SPARK | e-NEWSLETTER

DEPARTMENT OF ELECTRONICS ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD

September 2025
9th EDITION

INSIDE THIS ISSUE

FROM THE HOD'S DESK

Dear Readers,

We are here to update you about the overall progress and a few milestones achieved by the Department of Electronics Engineering in September 2025.

In this month, Prof. Rajeev Kumar Ranjan was accorded national recognition at SEMICON India 2025, inaugurated by the Hon'ble Prime Minister Shri Narendra Modi, in acknowledgment of the successful fabrication of an integrated circuit designed by him at the Semiconductor Laboratory (SCL). Furthermore, marking a significant contribution to global research and innovation, the book Introduction to Microwave Photonics, co-authored by Prof. Sanjeev K. Raghuwanshi, was published internationally by SPIE, USA. Additionally, Prof. Sanjeev K. Raghuwanshi, Prof. Rajeev Kumar Ranjan, and Prof. Manodipan Sahoo have recently authored several research articles published in esteemed international journals. Moreover, a patent has been granted to Prof. Ravi Kumar Gangwar and his research team for a compact circularly polarized (CP) four-port multiple-input multiple-output (MIMO) antenna.

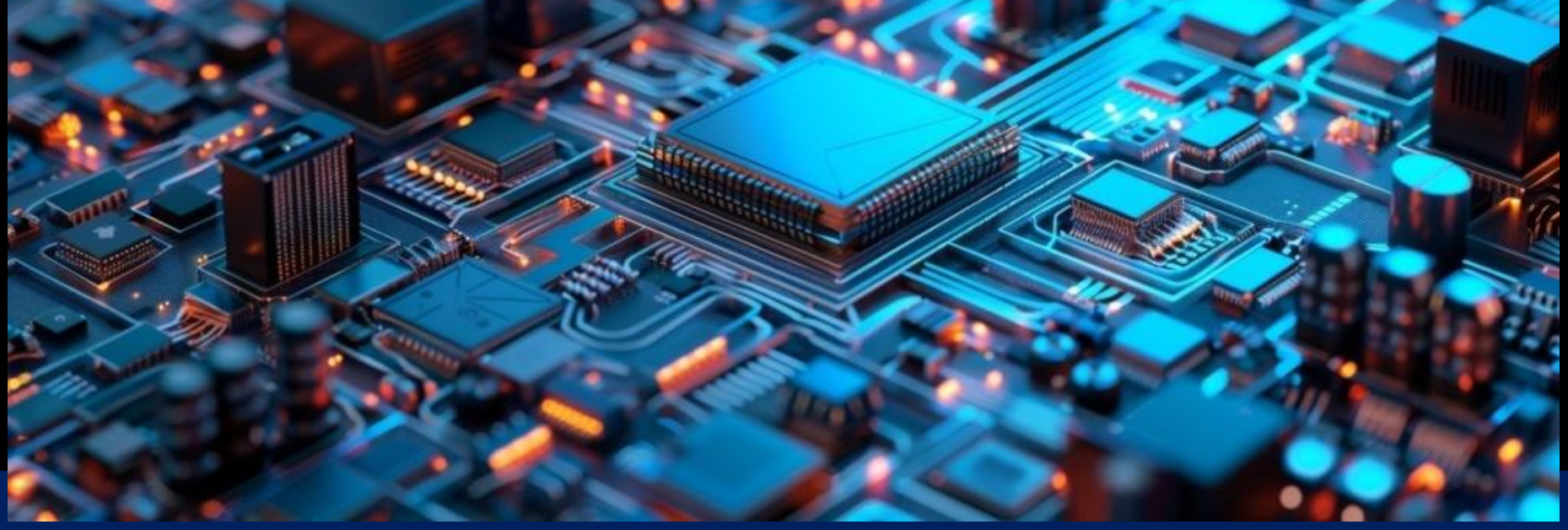
I'm pleased to share that an opportunity for bright and intelligent individuals to pursue a PhD program, with interviews being conducted monthly.

Lastly, there is also a Global Initiative of Academic Networks (GIAN) program is scheduled to be held in November 2025. We look forward to active and enthusiastic participation in this significant academic event.

Please find the Newsletter for detailed updates and give your valuable feedback to fertilise us to be bigger and better.

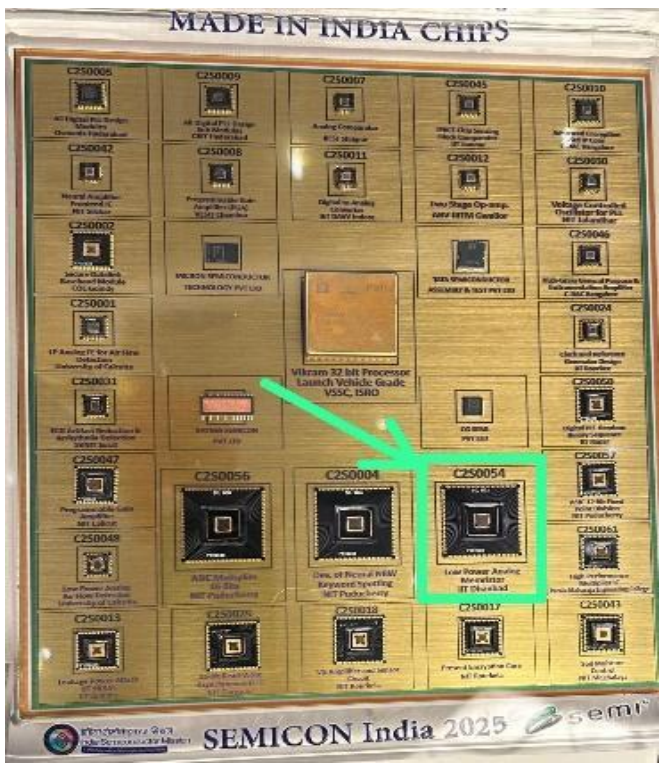
Wish you all the best!

