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THE ZENITH

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TECHNICAL NEWS

Innovating 6G: Bristol's Latch-Effect Transistor Technology Set to Transform Wireless Communications

Imagine receiving a real-time medical diagnosis from across the world, or feeling the touch of a loved one in a different country — all enabled by ultra-fast 6G communication. In a major breakthrough, researchers from the University of Bristol have developed a revolutionary semiconductor technology using Gallium Nitride (GaN), a material already known for its high power and efficiency. The team introduced a new type of transistor—Superlattice Castellated Field Effect Transistors (SLCFETs)—featuring over 1000 ultra-thin fins (under 100 nm), which control current flow with unmatched precision.

The key discovery was the identification of a latch effect in GaN materials. This previously unexplored behavior dramatically improves performance in the W-band frequency range (75–110 GHz), critical for 6G. By analyzing more than 1,000 individual fins using ultra-precise electrical and optical techniques, the team located the effect in the widest fins, unlocking a path toward high-speed and low-power RF devices.

The researchers confirmed that the latch effect not only boosts performance but also maintains long-term reliability, thanks to a thin dielectric coating around each fin. The result is a high-speed, low-noise, and reliable semiconductor device that can handle the demands of next-generation communication networks.

With real-world applications ranging from autonomous vehicles, virtual classrooms, and remote healthcare, to industrial automation and virtual tourism, this innovation in GaN transistor architecture promises to transform how we live, work, and connect. As the world prepares for 6G, such discoveries will be critical to turning bold concepts into reality.

- Source: [ScienceDaily](#)
- Published by: University of Bristol
- Journal: Nature Electronics

This breakthrough not only marks a major milestone in semiconductor research but also reinforces the University of Bristol's role as a global leader in shaping tomorrow's technology. It presents exciting opportunities for students and researchers in electronics, physics, and computer science to be part of a future where wireless communication is faster, smarter, and more connected than ever before.



Image shows Professor Martin Kuball at the Centre for Device Thermography and Reliability (CDTR), based at the University of Bristol, which unites scientists from across the world to develop next generation semiconductor electronic devices.

EXPERT LECTURES / SEMINARS / COURSES ORGANISED

IKS Field Visit to Gondeshwar Temple, Sinnar

The First Year B.Tech (E&TC) students participated in an IKS field visit to Gondeshwar Temple, Sinnar on 16th and 17th May 2025. The visit provided students with insights into India's ancient architectural excellence and cultural heritage, enhancing their understanding of traditional knowledge systems and their relevance to modern engineering perspectives.



Experi Lectures / Seminars / Courses organised

FDP/STTP/Workshop attended by faculty

- Mrs. P. P. Patil completed the online internship program on Antenna Design, Fabrication, and Testing: Industrial Practices provided by Abhyantha, the training arm of Entuple Technologies Pvt Ltd, from May 02, 2025 to June 13, 2025.



- Following faculties attended One Week National Level Faculty Development Program on “Integrating AI and Deep Learning for Biomedical Signal Processing: A MATLAB Approach” Organized By Department of Electronics & Telecommunication Engineering, Dr. D. Y. Patil Institute of Technology, Pimpri, Pune, in collaboration with Mathworks and Designtech systems from 23rd to 27th June 2025.
 1. M. J. Jawage
 2. I. M. Sayyed
 3. P. S. Jadhav
 4. S. D. Raut
 5. R. V. Daund

Experi Lectures / Seminars / Courses organised

FDP/STTP/Workshop attended by faculty



CAMPUS PLACEMENTS / ACHIEVEMENTS

Faculty Achievements



Prof. Payal Jadhav, Dr. S.P. Ugale and Prof. Dr. D. M. Chandwadkar from Department of Electronics and Telecommunication Engineering received CGK Endowment Fund Award by the Society of Indian Aerospace Technologies and Industries (SIATI) For the Paper title “Development of Visual System for Flight Simulation Training Device”.

VISION & MISSION



VISION

Excel in quality technical education and research in Electronics and Telecommunication (E&TC) Engineering for sustainable solution development for industry and betterment of society.

MISSION

M 1: To provide quality education for the preparation of technically and professionally competent E&TC engineers.

M 2: To create an environment to enhance life-long learning and 21st century skills

M 3: To inspire students' innovative thinking and creativity to promote research culture.

MEET OUR TEAM

FACULTY ADVISOR

Prof. S. D. Raut

STUDENTS FROM THIRD YEAR

Sayali Patil
[TY - A]

Anushka Patil
[TY - A]

Aryan Bhanuse
[TY - A]

Vedant Gangurde
[TY - A]

Ankit Mansotra
[TY - A]

Atharva Paranjpe
[TY - A]

Chaitanya Patil
[TY - A]

Amaan Sayyed
[TY - A]

Narayan Bhute
[TY - A]

Siddharth Pingle
[TY - A]

Anurag Mohad
[TY - B]

THE ZENITH

"Believe you can and you're
halfway there."

– Theodore Roosevelt



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