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ECE EXPEDITION



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EDITORIAL

FROM EDITOR-IN-CHIEF'S DESK



On behalf of the editorial team, I express my extreme pleasure in presenting the fifth issue of the 'ECE Expedition', the newsletter of our department, published half-yearly aiming to present remarkable developments and notable activities of the department semester-wise. The editorial team extends heartfelt thanks to each member of the department for their achievements and contributions toward the worthy expedition of the department.

During the last six months (July-Dec 2024) the department has made significant contributions in various domains such as teaching and research, product development, sponsored projects, outreach activities and students' achievements. I am sure this issue will give a glimpse of the above.

We are marching with 'Team Spirit and Synergy'. I wish to quote William Shakespear who said, "You know what you are, but you also know what you can be". The Team Spirit and Synergistic approach can help us evolve. Synergy is not only the answer to human conflicts, rather it transcends the conflicts and creates something new and rewarding. Synergy is based on combining the individuals' strengths which produces results, far greater than anyone could achieve alone. For example, a musical chord made up of several notes; creates music, which a single note cannot. The individual notes do not lose their individual identity, but together they produce music. Like musical notes, synergistic people do not lose their identity, but together they can create something new and fulfilling. This needs internal strength to think in terms of we, which is a key to transform the whole situation. Synergy leads to mutual understanding and growth. New ideas breathe best in an atmosphere of mutual understanding.

Lack of synergy is one of the greatest tragedies, since so much potential remains unexplored and unused. Egoism is the greatest barrier to synergy, which prevents creative blending of human energies and puts walls around and stops from moving forward.

Let us march forward with Team Spirit and Synergistic approach, leading to excellence.

Thank you and best wishes

Dr. Sanjay Kumar
EDITOR-IN-CHIEF

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DOWN THE MEMORY LANE



Nishant Biyani, Gold Medalist and a proud alumnus of the 2024 Electronics and Communication Engineering batch at Birla Institute of Technology, Mesra, has embarked on a remarkable journey in academia and research. A recipient of the prestigious Gold Medal for his outstanding academic performance, Nishant's journey at BIT was defined by resilience, exploration, and growth. Navigating the challenges of being part of the first batch to face the pandemic, he adapted to remote learning and later embraced on-campus experiences with enthusiasm, finding his passion in core electronics. Guided by curiosity and a drive for excellence, Nishant credits the life-changing ISRE program, supported by Vishal H. Shah Sir and BITMAA, for broadening his horizons. Through this program, he secured a summer internship at Northeastern University, where he contributed to setting up the RTL-to-GDS flow for the 65-nm technology node.

Following his return to campus, Nishant carefully evaluated his options between industry placements and higher studies, ultimately choosing to pursue advanced research. To deepen his practical knowledge, he completed a six-month internship at the Indian Institute of Science (IISc), Bangalore, focusing on GaN HEMTs and device characterization. His research contributions include publications on radiation-hardened memory circuits capable of withstanding multi-node upsets and self-recovery mechanisms. With a strong foundation in VLSI, CMOS, and circuit design, Nishant is now pursuing his Ph.D. in the Energy Circuits and Systems Group at Northeastern University in Boston, USA, under the guidance of Professor Aatmesh Shrivastava. His research focuses on ultra-low-power circuits and analog computing, areas where he aims to make significant contributions.

Grateful for the unwavering support of BIT's faculty and the nurturing environment of his alma mater, Nishant is committed to advancing technology through innovation and collaboration. As he steps into a promising future, he remains deeply connected to BIT, aspiring to give back to the institution that played a pivotal role in shaping his career and aspirations.

HOLLOW MICRONEEDLE MEDIATED PAINLESS DRUG DELIVERY

Sachin Kumar Singh*, Richa Mishra*

Birla Institute of Technology, Mesra, Ranchi, Jharkhand - 835215,

Email - richa@bitmesra.ac.in

Microneedles(MNs) are micron-scaled medical devices used to administer vaccines, drugs etc. It creates micron-sized transport pathways that allow enhanced delivery of a wide range of drug molecules. It is used for transdermal, biofluids (i.e., ISF and blood) sampling.

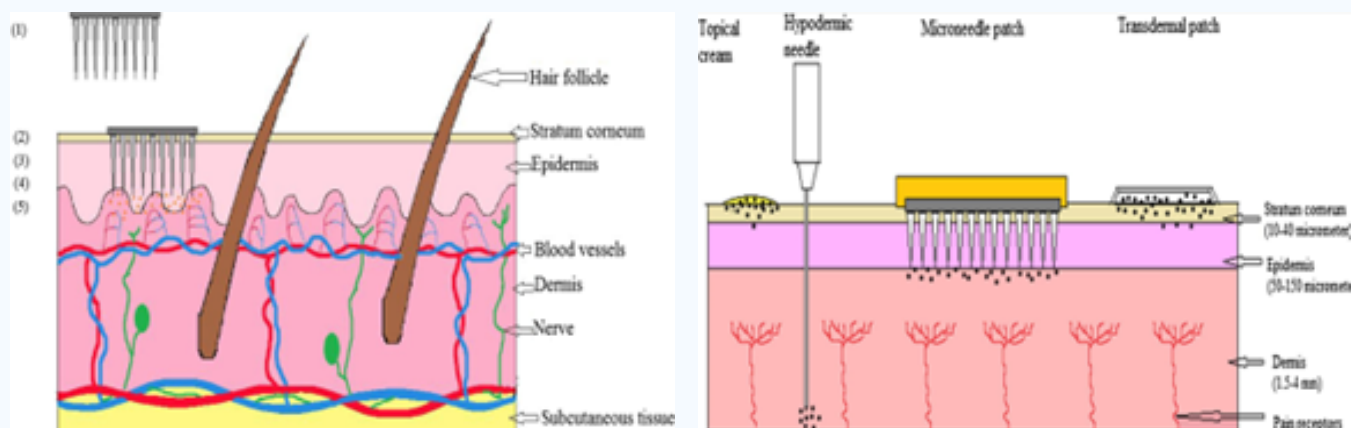


Fig.1. (a). Comparison of topical cream, hypodermic needle, microneedle patch and transdermal patch. (b). Mechanism of drug delivery by microneedle device: (1) Microneedle device with drug solution; (2) Device inserted into the skin; (3) Temporary mechanical disruption of the skin; (4) Releasing the drug in the epidermis; (5) Transport of drug to the site of action. [Ref – T. Waghule, G.Singhvi, S. K. Dubey, M. M.r Pandey, G. Gupta, M. Singh, K. Dua, Microneedles: A smart approach and increasing potential for transdermal drug delivery system, Biomedicine & Pharmacotherapy, Volume 109, 2019, Pages 1249-1258]

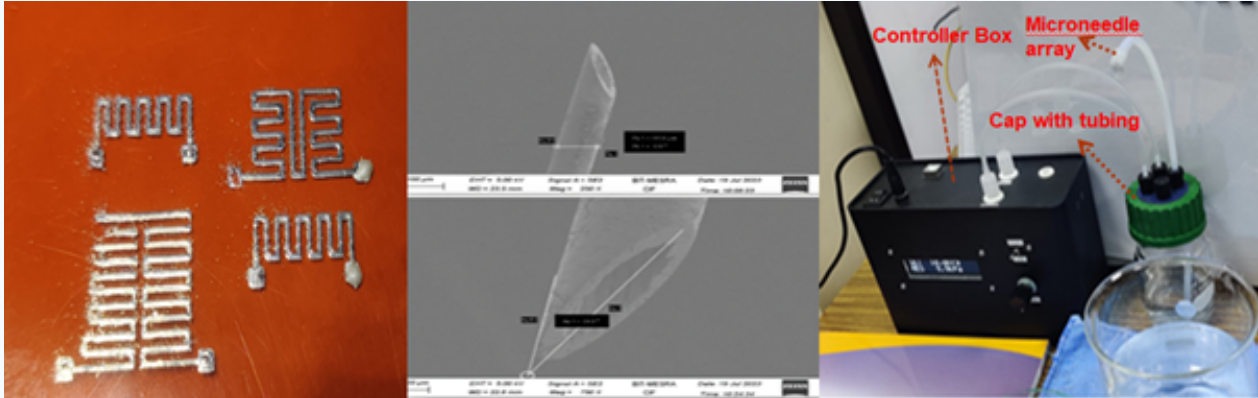
Hypodermic needles and topical creams are most commonly used when it comes to delivery of the drug through the skin. Needles are less accepted by patients due to pain associated with them and topical creams show less bioavailability. Skin serves as the major barrier for delivering drug through the topical route. Skin is made up of three main layers-the outermost stratum corneum, middle epidermis and the thickest of all, dermis. The stratum corneum layer behaves like a major barrier as it allows only certain molecules like low molecular weight drugs to pass through it. Microneedles (MNs) are employed for the painless transdermal delivery of drugs, effectively addressing the limitations associated with traditional methods. Microneedle device consists of needles of micron size, which are arranged on a small patch.