Prof. Ravi Kumar Gangwar
HoD, Department of
Electronics Engineering,
IIT(ISM) Dhanbad



Innovation Spotlight: IIT (ISM) Dhanbad at SEMICON India 2025

Achievement in Chip Design



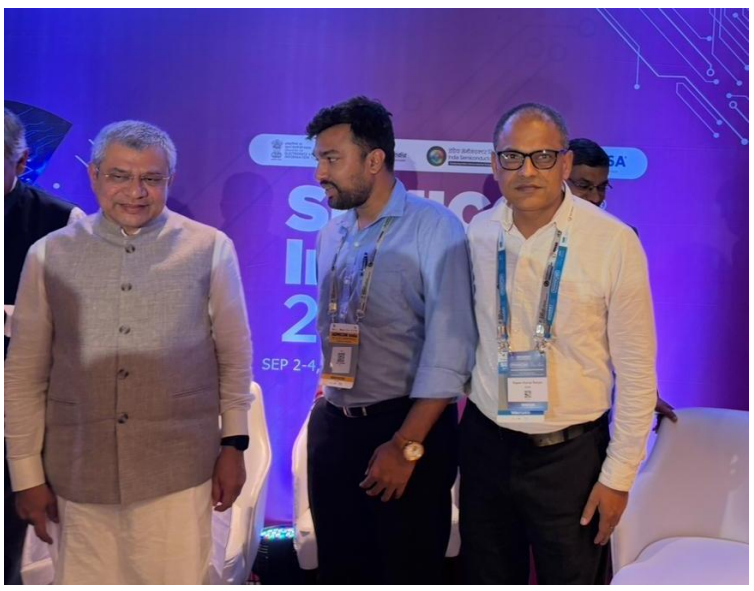
The Department of Electronics Engineering proudly share that **Dr. Rajeev Kumar Ranjan** received national recognition at SEMICON India 2025, inaugurated by Hon'ble Prime Minister Shri Narendra Modi. His integrated circuit, **APEEC1**, was successfully fabricated at the **Semiconductor Laboratory (SCL), Mohali**, through the ChipIN Centre.

APEEC1 is a **low-power analog memristor emulator** designed to replicate biological synapses and enable advanced learning mechanisms like **Spike Density Dependent Plasticity (SDDP)**. With an operating range of **1–30 MHz**, the chip holds potential for applications in **neuromorphic computing, spiking neural networks, crossbar arrays, and edge AI devices**.

This achievement highlights department's growing contributions to **indigenous chip design and semiconductor research**, aligning with India's vision of **technological self-reliance**. It also demonstrates how **academic innovations can transition into real-world silicon**, contributing to India's semiconductor roadmap.

The recognition of Dr. Ranjan's work at such a prestigious platform brings pride to IIT(ISM) Dhanbad and sets a benchmark for **future research initiatives**. It further strengthens collaborations between **academia, industry, and national laboratories** in the semiconductor domain.

The department looks forward to encouraging **students and young researchers** to build upon this success and continue driving impactful innovations in **integrated circuits and VLSI design**.



BOOK PUBLICATION

We are pleased to share that the international publication of the book "*Introduction to Microwave Photonics*" by SPIE, USA, authored by **Prof. Sanjeev K. Raghuwanshi**, Prof. Mandeep Singh, Dr. Ritesh Kumar, and Prof. Santosh Kumar.

This book delves into the swiftly expanding interdisciplinary realm of microwave photonics, linking microwave engineering with photonics to foster progress in high-speed communication, radar, sensing technologies, and biomedical applications. It addresses both theoretical principles and experimental methods, emphasizing state-of-the-art subjects like photonic generation, fiber Bragg gratings, beamforming, and the photonic stimulation of antennas.

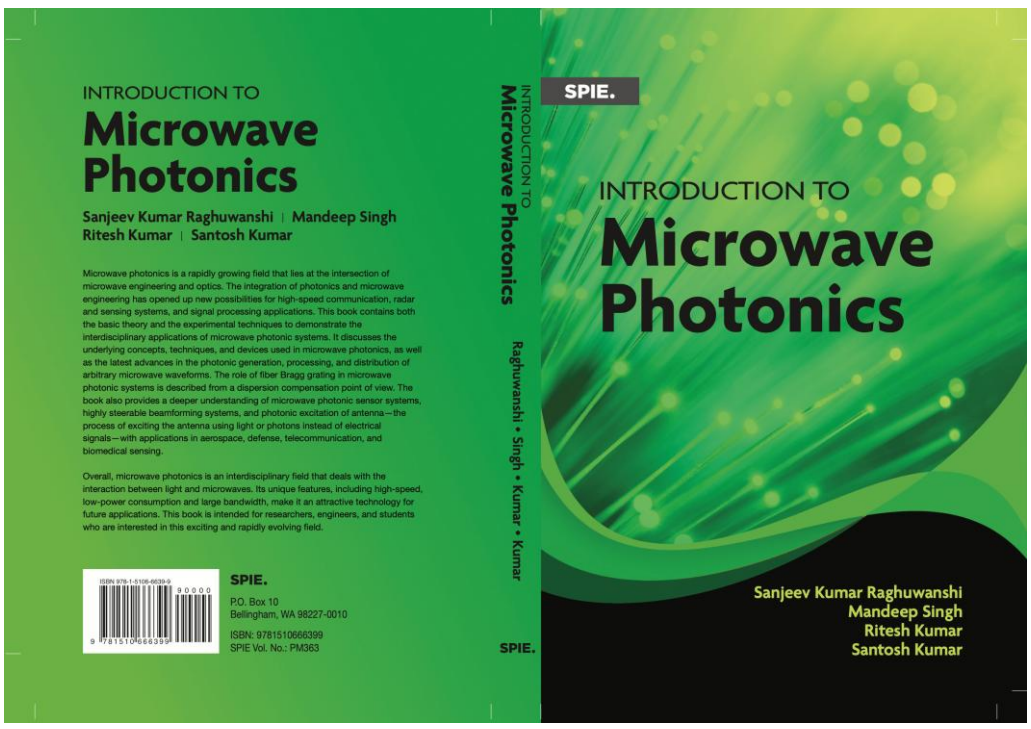
This remarkable achievement further strengthens IIT(ISM) Dhanbad's global footprint in research and innovation.

Book Description

Microwave photonics is a rapidly growing field that lies at the intersection of microwave engineering and optics. The integration of photonics and microwave engineering has opened up new possibilities for high-speed communication, radar and sensing systems, and signal processing applications. This book contains both the basic theory and the experimental techniques to demonstrate the interdisciplinary applications of microwave photonic systems. It discusses the underlying concepts, techniques, and devices used in microwave photonics, as well as the latest advances in the photonic generation, processing, and distribution of arbitrary microwave waveforms. The role of fiber Bragg grating in microwave photonic systems is described from a dispersion compensation point of view. The book also provides a deeper understanding of microwave photonic sensor systems, highly steerable beamforming systems, and photonic excitation of antenna—the process of exciting the antenna using light or photons instead of electrical signals—with applications in aerospace, defense, telecommunication, and biomedical sensing.

Overall, microwave photonics is an interdisciplinary field that deals with the interaction between light and microwaves. Its unique features, including high-speed, low-power consumption and large bandwidth, make it an attractive technology for future applications. This book is intended for researchers, engineers, and students who are interested in this exciting and rapidly evolving field.

