

SL No.	Author(s)	Title	Name of Journal	Volume	Page	Year
1.	S.K.Sahu and K.Mazumdar	Key Factors Affecting Dynamic Reliability in GaN HEMTs and How Can They Be Mitigated?	IEEE Transactions on Device and Materials Reliability (SCIE, Impact Factor: 2.7)	26	388-408	2026
2.	C.Das and K.Mazumdar	HEMT-based wearable biosensors for noninvasive health monitoring and AI-driven diagnostics: A review	IEEE Transactions on NanoBioscience (SCIE, Q1-JCR 2024, Impact Factor: 4.4)	25	150-159	2026
3.	S. K.Sahu and K.Mazumdar	Investigation of a GaAs/AlGaAs/InGaAs pHEMT with 500 nm Gate Length for 5G RF Front Ends	IETE Journal of Research (SCIE, Impact Factor: 1.3)	72	995-1005	2026
4.	S.K.Sahu, C.Das and K.Mazumdar	TCAD Simulation Based Comparative DC Analysis of Heterojunction Material Selection for High Electron Mobility Transistor	Macromolecular Symposia Wiley	-		2026
5.	S.K.Sahu and K.Mazumdar	TCAD Analysis of GaAs/AlGaAs Multi-Quantum-Well Laser Diode with Nanoscale Active Regions Using Scalar and Vector Helmholtz Solvers	Macromolecular Symposia Wiley	-		2026

6.	S.K.Sahu and K.Mazumdar	Investigation of Current Collapse and Recovery Phenomena in GaN FET Induced by Intentional Iron Doping and Bulk Traps	Macromolecular Symposia Wiley	-		2026
7.	C.Das and K.Mazumdar	Modeling and Simulation of GaInAsN/GaAs MOS-HEMT for Rapid Detection in Biosensor Applications	Analog Integrated Circuits and Signal Processing (SCIE, Impact Factor: 1.4)	126	1-8	2026
8.	S.K.Sahu and K.Mazumdar	DC Characterization of Next-Generation Vertical AlGaIn/GaN HEMTs having CAVET and Superjunction Architectures for High-Performance Electronics	Journal of Electronic Materials (SCIE, Impact Factor: 2.8)	54	10343–10352	2025
9.	S.K.Sahu, K.Mazumdar and S.Kumar	A Systematic Analysis on the Applications of AlGaIn/GaN HEMT for High-Performance Sensing	IEEE Sensors Reviews	2	479-497	2025
10.	S.K.Sahu, K.Mazumdar , Kitmo, Y.B.Jember and S.Das	Design and investigation of InGaAs/InP/InAlAs MOSFET with optimized switching efficiency	IEEE Access (Q2, SCIE Impact Factor 3.9)	12	70045-70052	2024
11.	S.Chakraborty and K.Mazumdar	Sustainable task offloading decision using genetic algorithm in sensor mobile edge computing	Journal of King Saud University – Computer and Information Sciences	34	1552-1568	2022

			(Q1, SCI Impact Factor 5.2)			
12.	S.Chakraborty, K.Mazumdar , D.De, and S.Kumar	RMS: A Delay Sensitive Road Monitoring System using Edge Intelligence	IEEE Sensors Journal (Q2, SCI Impact Factor 4.3)	23	2643-2650	2022
13.	S.Chakraborty, K.Mazumdar , and D.De	CBLM: Cluster-Based Location Management for 5G Small Cell Network Under Stochastic Environment	Journal of Circuits, Systems and Computers (Q4, SCI Impact Factor 1.5)	30	2150174	2021
14.	K.Mazumdar , S.Kala, and A.Ghosal	Nanocrack Formation Due to Inverse Piezoelectric Effect in AlGa _N /Ga _N HEMT	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	125	120-124	2019
15.	K.Mazumdar , R.Shankar, and A.Ghosal	Design and investigation of InAlN/Al _{0.14} N _{0.15} N superlattice MOSFET	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	109	54-57	2017
16.	K.Mazumdar , R.Shankar, and A.Ghosal	Analytical innovation of static characteristics for novel AlGa _N /Ga _{0.14} N _{0.15} N superlattice MOSFET	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	120	824-827	2018
17.	K.Mazumdar , R.K.Ranjan, R.Shankar, B.Priyadarshini, and A.Ghosal	Modern comparative approach for carrier transport in InAlN/AlN superlattice device with characteristics	Superlattices and Microstructures	103	190-194	2017