TECHNOLOGY VISION

Objective of the Research

- 1.Design, simulation and fabrication of hollow steel microneedle array.
- 2.Integration of micropump with microneedles.
- 3.Design, simulation and fabrication of microheater.

This work is supported by the Birla Institute of Technology, Mesra, India Seed Money Grant entitled "High Speed Two Photon Polymerisation based Fabrication of Hollow Microneedles" (2022-2024) and Department of Science and Technology, India Scientific and Engineering Research Board Promoting Opportunities for Women in Exploratory Research (SERB POWER grant) entitled, " Scalable assembly of Painless Hollow Microneedle Array", 2022-25.



DEPARTMENTAL ACTIVITIES

Dr. Priyank Saxena Organized a one-week workshop entitled "**Mastering UAV Design: From Concept to Creation (UAVDW-2024)**," scheduled from July 22nd to July 26th, 2024. Industry Partner: Speciality Products & Services (SPS) (www.spsig.com), LLP. 30 participants from industry, academia, and students from all over the country attended.



BIRLA INSTITUTE OF TECHNOLOGY MESRA

WORKSHOP ON
MASTERING UAV DESIGN
FROM CONCEPT TO CREATION (UAVDW-2024)

July 22nd to July 26th, 2024

Key Highlights

- Hands-on Learning
- Expert Instructors
- Comprehensive Curriculum
- Final Project

Industry Partner
Speciality Products & Services (SPS), LLP

Certificate
The certificate will be issued jointly by BIT Mesra and SPS India upon successfully completing the course.

Last Date of Registration
JULY 18TH, 2024

Payment for Registration
[QR Code]
(Select 'UAVDW-2024')

Registration
[QR Code]

+91 72505 1



DEPARTMENTAL ACTIVITIES

Dr. Richa Mishra conducted SERB Sponsored 2 Day High-End Workshop on **MEMS based Scalable Healthcare Technologies** on 1st and 2nd August 2024 under SERB POWER project titled "Scalable Assembly of Hollow Microneedle array", Project Investigator - Dr. Richa Mishra (File no. SPG/2021/004087). The workshop was targeted towards understanding fundamentals and contemporary research on microneedles, microsensors, actuators, and motors, valves, pumps, and fluidics used in Microsystems used for healthcare applications. The book MEMS-based Transdermal Drug Delivery coauthored by Dr. R Mishra and Prof. T K Bhattacharyya and published by CRC Press was also released on the occasion. The workshop was attended by 30 students from all over India.

Speakers



DEPARTMENTAL ACTIVITIES

Dr. Richa Mishra organised seminar on **Accelerators / Incubation Opportunities for Students: Early-Stage Entrepreneurs** under the aegis of Institution's Innovation Council, Birla Institute of Technology, Mesra, Ranchi (IIC-BIT) on 27th August 2024. The event was presided over by Prof. C. Jeganathan Dean, Research Innovation and Entrepreneurship, BIT Mesra.

The poster is for a seminar titled "Accelerators/Incubation - Opportunities for Students - Early-Stage Entrepreneurs" held at Birla Institute of Technology, Mesra, Ranchi, Jharkhand-835215. It is organized by the Institution's Innovation Council (IIC-BIT) under the Ministry of Education Initiatives. The event took place on 27th August 2024, starting at 3:30 pm onwards. The poster features three key note speakers: Dr. Sanjeev Kr. Shrivastava, Director of Skilling Programs at AI & Robotics Technology Park (ARTPARK), Indian Institute of Science, Bangalore; Dr. Viswanadham Duppatla, VP of Biopharma Innovation & Biomanufacturing at IKP Knowledge Park, Genome Valley, Hyderabad; and Mr. Prakash Kumar, Deputy Director of Software Technology Parks of India, Namkum Industrial Area STPI-Ranchi. The seminar was held in Seminar Hall-1 R&D Building, BIT Mesra. The poster also includes logos for the 70th Anniversary of IIT Bombay and the Institution's Innovation Council.

Birla Institute of Technology, Mesra
Ranchi, Jharkhnad-835215

Seminar on
"Accelerators/Incubation - Opportunities
for Students - Early-Stage
Entrepreneurs"

27th August 2024

Time : 3:30 pm onwards

Key Note Speaker

Dr. Sanjeev Kr. Shrivastava
Director, Skilling Programs
AI & Robotics Technology Park (ARTPARK)
Indian Institute of Science, Bangalore

Dr. Viswanadham Duppatla
VP - Biopharma Innovation & Biomanufacturing
IKP Knowledge Park, Genome Valley, Hyderabad

Mr. Prakash Kumar
Deputy Director
Software Technology Parks of India
Namkum Industrial Area STPI-Ranchi

Seminar Hall-1 R&D Building, BIT Mesra



DEPARTMENTAL ACTIVITIES

Dr. Priyank Saxena conducted a two-day workshop on "**Microcontroller-Based Development Board: An Insight into Prototyping and Automation**" from 30th November to 1st December 2024. Thirty UG students from different branches attended it.



DEPARTMENTAL ACTIVITIES

Dr. Sanjay Kumar was convener of the Three weeks Students' Induction Program (SIP) for the newly admitted UG & PG students of MO 2024 Batch, BIT Mesra, Ranchi, 20 Aug to 06 Sep 2024.



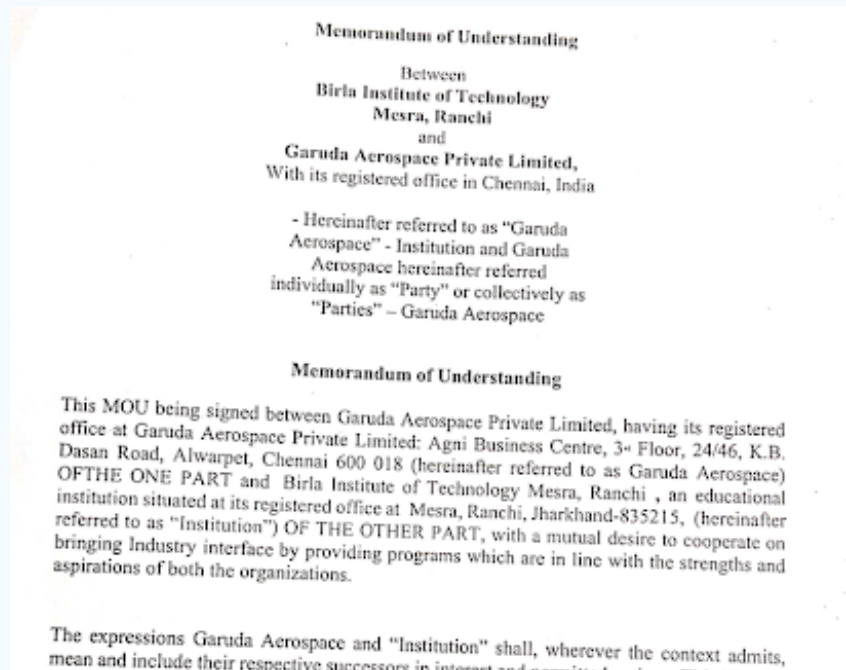
The Department of ECE organized a 4 to 8-weeks summer internship starting on 3 June 2024.



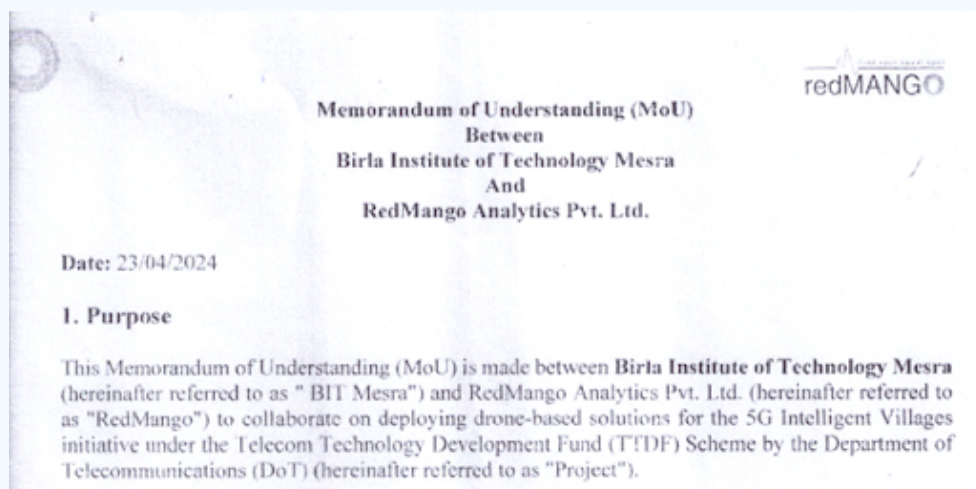
The Department signed an MoU with **Speciality Products & Services (SPS)** (www.spsig.com), LLP on Jul 26, 2024 to facilitate collaborative research on industrial problems and support student Internships.