Read more on SPIE: https://spie.org/Publications/Book/2686281

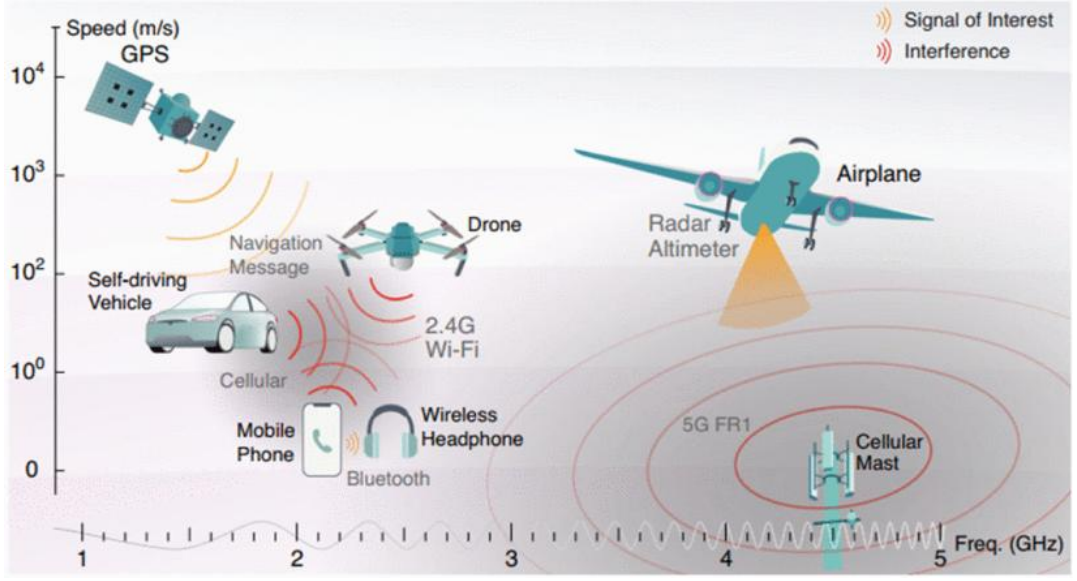


Prof. Sanjeev K. Raghuwanshi

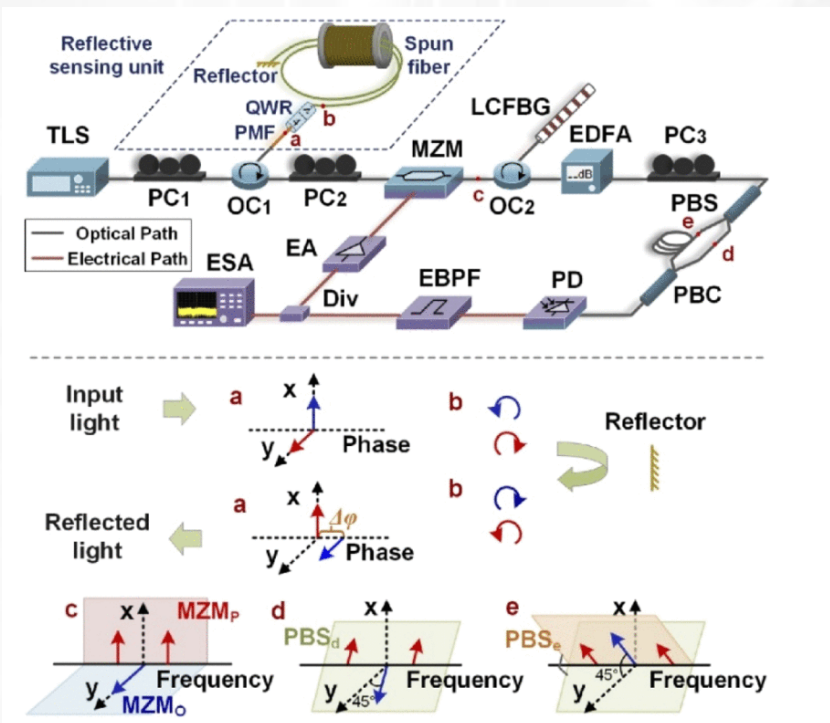
PUBLICATION

Ritesh Kumar, Pankaj Kumar Singh, Sanjeev Kumar Raghuwanshi, Santosh Kumar "Microwave Photonic Filter for Fiber Optic Sensing Applications: A Review " IEEE Sensors Review, September 2025 DOI: 10.1109/SR.2025.3611416

In this work, a detailed analysis of microwave photonic filters (MPFs) is discussed in the context of fiber optic sensing and measurement techniques. At first, MPFs are reviewed in terms of classification and characteristics, followed by scope of reconfiguration in a photonic system, applications in aerospace, and associated challenges in implementation. Emerging technologies and advanced systems require featured photonic-assisted detections and processing. In this direction, multifeatured detection schemes, such as coherent detection, in-phase quadrature detection, Nyquist bandwidth detection, and heterodyne detection, are discussed. Furthermore, for the signal processing and system performance evaluation point of view, time–frequency analysis, phase noise measuring technique, and spurious free dynamic range analysis are given in detail. The discussion is extended to the application in microwave sensing through photonic filters. The key sensing discussion involves compressive sensing, microwave photonic interferometry and interrogation, and sensing of various physical attributes. Photonic filters provide the potential for microwave measurements in aerial systems. The most typical measurements in such systems include real-time frequency evaluation, the demand for a high-resolution and high-sensitivity measuring device, Doppler frequency measurement, frequency scanning, and angle of arrivals. Various photonic techniques for such measurements are reviewed, as well as newly developed photonic airborne systems.



Representation of RF interference in wirelessly connected technology applications with spatial multiplexing