		and modelling using nitride (^{14}N , ^{15}N) isotopes	(Q2, SCI Impact Factor 3.1)			
18.	K.Mazumdar , R.K.Ranjan, R.Shankar, A.Sharan, B.Priyadarshini, M.Kundu, and A.Ghosal	Analysis of electron transport in AlGa N /Ga N superlattice HEMTs for isotopes ^{14}N and ^{15}N	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	100	983-987	2016
19.	K.Mazumdar , G.K.Pathak, and A.Ghosal	Drain current versus drain voltage characteristics for an analytical Al $_{0.25}$ Ga $_{0.75}$ N/Ga N superlattice MOSFET	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	97	448-451	2016
20.	K.Mazumdar , V.P.Singh, A.Sharan, and A.Ghosal	Study of the carrier transport in presence of backscattering in InAs nanowire based MOSFET after Ga N	Superlattices and Microstructures (Q2, SCI Impact Factor 3.1)	88	110-115	2015
21.	K.Mazumdar , A.Jha, R.Begum and A.Ghosal	Mobility of 1-D GaAs Quantum Wire Limited by Polar Optic Phonon Scattering	International Journal of Innovative Research in Science, Engineering and Technology	3	1-4	2014
22.	K.Mazumdar , S.Hussain, V.P. Singh and A.Ghosal	Tunneling Effect in Double Barrier Nitride (AlGa N /Ga N) Heterostructures at Very Low Temperature	Science International	27	1017-1019	2015

Publications related to Conference:

1. S. K. Sahu and **K. Mazumdar**, “Design and Analysis of Vertical Cavity Surface Emitting Laser (VCSEL) for High-Power and Thermally Stable Operation”, Proceedings of IEEE 13th International Conference on Intelligent Embedded, MicroElectronics, Communication and Optical Networks (IEMECON), Year 2025, Pages 1-5.
2. C.Das, **K.Mazumdar** and K.A.Shah, “Modeling and Characterization of $\text{Al}_{0.8}\text{In}_{0.15}\text{Ga}_{0.05}\text{N}/\text{GaN}$ HEMTs With Enhanced 2DEG Density for High-Power Applications”, Proceedings of 8th International Conference on Electronics, Materials Engineering & Nano-Technology (IEMENTech), Year 2025, Pages 1-5.
3. C.Das and **K.Mazumdar**, “Impact of Cap Layer Engineering on the DC and RF Performance of N-Polar $\text{AlGaIn}/\text{GaInN}$ HEMTs”, Proceedings of 6th International Conference on 2025 Devices for Integrated Circuit, DevIC 2025, Year 2025, Pages 439-442.
4. **K.Mazumdar**, K.A.Shah, and A.Ghosal, “Low Power CMOS Comparator with low offset voltage and good resolution for 10-bit SAR ADC”, Proceedings of 2022 IEEE International Conference of Electron Devices Society Kolkata Chapter, EDKCON 2022, Year 2022, Pages 57-62.
5. **K.Mazumdar** and V.K.Patel, “Modelling and simulation of GaAs nanowire transistors”, Proceedings of 4th International Conference on 2021 Devices for Integrated Circuit, DevIC 2021, Year 2021, Pages 190-192.
6. **K.Mazumdar** and A.Ghorai, “Power optimized 10 Bit ADC IP design in transistor level”, Proceedings of 4th International Conference on 2021 Devices for Integrated Circuit, DevIC 2021, Year 2021, Pages 180-184.
7. B.Kumari, **K.Mazumdar**, and A.Ghosal, “Comparative Investigation of DSG-MOSFET and Some analysis on its Performance”, Proceedings of 3rd International Conference on 2019 Devices for Integrated Circuit, DevIC 2019, Year 2019, Pages 128-130.
8. **K.Mazumdar**, S.Kumar, and A.Ghosal, “Advanced pioneer approach to various properties and significant parameters in special semiconductor arrangement”, Proceedings of 2nd International Conference on 2017 Devices for Integrated Circuit, DevIC 2017, Year 2017, Pages 410-413.
9. **K.Mazumdar**, G.K.Pathak, A.Sharan, and A.Ghosal, “Mobility and power dissipation due to total phonon scatterings compared with ballistic transport in $\text{AlGaIn}/\text{GaInN}$ superlattice” 2015 6th International Conference on Computers and Devices for Communication (CODEC), Department of Radio Physics and Electronics, University of Calcutta, Year 2015, Pages 1-3.

10. **K.Mazumdar**, V.P.Singh and A.Ghosal, “Analysis of various electron scattering mechanisms in quantum wells of AlGa_N/Ga_N superlattice heterostructures”, 1st International Conference on Scattering and Diffraction Techniques for Material Characterization, Dept. of Physics, NIT Rourkela, December 13-15, 2013.

Details of **Patents**.