The Department of ECE signed an e-MoU with **Garuda Aerospace Pvt. Ltd.** to establish a centre of excellence in **Drone Technology**.



Dr. Priyank Saxena signed an MoU with RedMango Analytics to collaborate on deploying drone-based solutions for the 5G Intelligent Villages initiative under the Telecom Technology Development Fund (TTDF) scheme by the Department of Telecommunications.



Welcome ceremony of First year ECE students



Interactive Session with 7th Semester Students

In a proactive initiative, the Department of ECE proposed during the meeting on November 30, 2024, to host an interactive session with final-year students. This session was conducted on November 25, 2024. The aim of this session was to provide students with a platform to openly share their experiences, thoughts, and ideas. Their valuable insights helped shape and enhance the teaching-learning process, academic programs, and overall environment of the department.

Farewell of Dr. A. K. Tiwary

On August 13, 2024, the Department of Electronics and Communication Engineering (ECE), BIT Mesra, organized a heartfelt farewell for Dr. Anjini Kumar Tiwary, who resigned to join as an Associate Professor. Dr. Tiwary joined BIT Mesra on January 3, 2005, and dedicated nearly two decades to the department. During his time at BIT Mesra, Dr. Tiwary made significant contributions to teaching, research, and mentoring students. His dedication and vision have left a lasting legacy within the department. We thank Dr. Tiwary for his invaluable service and wish him a fulfilling future ahead.

Farewell of Dr. Manoj Mukul



On 4th November 2024, the Department of ECE, BIT Mesra, gathered to bid an emotional farewell to Dr. Manoj Kumar Mukul, who served with dedication from 26th February 2007 to 3rd October 2023. Throughout his 16-year tenure, Dr. Mukul's unwavering commitment to academic excellence and his contributions to the department were exceptional. As a mentor and educator, he shaped countless students' careers, instilling knowledge and values that will last a lifetime. His research endeavors elevated the department's standing, while his leadership fostered a spirit of innovation and collaboration.

Batch Photography held on (29 November 2025) for UG, PG.

The Department of ECE organized a memorable batch photography event on November 29, 2025, for its undergraduate (UG) and postgraduate (PG) students. This special occasion brought together students and faculty to capture moments of camaraderie and celebration, marking the culmination of their academic journey at BIT Mesra. The event served as a cherished opportunity for students to create lasting memories with their peers and mentors.

Interactive session with Mr. Subhas Basu, CEO, Silicon Interface on 20th Sept. 2024



Expert talk by Prof Aatmesh Shrivastava on "Hardware for AI"

**Birla Institute of Technology,
Mesra, Ranchi**

Prof. Aatmesh Shrivastava**Associate Professor
Northeastern University, Boston**

Expert Talk on
"Hardware for AI"
Organized by Department of Electronics
and Communication Engineering &
IIC-BIT Mesra
15th July 2024
Time : 4:00 PM onwards

Venue : Seminar Hall-1 R&D Building, BIT Mesra

RECENT PUBLICATIONS (JOURNALS)

JOURNAL PUBLICATIONS

1. Arvind Kumar, Biswajit Karan, S.S. Solanki, Mahesh Chandra, D.K. Singh, "Automatic tuning of radio stations based on listener's preference using Software Defined Radio and MATLAB", Engineering Applications of Artificial Intelligence, Volume 137, Part A, 2024, DOI:10.1016/j.engappai.2024.109117.
2. Trivikram Chand Rachakonda ,Shagufta Parveen, Asif Akhtar , **Aminul Islam** "High Tunneling Magneto-Resistance Ratio in Co₂FeAl Heusler Alloy and WSe₂ 2D Material Tunnel Barrier-Based Magnetic Tunnel Junctions," Journal of Magnetism and Magnetic Materials, vol. 606, no. 172365, pp. 1–10, Sep. 2024, Publisher: Elsevier, DOI: <https://doi.org/10.1016/j.jmmm.2024.172365>

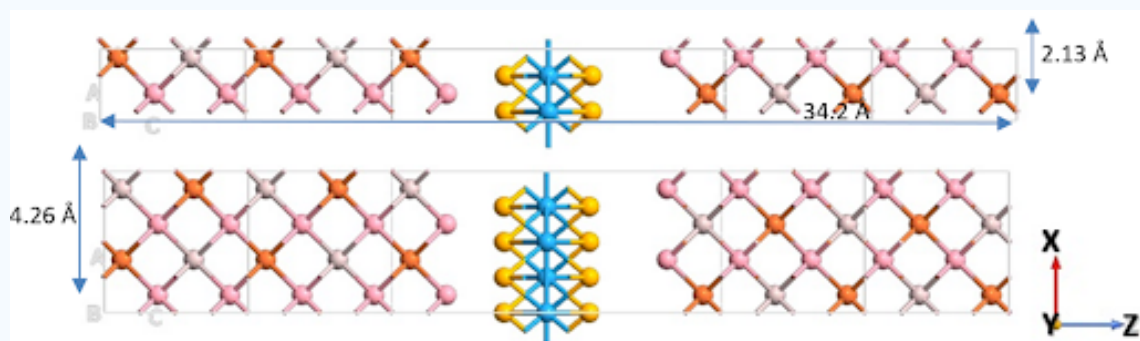
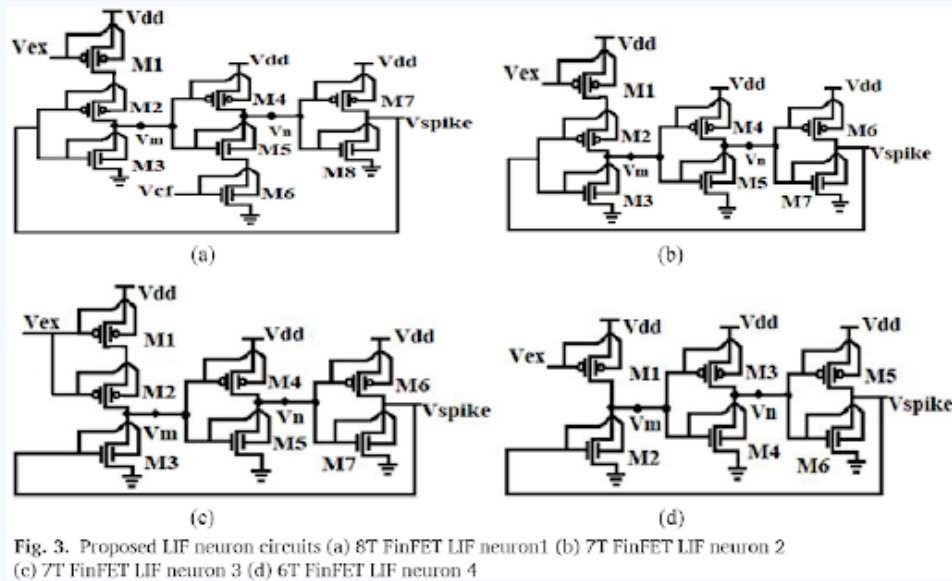


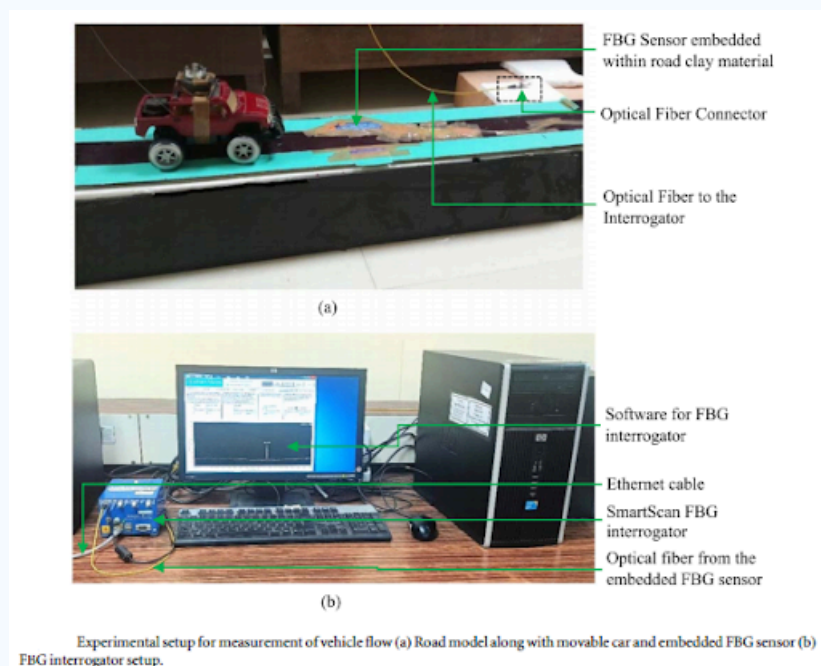
Fig. 3(a). Device configuration of thin film Co₂FeAl and 1L WSe₂-Based MTJ (top Fig.). Device configuration of complete lattice Co₂FeAl and 1L WSe₂-Based MTJ (bottom Fig.). The figure is viewed from the top along the Y-axis. To make a thin film, the device is cut across the X-axis and the thickness of the layer is measured along the Z-axis.