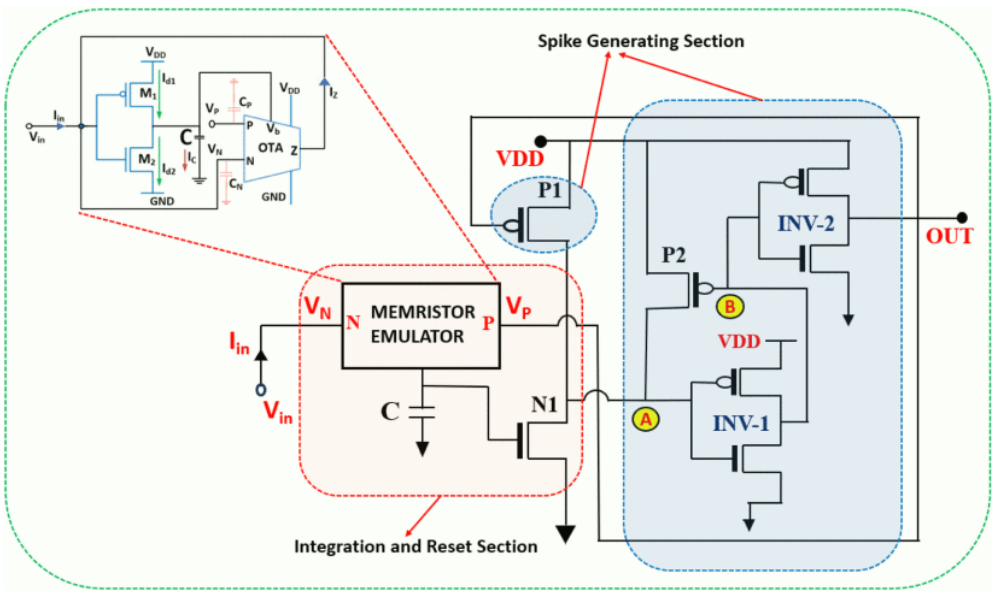


Schematic diagram of optoelectronic-based optical current sensor and schematic of polarization state at various stages . TLS: tunable laser source; PC: polarization controller; OC: optical coupler; LCFBG: linear chirp fiber Bragg grating; PBS:

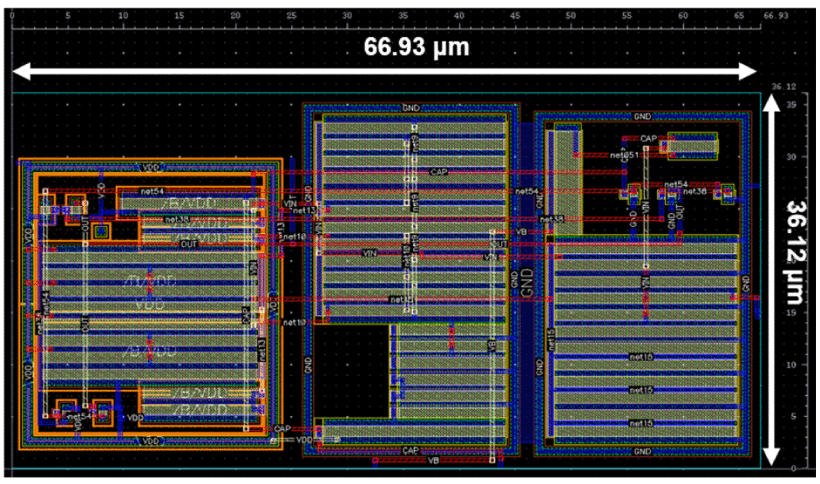
PUBLICATION

P. Kumar, R. K. Ranjan and S. -M. Kang, " Ultra-Low Power 1.2 pJ/Spike Fully CMOS SpikingNeuron and Its Application,"; in IEEE Transactions on Nanotechnology, vol. 24, pp. 462-468, 2025, DOI: 10.1109/TNANO.2025.3613362

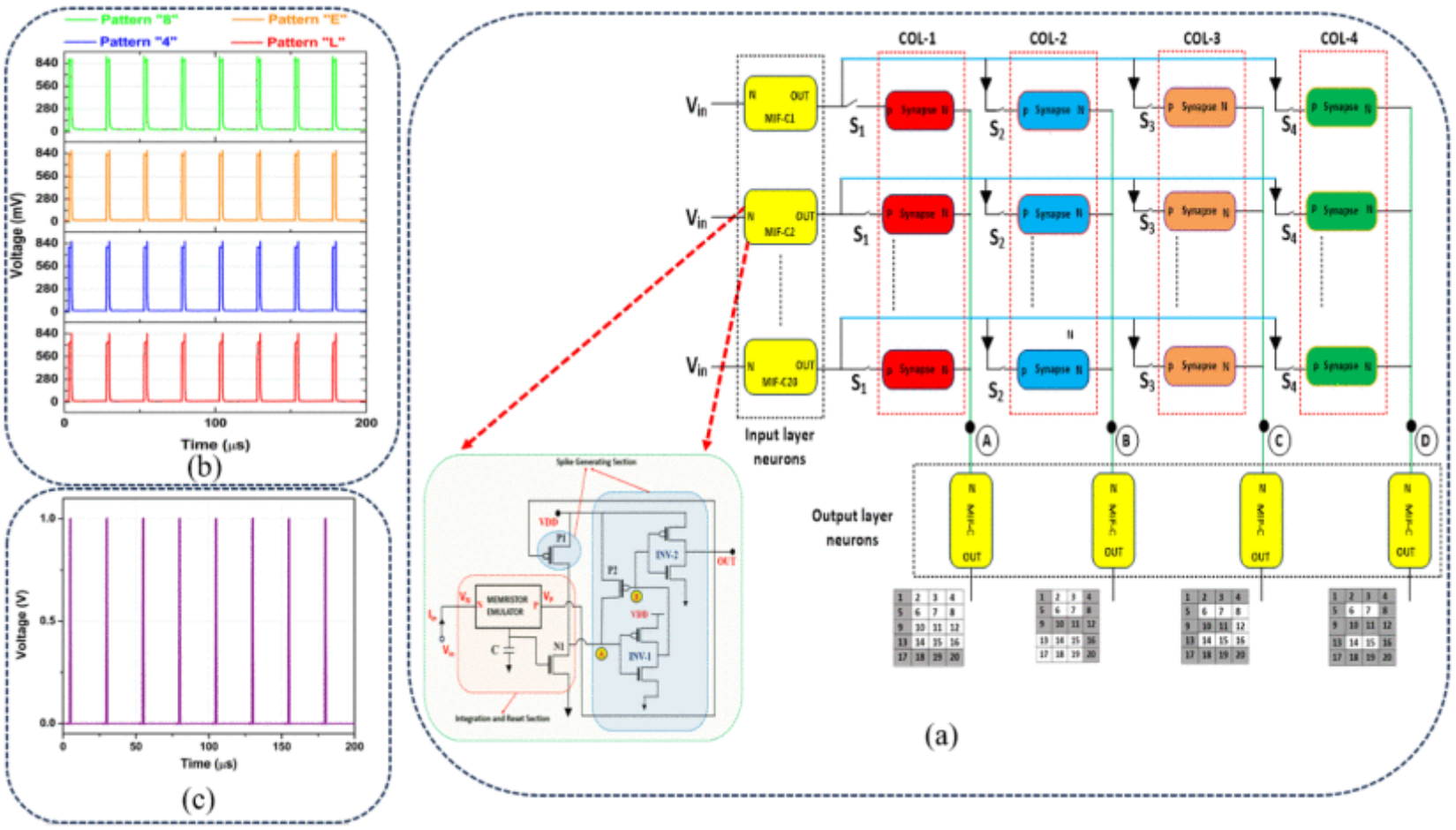
In this research, electronic neurons, such as integrate-and-fire models and memristor synapses, are key components of energy-efficient spiking neural network (SNN) systems. Current silicon-based models face challenges due to high transistor counts, large footprints, and excessive energy consumption. This brief presents a low-transistor count, energy-efficient neuron design. The spiking signal-generating circuit consumes approximately 1.2 pJ per spike and uses a single capacitor as its only passive element, while occupying a layout area of 66.93 µm × 36.12 µm and operating on a 1 V power supply. It also highlights the driving capability and pattern recognition application of the proposed neuron model.