SL No.	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency/Country	Status
1.	Design And Investigation Of In _{0.52} Al _{0.48} As/In _{0.53} Ga _{0.47} As MOSFET With Optimized Switching Efficiency	Sole Inventor: Kaushik Mazumdar	538728	Granted on 20/05/2024	The Patent Office, Government Of India, Country- India	Granted
2.	In _{0.22} Al _{0.2} Ga _{0.58} As/In _{0.6} 3Ga _{0.37} As metal –oxide – semiconductor high - electron -mobility transistor (HEMT) with TiO ₂ passivation for RF application	Inventor: Kaushik Mazumdar , Chumki Das	576965	Granted on 31/12/2025	The Patent Office, Government Of India, Country- India	Granted
3.	N -Polar AlGa _N /Ga _N High Electron Mobility Transistor (HEMT) using AlN Cap Layers and HfO ₂ Dielectrics with enhanced DC and RF performance	Inventor: Kaushik Mazumdar , Chumki Das	587604	Granted on 24/04/2026	The Patent Office, Government Of India, Country- India	Granted
4.	SYSTEM AND METHOD FOR PRIVACY-PRESERVING OBJECT DETECTION USING FEDERATED YOLOV8 IN CONNECTED AND AUTONOMOUS VEHICLES	Inventor: Kaushik Mazumdar , Subindu Saha and Swastik Kumar Sahu	202531 105457	2025	The Patent Office, Government Of India, Country- India	Filed, Published, FER ISSUED: 10/12/2025
5.	A Multi -Layer Quantum Chip Packaging Process Integrating Meta - Material Shielding, Cryogenic Enclosure, And	Inventor: Kaushik Mazumdar , Swastik Kumar Sahu	202531 025042	2025	The Patent Office, Government Of India, Country- India	Filed on 20.03.2025

	Superconducting Interconnects					
6.	A heterojunction bipolar transistor (HBT) based on AlGaAsP/GaAsP for high frequency applications	Inventor: Kaushik Mazumdar , Swastik Kumar Sahu and Sarita Gupta	202531 068584	2025	The Patent Office, Government Of India, Country- India	Filed, REPLY TO FER DATE: 14/05/2026
7.	A machine learning based system and method for early fire detection and extinguishing in coal mines.	Inventor: Kaushik Mazumdar and Swastik Kumar Sahu	202631 031832	2026	The Patent Office, Government Of India, Country- India	Filed, Published, FER ISSUED: 20/04/2026
8.	Development of an Optimized Autoencoder System and Method for Detecting Faults of Drilling Machines in Underground Coal Mines and Bauxite Mines	Inventor: Kaushik Mazumdar , Bandita Sarkar and Biswaranjan Das	202631 026571	2026	The Patent Office, Government Of India, Country- India	Filed, Published, FER ISSUED: 12/05/2026

Books/Chapters etc.

S.No	Title	Author's Name	Publisher	Year of Publication
1.	“A Comprehensive Analysis of Quantum Communication Network: State-of-the-Art, Applications and Future Prospects”, From Bits to Qubits: The Quantum Transformation of Computing [Pages 3-30 (Book Chapter)]	S. K. Sahu and K. Mazumdar	Springer Nature	2026
2.	“Synergistic Integration of High Electron Mobility Transistors (HEMT) and Quantum Dots for Spintronics-Based Quantum Computing”, Field-Effect Transistors Technology From Sustainability to Next-Generation VLSI Design [Pages 297-326 (Book Chapter)]	S. K. Sahu and K. Mazumdar	CRC Press	2025
3.	Cognitive Cardiac Rehabilitation Using IoT and AI Tools [Pages 1-254 (full Edited book)]	P.Bhowmick, S.Das, and K.Mazumdar	IGI Global Scientific Publishing	2023
4.	“The role of AI-ML techniques in cyber security”, Methods, Implementation, and Application of Cyber Security Intelligence and Analytics [Pages 35-51 (Book Chapter)]	S.Das, A.K.Balmiki, and K.Mazumdar	IGI Global Scientific Publishing	2022
5.	“Internet of Things with Machine Learning-Based Smart Cardiovascular Disease Classifier for Healthcare in Secure Platform”, Internet of	S.Das, J.Das, S.Modak, and K.Mazumdar	Taylor & Francis Group	2022

	Things and Data Mining for Modern Engineering and Healthcare Applications [Pages 45-63 (Book Chapter)]			
6.	“Comparative Analysis of Current for Specific Scattering in GaN MOSFET”, Lecture Notes in Networks and Systems[Pages 127- 133 (Book Chapter)]	K.Mazumdar, P.Kumar, and A.Ghosal	Springer Nature	2019