3. Arti Kumari and **Sanjeet Kumar**, "Compressed Sensing Image Communication in Rayleigh Fading Channel using Polar Code", Microwave Review - Vol. 30, No. 2, December 2024.
4. Sharmeen Sultana, **Neela Chattoraj**, "Compact Circular Wilkinson Power divider " Frequenz ,vol 78 ,issue 11-12, 31st July 2024

5. Umayia Mushtaq , Md. Waseem Akram, Dinesh Prasad, **Aminul Islam** , "An Energy and Area-Efficient Spike Frequency Adaptable LIF Neuron for Spiking Neural Networks," Computers & Electrical Engineering, vol. 119, no. 109562, pp. 1–13, Oct. 2024, Publisher: Elsevier,
DOI: <https://doi.org/10.1016/j.compeleceng.2024.109562>

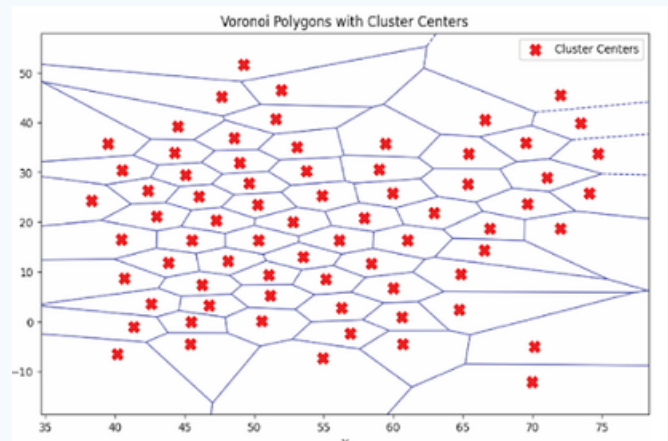


6. Rani Ankita, **S K Ghorai and Somnath Sengupta**, "Vehicle flow indication and identification using FBG sensors", Physica Scripta, IOP, vol. 99, no.12, p.125543 (12 pp.), 19 Nov' 2024. Publisher - SCI, DOI: 10.1088/1402-4896/ad8f6c

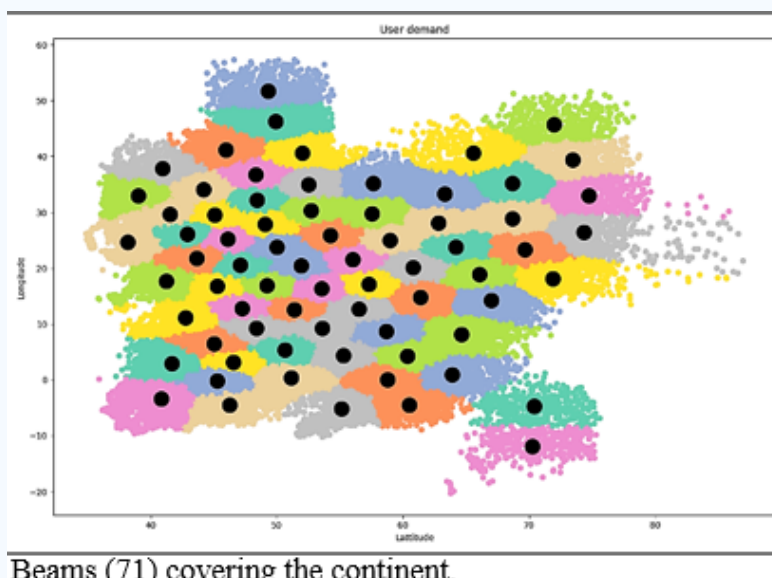


JOURNAL PUBLICATIONS

7. S. Kashyap and **N. Gupta**, "Gaussian Mixture Model Based Voronoi Partitioning Scheme in Multi-Beam Satellites," IETE Journal of Research, pp. 1-14, Nov. 2024, doi: 10.1080/03772063.2024.2426710.



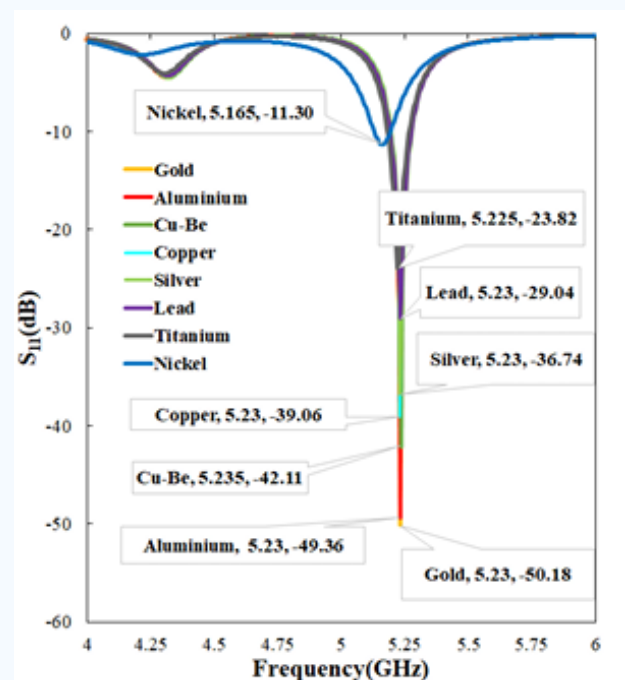
8.



Beams (71) covering the continent.

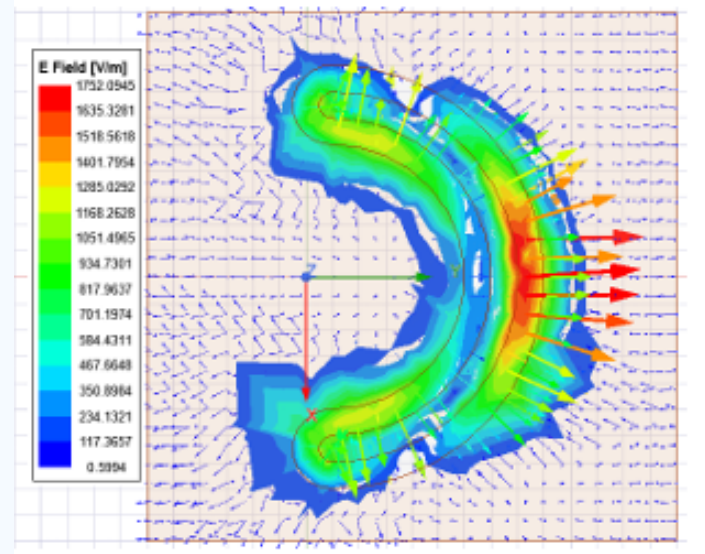
S. Kashyap and **N. Gupta**, "Demand Based Dynamic Bandwidth Allocation in Multibeam Satellites Using Machine Learning," Wireless Personal Communications, vol. 136, no. 2, pp. 1243-1260, May 2024, doi: 10.1007/s11277-024-11341-7

9. S. Pawde and **N. Gupta**, "Microwave Sensors for Metal Conductivity Measurement," Mikrotalasna revija = Microwave Review, vol. 30, no. 1, pp. 16-22, 2024, doi: 10.18485/mtts_mr.2024.30.1.3.



JOURNAL PUBLICATIONS

- 10.** S. Pawde and N. Gupta, "Microwave Sensors for Arsenic Detection Using Folded Complementary Circular Ring Resonator," Mikrotalasna revija = Microwave Review, vol. 30, no. 2, pp. 124–128, 2024, doi: 10.18485/mtts_mr.2024.30.2.14.