A new CMOS memristor neuron circuit: MIF-C.



Layout of the MIF-C neuron in 180 nm CMOS technology.



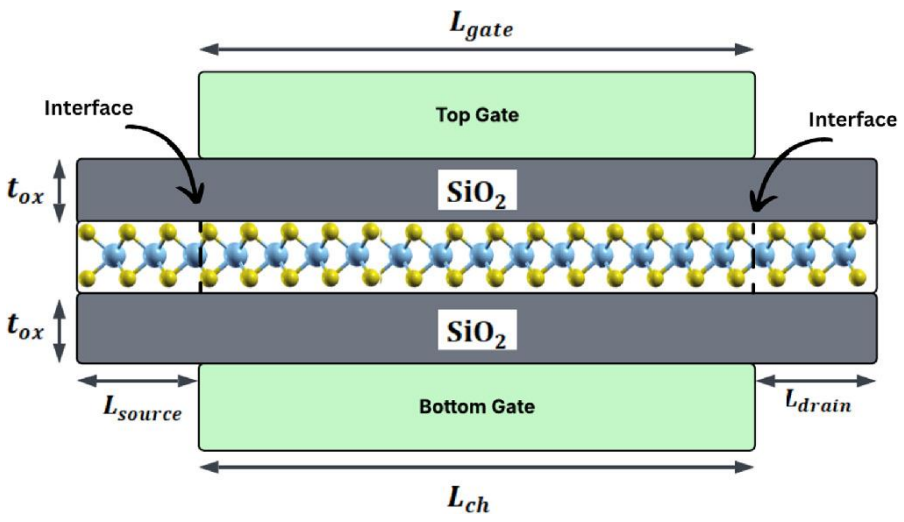
(a) Proposed Pattern Recognition System. (b) Summed voltage for different patterns at their respective nodes. (c) Output spikes from output layer neurons.

PUBLICATION

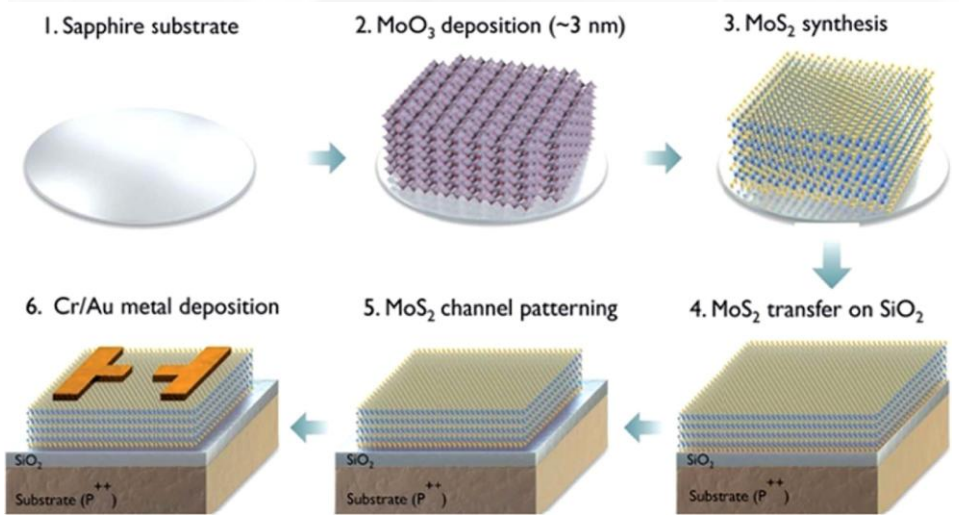
Shashank Singh, Saptarshi Neogi, Ishita Visen and Manodipan Sahoo, “Multiscale Simulation of 2D Material-Based Homo-and Heterostructure FET: A Material-to-Circuit Approach”, Physica Scripta, IOP Publishers, September 2025

