragade, P. Supugade and **B. C. Mech**, “Floating Type Memristor Emulator with Single DVCC Active Block for High Frequency Applications,” 2023 International Conference on Next Generation Electronics (**NEleX**), Vellore, India, 2023, pp. 1-6, doi: 10.1109/NEleX59773.2023.10421574.
2. P. Supugade, M. Khobragade, M. A. AHMAD, M. S. Muktadir and **B. C. Mech**, "Study of Multiple High-k Dielectric Band Modulated TDGDI GNR FETs," 2023 International Conference on Next Generation Electronics (**NEleX**), Vellore, India, 2023, pp. 1-5, doi: 10.1109/NEleX59773.2023.10421545.
3. Sumit Saha, Sweta Rani, Ahna Sharan, **Bhubon Chandra Mech** and Jitendra Kumar, “Thermal analysis of a non-polar, M-plane III-nitride quantum cascade detector,” 3<sup>rd</sup> International Conference on Microwave and Photonics (**ICMAP-2018**), IIT (ISM), Dhanbad, India, 9-11 Feb. 2018. doi: 10.1109/ICMAP.2018.8354515.
4. **Bhubon Chandra Mech**, Sumit Saha, Saddam Hussain, and Jitendra Kumar, “A three-dimensional numerical study of transport characteristics of Silicene nanoribbon TFETs in comparison to GNR TFETs,” 17<sup>th</sup> IEEE International Conference on Nanotechnology (**IEEE-NANO 2017**), University of Pittsburgh, Pittsburgh, USA, 25 – 28 July 2017. doi: 10.1109/NANO.2017.8117417.
5. Sweta Rani, Saddam Hussain, **Bhubon Chandra Mech** and Jitendra Kumar, “Recombination Dynamics in Quantum-Dot Infrared Photodetectors with Spherical and Lens-shaped Potential,” 17<sup>th</sup> IEEE International Conference on Nanotechnology (**IEEE-NANO 2017**), University of Pittsburgh, Pittsburgh, USA, 25 – 28 July 2017. doi: 10.1109/NANO.2017.8117429.
6. Sumit Saha, **Bhubon Chandra Mech**, Saddam Hussain, and Jitendra Kumar, “Optical analysis of non-polar, m-plane GaN/AlGaIn quantum cascade structures,” 2017 International Conference on Numerical Simulation of Optoelectronic Devices (**NUSOD-2017**), Copenhagen, Denmark, 24-28 July 2017. doi: 10.1109/NUSOD.2017.8010037.

## Research Projects

1. Title: " Design and development of reconfigurable FETs using 2D materials for HF applications ", Funding agency: DIAT Pune, Grant: Rs 9,95,000/=, Role: PI, Status: Ongoing

## Awards & Honors

1. Received MHRD, Govt. of India fellowship for PhD.

## Declaration

I hereby declare that the information furnished above by me is true and correct to the best of my knowledge and belief.

Place: DIAT, Pune

Date: 26/07/2024

Bhubon Chandra Mech  
Signature