- 11.** Tuhin Mukherjee, Ashok Pattnaik, **Sitanshu Sekhar Sahu**, "Analyzing VEGFA/VEGFR1 Interaction: Application of the Resonant Recognition Model-Stockwell Transform Method to Explore Potential Therapeutics for Angiogenesis-Related Diseases", The Protein Journal, 43, 697–710, July 2024

- 12.** MA Dinesh, R Kumar, **VR Gupta**, V Dayal, "Synthesis Characterization and Application of Ba3V2O8 ceramics in Cylindrical Dielectric Resonator Antenna: Simulation and Experimental Study", Materials Science and Engineering B. Volume 311, 16 November 2024 <https://doi.org/10.1016/j.mseb.2024.117791>

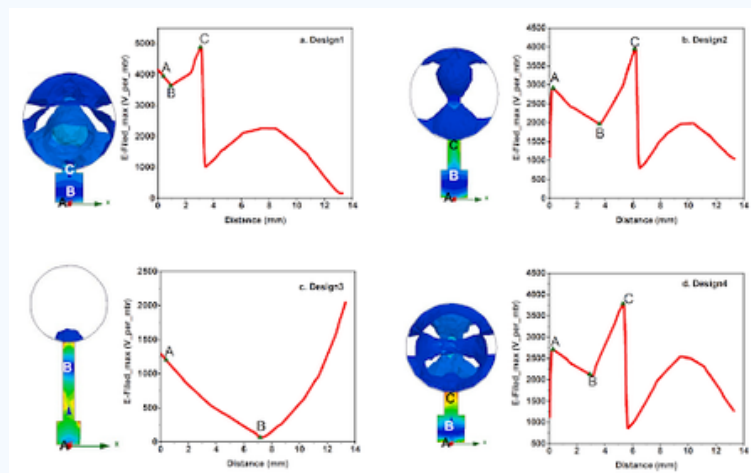
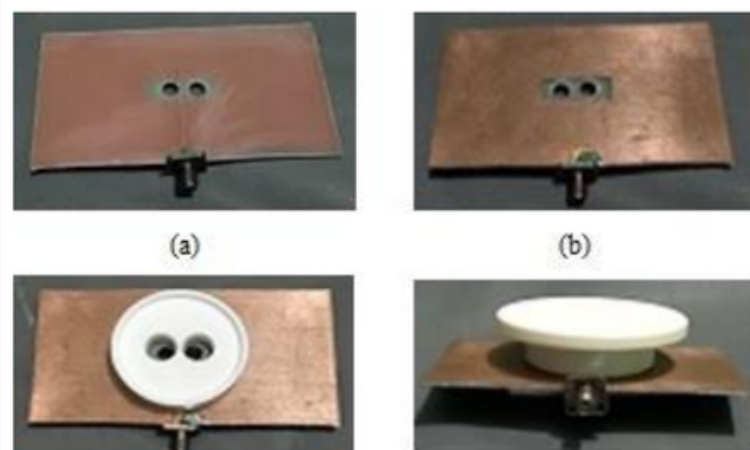


Fig. 6. Simulation Results showing the Electric field distribution for various DR positions in BVO-900-based CDRA.

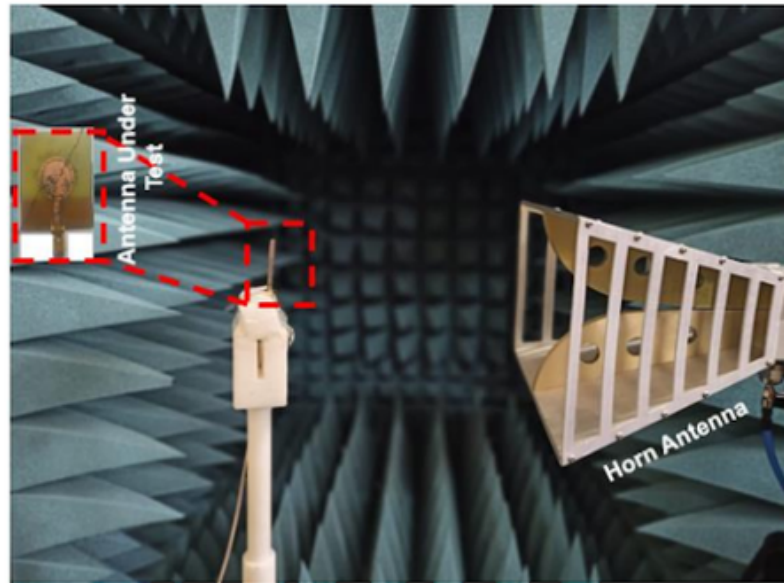
- 13.** A Kiran, **GK Mishra**, "Button Shaped Wearable Dielectric Resonator Antenna for IoT Applications." Microwave Review, issue-1, vol-30, pp. 29-36, 2024, DOI: 10.18485/mtts_mr.2024.30.1.5



JOURNAL PUBLICATIONS

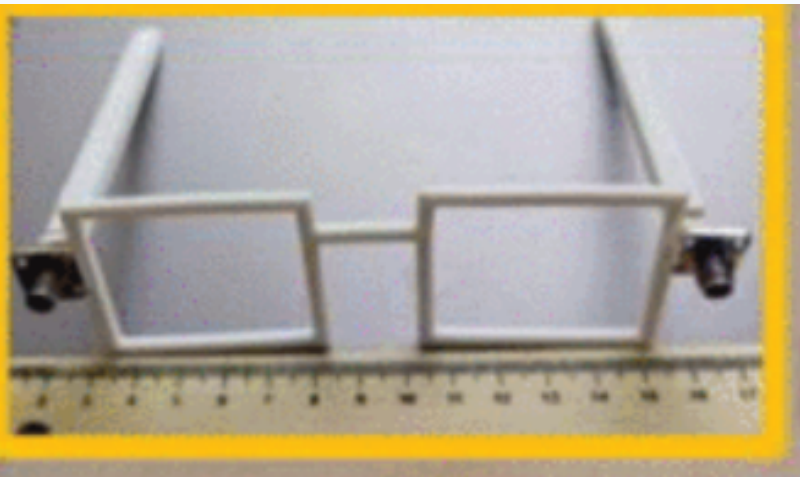
14.

Prem Nath Suman , **Gajendra Kant Mishra**, "Adaptive Antennas for the Wireless Future: Design, Analysis, and Performance Evaluation of Frequency Reconfigurable", Microwave Review, Vol. 30, No. 1, pp. 49-54, July 2024 DOI: 10.18485/mtts_mr.2024.30.1.7



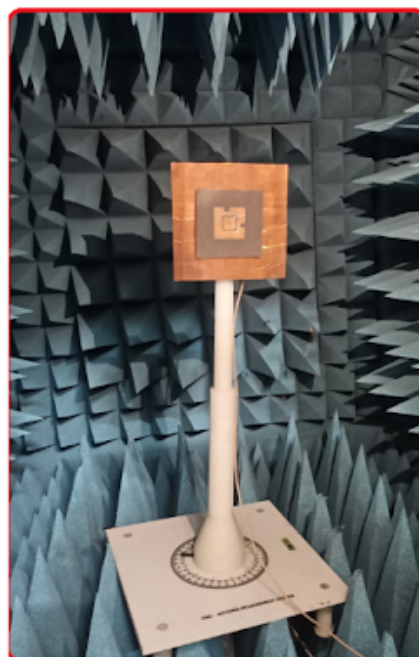
15.

A. Kiran and **G. K. Mishra**, "Bluetooth, Wi-Fi, and Wi-Max Supporting Spectacles Antenna for Internet of Things Applications," in IEEE Internet of Things Journal, vol. 11, no. 21, pp. 35185-35192, 1 Nov.1, 2024, doi: 10.1109/JIOT.2024.3435728.



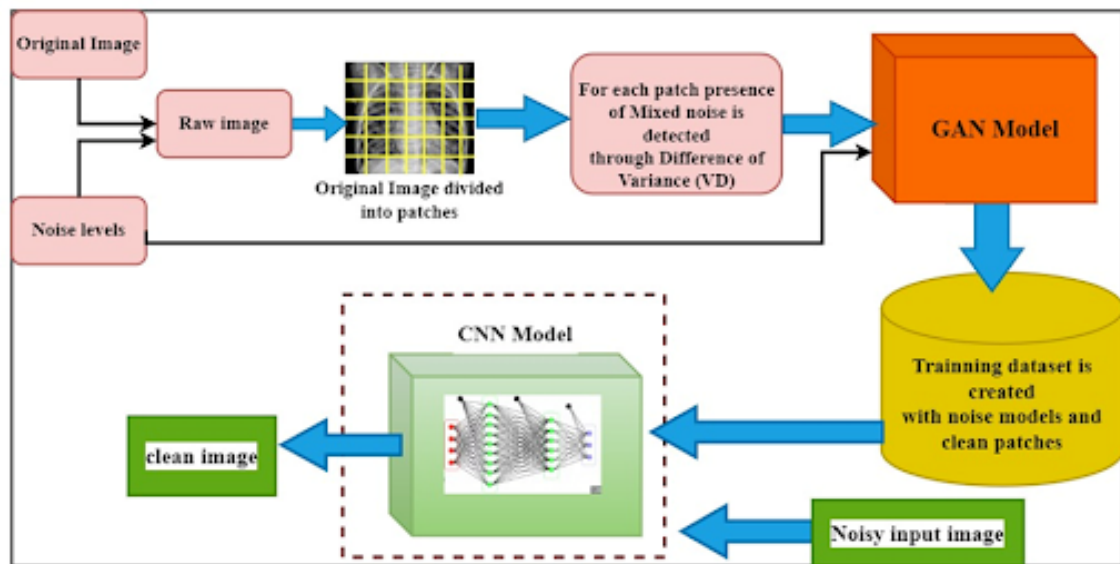
16.