DOI: https://doi.org/10.1088/1402-4896/ae0839

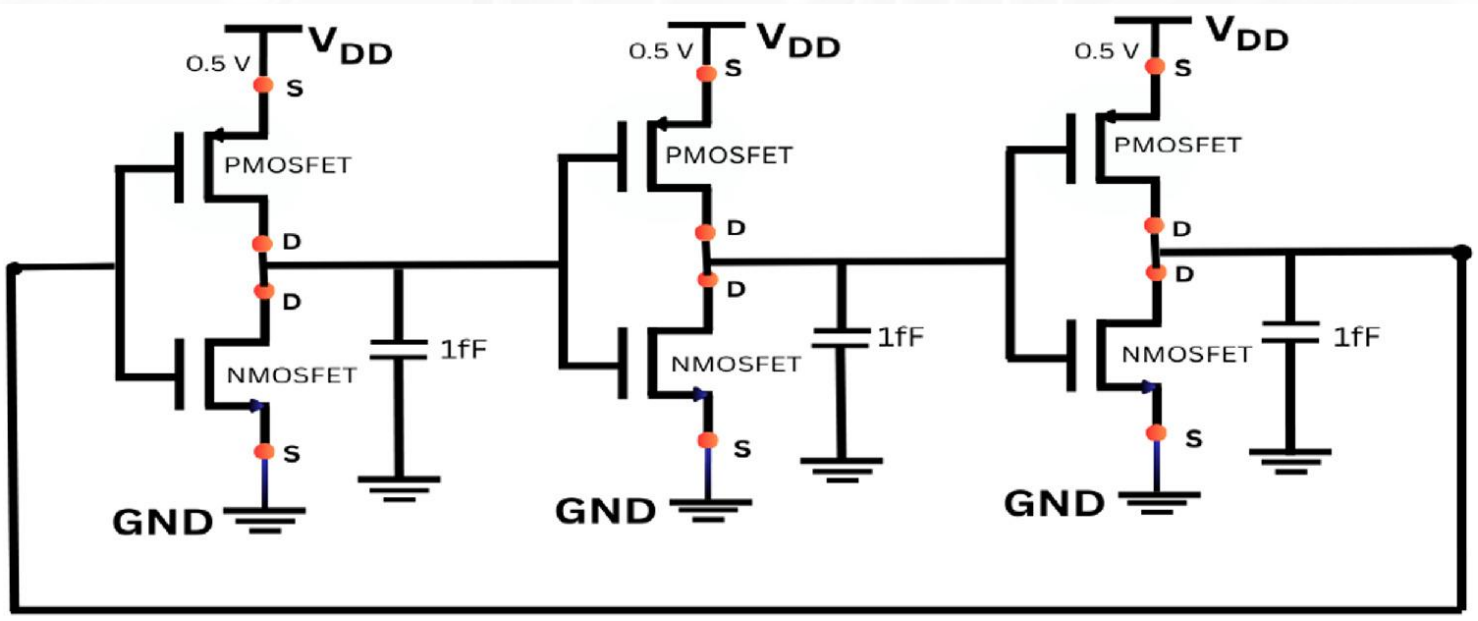
This study presents a comprehensive multiscale modeling approach for simulating 2*D* material-based field-effect transistor (FET) circuits. The proposed framework integrates various open-source tools to model electronic behavior from the atomic to the device level, ensuring precise and scalable simulations. VESTA is utilized for structural visualization and modification, followed by Quantum ESPRESSO for electronic property calculations. Next, Wannier90 extracts maximally localized Wannier functions (MLWFs) for accurate Hamiltonian representation. NanoTCAD ViDES is employed for device-level simulations, evaluating transistor performance. Additionally, Cadence Virtuoso is integrated into the workflow for material-to-device simulation, enabling advanced circuit-level design and optimization using Verilog-A. The framework accurately captures current-voltage characteristics and enables high-speed operation, achieving ring oscillator frequencies up to 43.5 GHz-highlighting the potential of MoS_2-based FETs for future low-power logic applications. The reliability and robustness of the proposed multiscale framework are validated through benchmarking against published experimental and simulation data, showing strong correlation and predictive accuracy. Moreover, the use of open-source tools ensures that this methodology remains both cost-effective and widely accessible to the research community. This framework not only accelerates the design and optimization of 2*D* material-based FETs but also provides a foundation for implementing these novel devices into digital VLSI circuits, supporting next-generation high-speed, low-power logic and memory applications.



The structure of the MoS_2-based double-gate homostructure FET.



Wafer-scale fabrication flow of MoS_2-based FETs [9] : (1) Sapphire substrate, (2) MoO_3 deposition, (3) MoS_2 synthesis, (4) transfer on SiO_2, (5) channel patterning, and (6) Cr/Au metal contact deposition.



Schematic of a three-stage ring oscillator (RO) using our proposed MoS_2 FET.

OUTREACH

Faculty Participation in Workshop on Indigenous Technologies for Critical Minerals and Sustainable Mining at IIT(ISM) Dhanbad

Four distinguished faculty members from our department, Prof. Ravi Kumar Gangwar, Prof. Subindu Kumar, Prof. Aman Sikri, and Prof. Prashant Kumar Varshney, actively participated in a one-day workshop held at **IIT (ISM) Dhanbad** under the ANRF–PAIR Category B Project titled *"Development of Innovative and Cutting-Edge Indigenous Technologies for Critical Minerals Exploration and Smart/Sustainable Mining."*

The workshop brought together leading experts, researchers, and institutional partners. Eminent mining engineer **Prof. Raja V. Ramani** (Pennsylvania State University, USA) graced the event as Chief Guest. The discussions focused on formulating a strategic roadmap for the development of indigenous technology packages vital for *Atmanirbhar Bharat* and India's clean energy future.

MEDIA CORNER

IIT (ISM) Dhanbad earns spotlight at Semicon India 2025 with Indigenous Chip Design

PNS : RANCHI

IIT (ISM) Dhanbad earned national recognition at Semicon India 2025 for the successful design and fabrication of an advanced integrated circuit, APEEC1, led by Dr. Rajeev Kumar Ranjan, faculty member of the Department of Electronics Engineering. The acknowledgment highlighted the institute's rising role in indigenous chip design and advanced semiconductor research.

The process of designing the circuit began in 2023 with an initial fund of ?1.12 crore provided by the Ministry of Electronics and Information Technology (MeitY), the Government of India agency responsible for the development, promotion, and regulation of the electronics and IT industry, as well as digital governance and cybersecurity initiatives in the country.

Semicon India 2025 was inaugurated in New Delhi on September 2, 2025, by Prime Minister Narendra Modi, who described chips as the "digital diamonds of the 21st century" and underlined India's ambition to become a global hub for semiconductor innovation.

In a landmark moment of the ceremony, Union IT Minister Ashwini Vaishnaw handed over India's first indigenous 32-bit microprocessor, Vikram-32, developed by ISRO's Semiconductor Laboratory, to the Prime Minister.

As part of this national celebration, the APEEC1 chip designed under Dr. Ranjan's leadership was spotlighted. Fabricated at the Semiconductor Laboratory (SCL), Mohali, via the ChipIN Centre, APEEC1 is a low-power analog memristor emulator created to replicate the behavior of biological synapses. By enabling advanced learning mechanisms such as Spike Density Dependent Plasticity (SDDP), it supports next-generation neuromorphic computing, spiking neural networks, crossbar arrays, and edge AI devices.

Operating efficiently between 1 MHz and 30 MHz, it offers high performance with low energy consumption, making it suitable for real-time adaptive learning systems.

Reflecting on the achievement, Dr. Ranjan remarked: "This chip is a small yet meaningful step toward India's vision of semiconductor self-reliance. It demonstrates how academic research can transform into tangible silicon with real-world impact."

With over 350 exhibitors from 33 countries, including global CEOs, researchers, and startups, Semicon

India 2025 showcased India's growing capabilities in the semiconductor ecosystem. The recognition of IIT (ISM) Dhanbad's contribution on such a prestigious platform reinforced the institute's commitment to supporting India's journey towards technological independence and global leadership in semiconductor innovation.

PATENT GRANTED

INTELLECTUAL PROPERTY INDIA

क्रम सं/SL No :033138969

पेटेंट कार्यालय,भारत सरकार | The Patent Office, Government Of India

पेटेंट प्रमाण पत्र | Patent Certificate

(पेटेंट नियमावली का नियम 74) | (Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No. : 570367

आवेदन सं. / Application No. : 202531010883

फाइल करने की तारीख / Date of Filing : 10/02/2025

पेटेंटी / Patentee : INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD

आविष्कारकों का नाम /Name of Inventor(s) : 1.Tripta Kumari 2.Kundan Kumar Suman 3.Ravi Kumar Gangwar

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित *A COMPACT ???????3 MATERIAL-BASED CP MIMO ANTENNA SYSTEM WITH RADOME INTEGRATION FOR UAV VIDEO TRANSMISSION* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख फरवरी 2025 के दसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *A COMPACT ???????3 MATERIAL-BASED CP MIMO ANTENNA SYSTEM WITH RADOME INTEGRATION FOR UAV VIDEO TRANSMISSION* as disclosed in the above mentioned application for the term of 20 years from the 10th day of February 2025 in accordance with the provisions of the Patents Act,1970.

अनुदान की तारीख : 03/09/2025
Date of Grant :

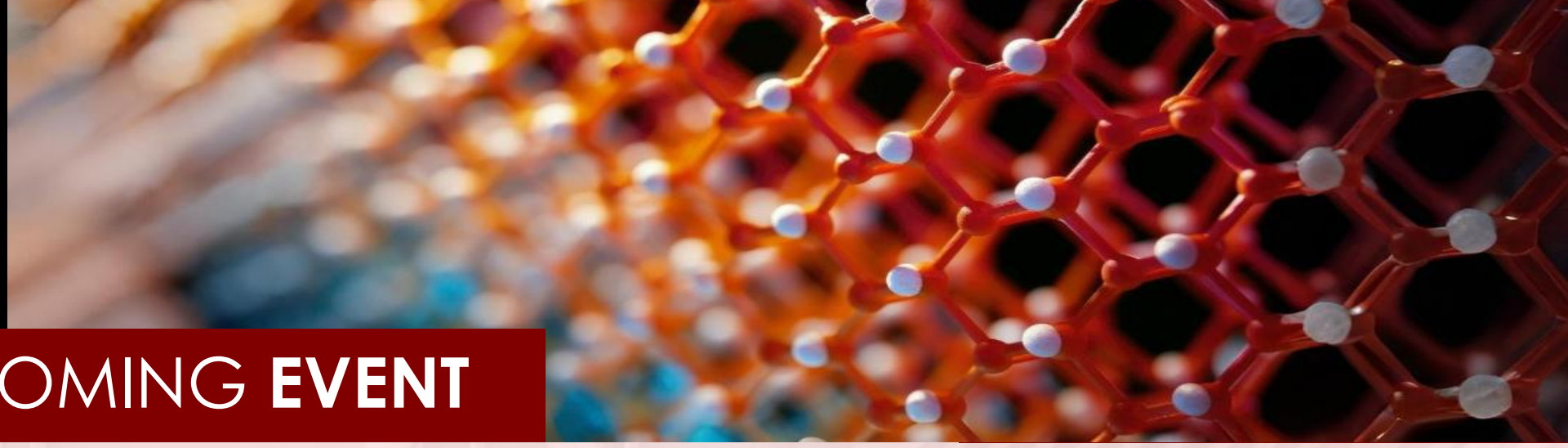
पेटेंट नियंत्रक
Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, फरवरी 2027 के दसवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 10th day of February 2027 and on the same day in every year thereafter.

The successful acquisition of the recent patent by Prof. Ravi Kumar Gangwar and his team is highly commendable.

This patent discloses a compact circularly polarized (CP) four-port multiple-input multiple-output antenna system developed using a dielectric resonator and integrated with a 3D-printed PLA radome for unmanned aerial vehicle (UAV) video transmission. The design employs open-loop conformal strips with lateral metallic strips to generate CP radiation, while a novel decoupling structure consisting of a cross-stub with a central ring and a labyrinth-shaped defected ground structure significantly enhances inter-port isolation (>16.8 dB). Operating in the 5.7–5.9 GHz band, the antenna achieves a measured gain of about 5.5 dBic with efficiency exceeding 90%, ensuring robust performance against multipath effects. The radome not only protects the antenna in harsh environments but also preserves aerodynamic stability, making the system highly suitable for reliable UAV-based video and communication applications.



UPCOMING **EVENT**

5-Day GIAN COURSE ON
2D Materials for Emerging Electronics

GIAN GLOBAL INITIATIVE OF ACADEMIC NETWORKS

शिक्षा मंत्रालय MINISTRY OF EDUCATION सत्यमेव जयते

This course offers a comprehensive introduction to 2D materials like graphene, TMDs, h-BN, and phosphorene, covering their fundamentals, growth techniques, device fabrication, and key challenges. Participants will gain hands-on experience in simulations and 2D material exfoliation. The course also discusses different material/device characterization techniques and highlights applications of 2D materials in advanced and emerging electronics.

03-07 NOVEMBER 2025

No. of Participants: 50 (First Come, First Serve)

Venue:
Department of Electronics Engineering
IIT (ISM) Dhanbad
Jharkhand – 826007
India

Enroll Now !!

https://forms.gle/sfvG6rgnQ14h1RrA6

OBJECTIVES:

- Exposing participants to the fundamentals of 2D material, its potential and limitations.
- Providing knowledge of atomic-level investigation methods and tools.
- Discussing the fundamentals of material synthesis and thin film growth.
- Hands-on experience on 2D material exfoliation and flake identification.
- Overview on extracting device properties and exploring applications of 2D materials.

COURSE FEE

- Students (BTech/MTech/M.Sc.) – ₹ 590*
- Research Scholars / Post-Doctoral Fellows – ₹ 1180*
- Faculty (Academic Institutions) – ₹ 2950*
- Industry / Research Organizations – ₹ 3540*
- Foreign Students – $350*

*Including GST

ACCOMMODATION

- IIT Dhanbad Guest House (A/C, Twin-sharing) – ₹ 672/- per day
- Hostel (Non A/C, Twin-sharing) – ₹ 236/- per day

Mode : Offline
Register by: 22 October 2025

Course Coordinator:
Prof. Jeevesh Kumar
Department of Electronics Engineering
IIT (ISM) Dhanbad
Phone: +91 8884742131
Email: jeevesh@iitism.ac.in

Guest Faculty

Prof. Ariel Ismach
Dept. of Materials Science and Engineering,
Tel Aviv University, Israel

Click here

Host Faculty

Prof. Jeevesh Kumar
Dept. of Electronics Engineering,
Indian Institute of Technology (ISM) Dhanbad, India

Click here

OPPORTUNITY

In the Department of Electronics Engineering at IIT (ISM) Dhanbad, applications are being accepted for both full-time and part-time Ph.D. programs.