Prem Nath Suman, **Gajendra Kant Mishra**, "Linear to Left-Hand and Right-Hand circularly polarized reconfigurable square patch antenna", AEU - International Journal of Electronics and Communications, vol. 184, 2024, 155421, ISSN 1434-8411, <https://doi.org/10.1016/j.aeu.2024.155421>

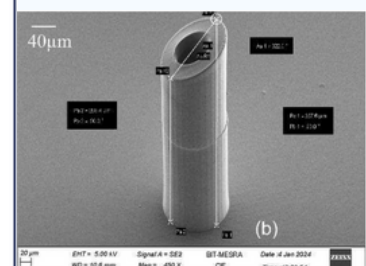
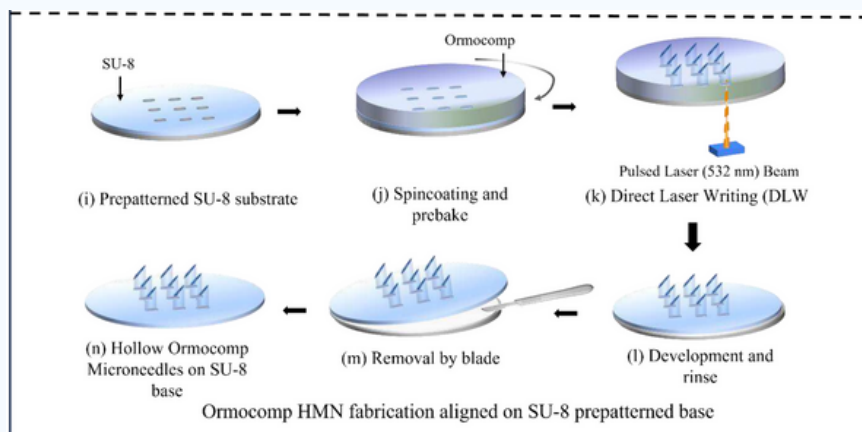


JOURNAL PUBLICATIONS

17. **Vishal H. Shah, P. P. Dash**, "GAN-CNN based structure-preserving mixed noise removal model for enhancing medical image", Journal of Scientific & Industrial Research (JSIR), Accepted.



18. Rangesh, Neel Mani, Arun Kumar Malaisamy, Nitesh Kumar, and **Sanjay Kumar**. "Analysis of the metabolic profile of humans naturally exposed to RF-EM radiation." Metabolomics 20, no. 3 (2024)
19. M. Jana and **S. Kumar**, "Performance analysis of IRS-assist wireless communication system with Alamouti transmit diversity scheme." Int. J. Electron. Commun., vol. 171, pp. 1–10, Aug, 2023.
20. S K Singh, M Dwivedi, T k Bhattacharyya, **R Mishra**, "Simulation of Hollow Ormocomp Microneedles and Fabrication by Two photon Photolithography", Microsystem Technologies, Publisher : Springer Nature link, Accepted.



CONFERENCE PUBLICATIONS

1. Himadri Nirjhar Mandal and **Soumya Sidhishwari**, "Predictive Analysis on Apodized Chirped Fiber Bragg Grating for Estimating Temperature-Strain Effects using Machine Learning," 2024 IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies (INSPECT 2024) 07-08 Dec., 2024, at ABV-Indian Institute of Information Technology and Management (IIITM) Gwalior, India. **(Best Paper Award)**

2. Himadri Nirjhar Mandal and **Soumya Sidhishwari** "Classification of Temperature-Strain Impacts on Apodized Fiber Bragg Grating using Optimized Artificial Neural Network", 4th Research Colloquium at BIT Mesra, July 2024. **(2nd Best Poster Presentation Award)**

3. Jainam, Anvi, **Sanjeet Kumar, Sanjay Kumar** and Ramjee Prasad, "Enhancing Drone Efficiency with 5G-Enabled Cloud-Based Processing for Real-Time Image Analysis," 27th IEEE International Symposium on Wireless Personal Multimedia Communications (WPMC 2024), 17-20 Nov., 2024, at Sharda University, Greater Noida, India. **(Best Paper Award)**

4. P. Patel, V. Belwanshi, **N. Chatteraj, R. Mishra**, 'Comparative Study of MEMS Microheaters using distinct designs and materials for PCR applications, IEEE Electron Devices Kolkata Conference (EDKCON 2024)

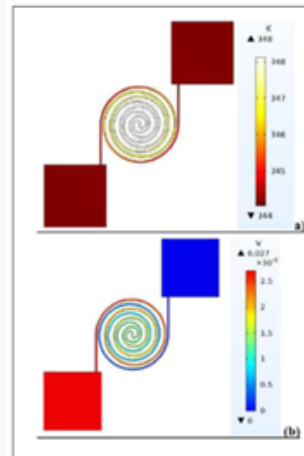


Fig.3. Contour plots for double spirals (a) temperature and (b) potential distributions

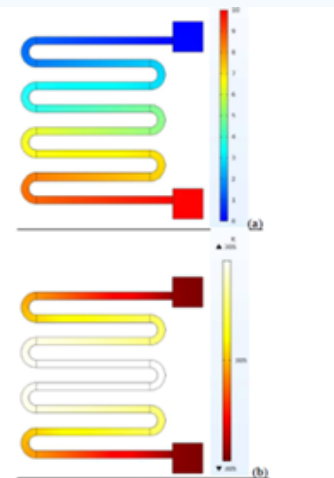
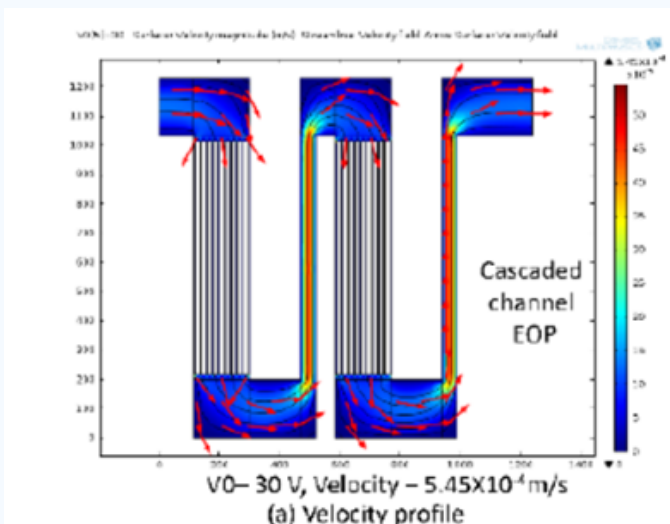


Fig.4. Contour plots for serpentine (a) potential and (b) temperature distributions

5. **Richa Mishra**, T.K.Bhattacharyya, Design and Simulation of MEMS based Cascaded Structure Electroosmotic Micropump, ISSS International Conference on Micro, Nano and Smart Systems 2024, July, 10-12, IISc Bangalore

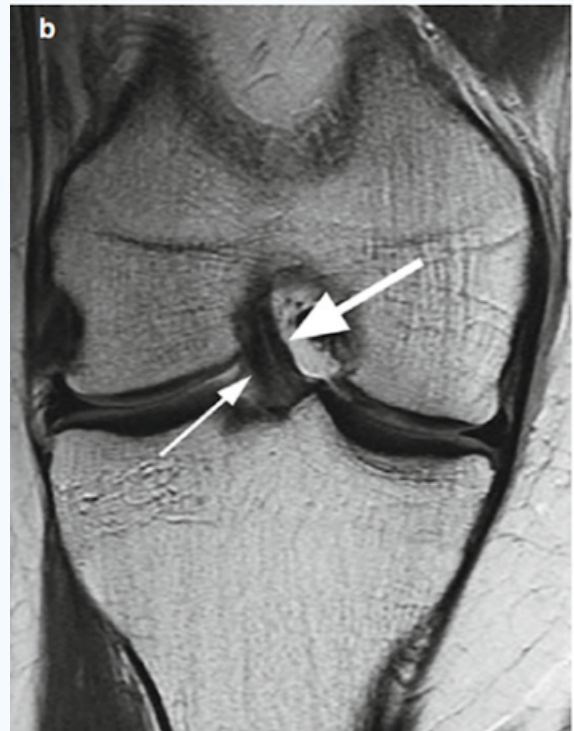


CONFERENCE PUBLICATIONS

6. Sachin K. Singh, **Richa Mishra**, Hollow Microneedle Mediated Painless Drug Delivery, 4th RESEARCH COLLOQUIUM (RESCOL IV) at BIT Mesra, July 15-17, 2024, Best Paper Award



7. Govind Kumar Gupta, **Priyank Saxena**, Automated knee injury detection from MRI scans using machine learning, 69th Annual Conference of the Indian Orthopaedic Association - IOACON 2024 Bengaluru between 2nd to 7th of December 2024.



CONFERENCE PUBLICATIONS

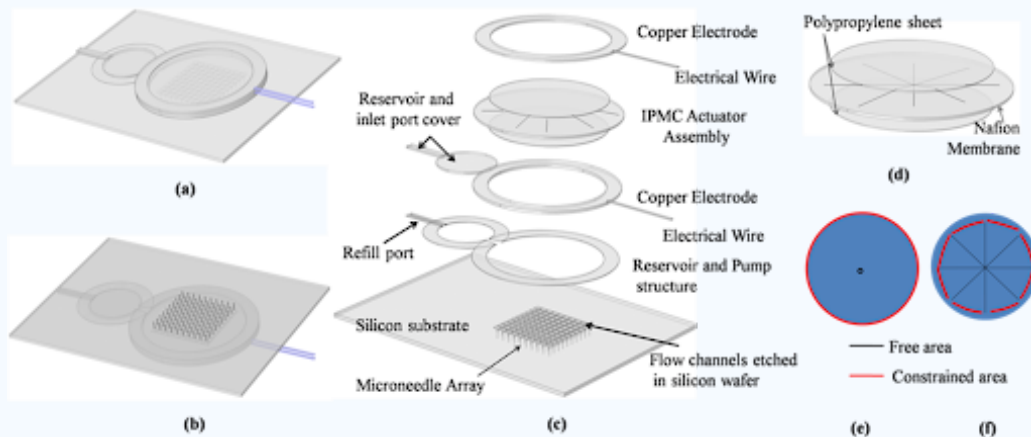
8. Anita Rupashree ,**Neela Chattoraj**, “Beam Steering of single microstrip antenna for Millimeter wave applications”2024 IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies (INSPECT 2024) 07-08 Dec., 2024, at ABV-Indian Institute of Information Technology and Management (IIITM) Gwalior, India
9. Sharmeen Sultana, **Neela Chattoraj** “Compact UWB Wearable Textile Antenna for Medical Applications with Bending Analysis” 19th EAI international Conference on Body area network, 15-16th December 2024 IIT, BHU, Varanasi India
10. Pandit Vivek Kumar Pandey, **Sitanshu Sekhar Sahu**, “Hybrid CNN-Bottleneck Encoder based feature extraction Technique for Parkinson’s Disease Detection from Voice Signal”, International Conference on Data science and Applications, 18 July 2024, MNIT Jaipur
11. Prity Bharti, **S. S. Solanki and Deepti Gola**, “Sensitivity assessment of Trigate Junctionless FET based Biosensor for Multifaceted Applications”, *8th International Conference on Micro-Electronics and Telecommunication Engineering* (ICMETE 2024) organized by the Department of ECE, SRM Institute of Science and Technology, Delhi-NCR Campus, Ghaziabad, UP, India from 6th – 7th December 2024.
12. A. Raj, **N. Gupta**, and I. Snigdh, “Electromagnetic Compatibility in Wearable Devices Using Artificial Magnetic Conducting Surfaces,” 2024 IEEE Space, Aerospace and Defence Conference (SPACE), pp. 885–887, Jul. 2024, doi: 10.1109/space63117.2024.10668021.
13. S. Kashyap and **N. Gupta**, “Machine learning in satellite communication,” PROCEEDINGS OF THE TIM22 PHYSICS CONFERENCE, vol. 3181, p. 040002, 2024, doi: 10.1063/5.0214200.

CONFERENCE PUBLICATIONS

14. Anisha Kiran, Premnath Suman, **Sanjeet Kumar, Sanjay Kumar**, Ramjee Prasad, **Gajendra Kant Mishra**, "Wearable Textile antenna for GPS applications", WPMC-2024, 17-20 Nov. 2024, Sharada Global University, Noida,, INDIA
15. Dikshant Vats, Sunny Kumar, Tanmay Arora, **Vishal H. Shah, and Prajna Parimita Dash**, "Entropy Enhanced Bilateral Filter (EEBF) for De-noising Medical Images with Variable Region of Interest (ROI)", *International Conference on Data science and Applications*, 18 July 2024, MNIT Jaipur

PATENTS

1. **Richa Mishra**, T.K. Bhattacharyya, T. K. Maiti, MICRONEEDLE AND MICROPUMP BASED FLUID DELIVERY SYSTEM, IIT Kharagpur, Patent Number 555945 from 7th May 2018 granted on 09.12.2024



WORKSHOPS/SEMINARS ATTENDED BY FACULTY MEMBERS

Prof. Sanjay Kumar and Mr. Vishal H. Shah participated in 2 days discipline-wise Annual Convention for Deans/HoDs of the MoU partner institutes organized by the Bureau of Indian Standards, Government of India at Mahabalipuram, Tamil Nadu.



OUTREACH ACTIVITIES OF THE FACULTY MEMBERS:

01

Prof. Sukumar Mishra, Director, IIT(ISM) Dhanbad, to DST FIST Sensor Fabrication Lab, ECE Department, BIT, Mesra on 15th July 2024.



02

Dr. Priyank Saxena was featured in the Doordarshan Jharkhand program named "Aur bhi hain Rahayein" aired live on 8th August 2024 on Career opportunities in Drone Technology (youtube link - <https://www.youtube.com/watch?v=Z1NkdxWGPbc>)



03

Dr. Richa Mishra featured in Doordarshan Jharkhand program named "Aur bhi hain Rahayein" aired live on 4th September 2024 on career opportunities in Device Microfabrication. (youtube link - https://www.youtube.com/watch?v=X_rDdsEMTKI)



04

Chairman, BoG of BIT Mesra, and renowned industrialist and philanthropist Shri C.K. Birla visited DST FIST Sensor Fabrication Lab, ECE Department, BIT Mesra on 16th November 2024.



05

Dr. Priyank Saxena served as a jury member in the science summit "Srijan" organised by DPS Bokaro on October 23rd, 2024.



06

Dr. Priyank Saxena visited different centres of ISRO including Vikram Sarabhai Space Center, Liquid Propulsion Systems Center, ISRO Inertial System Unit, and U R Rao Satellite Center from 7th to 9th October 2024.



07

Dr. Richa Mishra was judge at 4th Research Colloquium (RESCOL IV) at BIT Mesra ,July 15-17, 2024 for posters presented by various research scholars of the institute



08

Dr. S. S. Sahu was a Jury Member in the nationwide Edge AI Innovation Challenge in Collaboration with DigiToad Technologies Pvt. Ltd. and ST Microelectronics.



09

Dr. Richa Mishra, Assistant Professor and Dr. Neela Chatteraj, Associate Professor conducted to 4 and 8 weeks summer internship program at DST FIST Sensor Fabrication Lab at ECE Department, in the area of *MEMS devices- Design and Fabrication*.

Various students (from courses BSc., MSc., B.Tech and M.Tech programs) attended the program from colleges Dr. Shyama Prasad Mukherjee University, Ranchi, Lovely Professional University, Punjab, BIT Mesra etc. Dr. Vinod Belwanshi, Ph.D., Scientist, CSIR NML joined in as expert in the program.