Application form, Guidelines, Terms & Conditions for full-time are available at IIT(ISM) Dhanbad website.
https://admissions.iitism.ac.in/phd/index.php/admission/add_phd/home

FACULTY PROFILE

Dr. Aman Sikri

Assistant Professor

Research Interest: Reconfigurable Intelligent Surfaces (RISs), Non Orthogonal Multiple Access (NOMA), Free Space Optical (FSO) Communications, Rate Splitting Multiple Access (RSMA).

Dr. Amitesh Kumar

Associate Professor

Research Interest: Photonic Integrated Circuits, Fiber Optic Sensors, Microwave Photonics, and Radio-over Fiber Technologies for 5G and Beyond.

Dr. Debjani Mitra

Professor

Research Interest: Wireless Communication- 5G technologies, Communication Networks, Machine Learning and Statistical Signal processing.

Dr. Devendra Chack

Associate Professor

Research Interest: Photonic Integrated Circuits, Advance Optical Communications, Radio-over-Fiber System For 5G/6G.

Dr. Govind Murmu

Assistant Professor

Research Interest: Signal Processing and Communication Algorithms, Adaptive Filters, Adaptive Beamforming for 4G/5G, Blind Source Separation (BSS) Algorithms, , Adaptive Control.

Dr. Himanshu Bhusan Mishra

Associate Professor

Research Interest: Development of Physical Layer Signal Processing for 5G/6G Wireless Technologies (OFDM, Massive MIMO, OTFS, RIS, ISAC etc.), Implementation of Physical layer algorithms on Software Defined Radio (SDR) based point-to-point wireless setup.

Dr. Jaisingh Thangaraj

Associate Professor

Research Interest: Optical Networks, Wireless Sensor Networks, VANET, Software Defined Networks, Optical Instrumentation.

Dr. Jeevesh Kumar

Assistant Professor

Research Interest: 2D Materials, Emerging Electronic Devices, Atomistic Simulation, Device Fabrication, material & Device characterizations.

Dr. Jitendra Kumar

Professor

Research Interest: Nano-optoelectronics, Nanoelectronics.

Dr. Kaushik Mazumdar

Associate Professor

Research Interest: VLSI Design, Electronic Low Dimensional Systems, Analysis and Design of MOSFET & Nano-Devices.

Dr. Manodipan Sahoo

Associate Professor

Research Interest: Emerging Materials-based Devices, VLSI Circuits.

Dr. Manoj Kumar

Assistant Professor

Research Interest: Graph machine learning, graph dimensionality reduction, optimization algorithms, federated learning, large language models (LLMs), and their real-world applications.

Dr. Mrinal Sen

Associate Professor

Research Interest: Photonic Integrated Circuits, Embedded Systems.

Dr. Mukul Kumar Das

Professor

Research Interest: Modeling and Design of Semiconductor Devices for VLSI and Opto-electronic Applications, Growth of Semiconductor Interface and Band-gap Engineered Thin Film Transistor and Solar Cell by using PVD Technique, Design and Development of Integrated Modules for Photonic QKD Network Development Of Quantum Fiber Optic Network.

Dr. Naresh Sharma

Assistant Professor

Research Interest: Integrated Photonics, Programmable Photonics, Free Space Optics, Photonic Crystals Applications.

Dr. Nirupama Mandal

Associate Professor

Research Interest: Transducer Design, Controller Design, Instrumentation System Design, Smart Sensing System and Smart Instrumentation.

Dr. Prashant Kumar Varshney

Assistant Professor

Research Interest: SIW Based Microwave Planar Sensors, Metamaterial Inspired Microwave Sensors for Various Applications.

Dr. Preety Priya

Assistant Professor

Research Interest: Integrated Communications and Sensing, High Mobility Communications, Leo Satellite Communications, OTFS, OFDM, Beamforming, MIMO, Sparse Signal Processing, Synchronization and Channel Estimation, Nonlinear Data Detection (Particle Filter).

Dr. Rahul Bhattacharya

Assistant Professor

Research Interest: Modelling Of Analog and Mixed-signal Circuits, Fault Modeling and Testing of VLSI Circuits, FPGA-based Design.

Dr. Ravi Kumar Gangwar

Professor

Research Interest: Dielectric Resonator Antennas, MIMO Antennas, Bio-electromagnetics And Microwave Measurements.

Dr. Rajeev Kumar Ranjan

Associate Professor

Research Interest: VLSI Design, Mem-element (Memristor, Memcapacitor, And Meminductor) Design.

Dr. Santanu Dwari

Professor

Research Interest: RF & Microwave Engineering, Antenna.

Dr. Samrat Mukhopadhyay

Assistant Professor

Research Interest: Online Machine Learning, Compressed Sensing, Nonconvex and Stochastic Optimization, Sparse Adaptive Filtering.

Dr. Sanjeev Kumar Raghuwanshi

Professor

Research Interest: Numerical Method of Optical Waveguides, Optical Sensor, Microwave Photonics, Optical Fiber Communication.

Dr. Subindu Kumar

Professor

Research Interest: III-V Semiconductor Nano-structures, Nano-scaled MOS Devices and Circuits, On-Chip Interconnects.

Dr. Shalu Rani

Assistant Professor

Research Interest: Energy Storage Devices for Wearable Electronics Including Advanced Flexible Supercapacitors/Micro-supercapacitors.

Dr. Sushrut Das

Professor

Research Interest: Microwave Passive Networks, Antennas, Wireless Energy Transfer and Energy Harvesting Microwave Filters.

Dr. Swati Rajput

Assistant Professor

Research Interest: Silicon Photonics for Next Generation Optical Communication, Nano photonics, Semiconductor Optoelectronics.

Dr. Ugrasen Singh

Assistant Professor

Research Interest: Design and analysis of wireless communication systems. I have been working on Space Modulation Techniques (SMTs), Reconfigurable Intelligent Surface (RIS), Non-Orthogonal Multiple Access (NOMA), Orthogonal Frequency Division Multiplexing (OFDM), Ultra-Reliable and Low-Latency Communication (URLLC), and Physical Layer Security.

Dr. Y. M. Asha Latha

Assistant Professor

Research Interest: RF Power Amplifier Design: Broadband, High Efficiency, Switched Mode PAs, Harmonic Manipulation, Harmonic Injection, Load Modulation, Doherty PA, Chip Design: GaN MMIC Based RF Power Amplifier Design.

EDITOR'S NOTE

Hi everyone,
Our monthly electronics newsletter is a community effort, and your input is key to its success. We'd love to hear what you thought of this month's issue. Let us know what you enjoyed, and what you'd like to see in future issues, so we can make it a resource that benefits everyone.

Thanks for your time!

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"Let me not pray to be sheltered from dangers, but to be fearless in facing them.
Let me not beg for the stilling of my pain, but for the heart to conquer it.

--Rabindranath Tagore