10

Dr. S. S. Sahu and Dr. Richa Mishra visited Army base at Dipatoli, Ranchi for exploring collaboration with BIT Mesra



11

Dr. Gajendra Kant Mishra was judge at 4th RESEARCH COLLOQUIUM (RESCOL IV) at BIT Mesra July 15-17, 2024 for posters presented by various research scholars of the institute



12

During the Convocation, Hon'ble Chairman Visited newly installed 5G lab, Dr. Gajendra Kiant Mishra discussed about the facilities and research opportunities related to lab

13

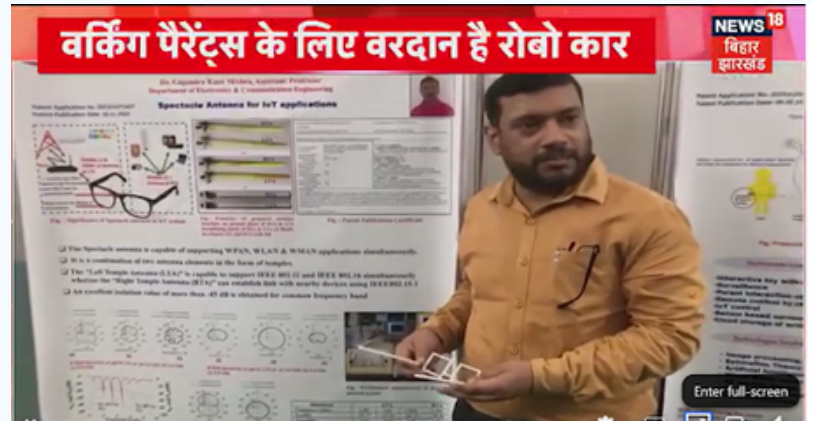
Dr. Gajendra Kant Mishra featured in Doordarshan Jharkhand program named "Aur bhi hain Rahayein" aired live on 16 th October 2024 on Career opportunities in Wireless Communication and Networking (youtube link - https://youtu.be/xDi_nHcFPw w?si=Tp3lmt-RDOu9HE-N)



OUTREACH ACTIVITIES - PATENT PROMOTION

14

Two patented contributions of Dr. Gajendra Kant Mishra was featured in News18 channel
https://fb.watch/tpxf_7Kh1q/



15

Patent Poster presentation by Dr. Gajendra Kant Mishra on the occasion of BIT Mesra's Foundation Day on 15th July 2024



16

Patent Poster presentation by Dr. Richa Mishra on the occasion of BIT Mesra's Foundation Day on 15th July 2024.

INVITED TALKS DELIVERED BY FACULTY MEMBERS:

1

Dr. Sanjay Kumar (resource person) delivered a talk-cum-interactive session on the topics of “NEP Deliberation and Academic Ordinance Framing for Diploma in Engineering Programmes” University Polytechnic, BIT Mesra, Ranchi on 12th Aug 2024.

2

Dr. Sanjay Kumar (resource person) delivered talks on the topics of “Higher Education & Society” during the NEP 2020 Orientation and Sensitization Program” organized by UGC, Malviya Mission Teachers Training Centre (MMTTC), Ranchi University, Ranchi on 08th Aug 2024.

3

Dr. Sanjay Kumar (resource person) delivered talks on the topics of “Measures to Implement NEP-2020 in Higher Education System” during the 4th Anniversary Celebration of National Education Policy 2020 organized by institution's Innovation Council (IIC), BIT Mesra, Ranchi on 29th July 2024.

4

Dr. Sanjay Kumar delivered invited talk on the topic of “How to Create the future you desire?” during the Students Induction Program for newly admitted UG/PG students, BIT Mesra, Ranchi, 22 Aug, 2024.



5.

Dr. Sanjay Kumar (resource person) delivered invited talk on the topic of “Teaching Methodology, Ethics, and Morality” at Adarsh College, Rajdhanwar, during the Intensive Teaching Workshop, 5th Dec 2024.



6.

Dr. Richa Mishra delivered invited talk at Triennial ISSS International Conference International Conference on Micro, Nano and Smart Systems (IC-MNSS 2024), DATE : 9th to 12th July 2024, J. N. Tata Auditorium, IISc, Bengaluru.



7.

Dr. S. S. Sahu delivered a plenary talk at International Conference on Data science and Applications, 18 July 2024 at MNIT Jaipur.

8.

Dr. Gajendra Kant Mishra delivered an invited talk on Future of Communication in RTCIT on 21st Sept 2024.

STUDENT SECTION

STUDENT ACHIEVEMENTS

1. Nishant Biyani got the GOLD MEDAL in 2024 pass out batch.
2. Yashashvi Vijayvargia secured 2nd rank in Indian engineering Services 2024.



3. Abhyuday Pandey B.Tech Electronics and Communication Engineering (ECE) selected as a Cisco Campus Ambassador(s) from Birla Institute of Technology, Mesra (BIT Mesra), for the academic year 2024-25.
4. Prakash Kumar Rai (Btech/10346/24 cleared interview (SSB) of NDA and TES.
5. Atul Arya (BTECH/10209/24) received a certificate of merit in journo con organised by NAPS(news and Publication Society of BIT MESRA).

STUDENT SECTION

STUDENT ACHIEVEMENTS

6. BIT Scholarship

Following students got scholarship from BIT -

1. BTECH/10792/23 AMISHA KESHARI BTECH (ECE) Mesra 100%
2. BTECH/10692/23 PINDI. HARSHA SURYA VARDHAN BTECH (ECE) Mesra 100%
3. BTECH/10382/23 SHASHWAT SINGH BTECH (ECE) Mesra 100%
4. BTECH/10732/23 VIBHOR JAIN BTECH (ECE) Mesra 100%
5. BTECH/10043/23 ANKUR KUMAR BTECH (ECE) Mesra 100%
6. BTECH/10396/23 ANURAG RAI BTECH (ECE) Mesra 100%
7. BTECH/10328/23 PRIYANSHU RAJ MISHRA BTECH (ECE) Mesra 100%
8. BTECH/10675/21 ANANT BHARTI BTECH (ECE) Mesra 100%
9. BTECH/10752/23 BALAJEE KUMAR BTECH (ECE) Mesra 100%
10. BTECH/10821/23 RANJAN KUMAR BTECH (ECE) Mesra 100%
11. BTECH/10486/23 KUSHAGRA MALL BTECH (ECE) Mesra 100%
12. BTECH/10517/21 AMIT KUMAR SAHU BTECH (ECE) Mesra 100%
13. BTECH/10615/23 SONU KUMAR BTECH (ECE) Mesra 100%
14. BTECH/10489/23 APOORVA PRAKASH BTECH (ECE) Mesra 100%
15. BTECH/10081/20 AYUSH MONDAL BTECH (ECE) Mesra 100%
16. BTECH/10212/20 NILESH RANJAN Rs -15000/-
17. BTECH/10323/22 HARSHITA KEDIA B.Tech (ECE) Mesra 7,500.00
18. BTECH/10326/22 VARAD JAY TANDALE B.Tech (ECE) Mesra

7. Introduction to Digital System Design (DSD)

Date: September 9–11, 2024

Details: This three-day session focused on familiarizing second-year students with the basics of digital system design. Topics included combinational and sequential circuits and finite state machines (FSMs). The event was tailored to build a strong understanding of DSD concepts and their applications.

STUDENT SECTION

STUDENT ACHIEVEMENTS

8. Tech-a-Thon 3.0

Duration: July 15 to August 16, 2024

Theme: Smart Synergy - AI Empowering ECE Innovation

This flagship event consisted of two engaging rounds: "Quiz a Bit" a technical quiz, and "Tech a Bit" a hands-on project development round. Over 1,000 students participated, presenting innovative projects aligned with the theme and assigned topics, showcasing how AI can revolutionize ECE innovations.



9. Gateway to Analog and Digital Electronics Workshop

Date: September 9–10, 2024

Details: A beginner-friendly workshop aimed at first- and second-year students. It introduced the fundamental concepts of analog and digital electronics, providing practical insights to build a strong foundation and foster interest in electronics.

PhDs Awarded

Name and Roll No. of Student	Guide's Name	Date of Defence	Thesis Title
Sukanta Kumar Dash (PHD/EC/10054/20)	Dr. S. S. Solanki (Guide) Dr. Soubhik Chakraborty (Co-guide)	18/11/2024	Predominant Instrument Recognition in Polyphonic Music Using Deep Convolutional Neural Networks
Amit Kumar Singh (PhD/EC/10005/19)	Dr. Srikanta Pal	16/10/2024	Development of Millimeter-Wave Microstrip to Folded Substrate Integrated Waveguide Transition Based MIMO Antenna for 5G Application
Rakesh Kumar Chandan (PhD/EC/10002/2018)	Dr. Srikanta Pal	12/07/2024	Study of Some Wideband Feeding Mechanisms and Functional High Gain Low Side Lobe Level Millimeter Wave Antenna Arrays and Characteristic Modal Analysis
Chanchala Kumari (PhD/EC/10051/2019)	Dr. N. Chattoraj	11/07/2024	Design, Analysis and Development of Tapered Slot Antennas for Wireless Applications
Ashish Raj (PhD/EC/10053/17)	Dr. Nisha Gupta	11/06/2024	Some Investigations on Electromagnetic Interference Mitigation Techniques
Sashi Shankar (PhD/EC/10002/2017)	Dr. Dileep Kumar Upadhyay	20/06/2024	Design, Analysis, and Experimental Verification of Fractal-Based Reconfigurable Antennas for Wireless Communication

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