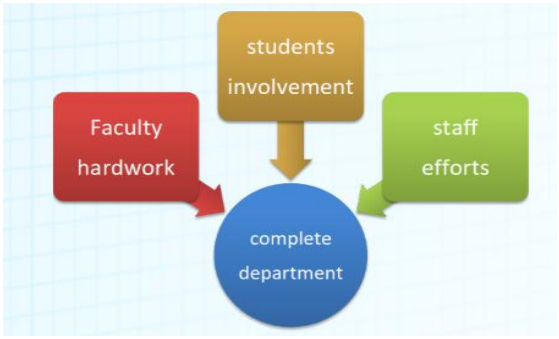
Newsletter July to September 2020

Vision

To create a centre for imparting technical education of international standards and conduct research at the cutting edge of electronics & communication technology to meet the current and future challenges of technological development.

Mission

To create technical manpower for meeting the current and future demands of industry and academia: to recognize education and research in close interaction with electronics & communication & related industry with emphasis on the development of leadership qualities in the young men and women entering the portals of the institute with sensitivity to social development and eye for opportunities for growth in the international perspective.



Seminar/Symposia/Workshop/Conference/STC Organized:

1. National Short Term Course on online short term course on “Software Tools & Techniques for Scientific Publications: ROOT, GNU Plot, GeoGebra" at Malaviya National Institute of Technology, Jaipur, India from 04-09-2020 to 08-09-2020
2. National Workshop on Two Week Online Global Summer Faculty Development Program on "Advanced Optimization Techniques and Hands on with MATLAB/SCILAB" at

Electronics and ICT Academy, MNIT Jaipur, Jaipur, India from 13-07-2020 to 24-07-2020

Publications

1. Jaiverdhan, S. Singhal, M. M. Sharma and R. P. Yadav ,"EPSILON SHAPED CIRCULARLY POLARISED STRIP AND SLOT LOADED ULTRA WIDEBAND ANTENNA for Ku-&K-BAND" , International Journal of RF and Microwave Computer-Aided Engineering Volume :0 / 1-11 / 2020
2. S. N. Mishra, R. Saha and K. Jena ,"Normally-Off AlGaN/GaN MOSHEMT as Lebel Free Biosensor" , ECS Journal of Solid State Science and Technology Volume :9 / 1-10 / 2020
3. E. Arumona, I.S. Amiri, S. Punthawanunt, K. Ray, G. Singh, G. Bharti, P. Yupapin ,"3D-Quantum Interferometer using Silicon Microring Embedded Gold Grating Circuit" , Microscopy Research and Technique (SCI, IF: 2.117) Volume :82 / 1-6 / 2020 ISBN: 1097-0029
4. Shanky Saxena, Ritu Sharma, B.D. pant ,"Effect of Seismic Mass Thickness on the Resonance Frequency of Cantilever Type Piezoelectric Energy Harvester" , Material Today Proceedings Volume :6 / 7 / 2020
5. Vivek Raghuwanshi, Deepak Bharti, Ajay Kumar Mahato, Amit Shringi, Ishan Varun, and Shree Prakash Tiwari ,"High Performance Flexible Organic Field-Effect Transistors with Barium Strintium Titanate Gete Dielectric Deposited at Room Temperature" , ACS Applied Electronic Materials Volume :2 / 529-536 / 2020
6. K. Tripathy, A. G. Mohapatra, S. P. Mohanty, E. Kougianos, A. M. Joshi and G. Das ,"EasyBand: A Wearable for Safety-Aware Mobility during Pandemic Outbreak" , IEEE Consumer Electronics Magazine Volume :00 / 11 / 2020
7. A. M. Joshi, P. Jain, S.P.Mohanty ,"iGLU: Non-Invasive Device for Continuous Glucose Measurement With IoMT Framework" 2020 IEEE Computer Society Annual Symposium on VLSI (ISVLSI) by IEEE at Cyprus / 11 / 2020
8. Rajesh Saha, Rupam Goswami, Brinda Bhowmick and Srimanta Baishya ,"Electrical Performance of Gate Modulated TFET (GM-TFET) With Epitaxial Layer" 7th International Conference on Microelectronics, Circuits and Systems 2020 (Micro 2020) by Conference Proceeding at Delhi Technological University, Delhi / / 2020

9. "Book Chapter" Reconfigurable Doping-free Tunneling Transistors – Technology and Modeling ISBN:9781849199988 published by - IET Year:2020 Authors- Sahu, C.; Lahgere A.
10. "Book Chapter" Setting up a neural machine translation system for English to Indian languages ISBN:9780128194447 published by - Academic Press, Elsevier (Cognitive Informatics, Computer Modelling, and Cognitive Science, Volume 1) Year:2020 Authors- Sandep Saini; Vineet Sahula
11. "Book Chapter" Technology and modeling of DNTT organic thin film transistors ISBN:PBCS0490 published by - Advanced Technologies for Next Generation Integrated Circuits, IET Year:2020 Authors- Amit Joshi, Sushilkumar Jain, Arunkumar Dwivedi
12. "Book Chapter" VLSI Implementation of Tunable Band-Pass Notch IIR Filter for Localization of Hot spots in Proteins ISBN:ISBN 978-981-15-5545-9 published by - Lecture Notes in Electrical Engineering, Vol.673 Year:2020 Authors- V. Pathak, S. J. Nanda, A. M. Joshi, S. S. Sahu

- **ARTICLE: Displays face a flexible future**

A recent report called "Stretchable Electronics 2017-2027" from market analyst house IDTechEX Research forecasts that the market for stretchable electronics could grow to at least $600m by 2027. Stretchable electronics can be moulded and shaped, making them particularly suitable for wearables, displays and other applications.The advance of stretchable electronics could spell the demise of the rigid computer chip: Made up of transistors and other semiconductor devices, conventional electronic systems could soon be over – this applies to televisions, laptops, smartphones, but also robots, which could be made of soft or elastic material.

Among the many, there's one application that stands to benefit the most from stretchable electronics – that of displays. Bespoke, light, pliable, flexible displays that won't take much space are useful in many sectors, including automotive, aerospace and signage. In the automotive industry, for example, displays are commonplace for on-board computing systems for navigation, entertainment and communication, with more advanced displays used instead of buttons and knobs. As many spaces in cars are curved, it is most advantageous to have flexible screens that can fit into these small spaces perfectly.

Conventional vs stretchy: Conventional displays are made of glass, silicon and hard ceramic materials and as such break relatively easily. Stretchable displays, on the other hand, are far more robust thanks to the substrate they are made of, which is often plastic; this means mechanical impact will not break or damage it. In digital signage applications, screens are protected with

tempered glass. This type glass is five times more robust and stronger than normal glass because of the multiple layers of oleophobic nano coating, anti-shatter film and penetrable silicone coating that give it scratch resistivity. However, compared to plastic, it is not particularly flexible due to its relatively high elastic modulus, usually varying between 50 and 90GPa. Generally, a plastic with high elasticity is the main material for the substrate of a flexible display. This allows the screen to take on more forms, maintain a stable temperature and offer excellent visual properties.According to the Organic Nanophotonics manual, manufacturing stretchable electronics displays requires the screen to stretch without experiencing any physical damage or component breakages. This is a challenge for most electronic components in the display, particularly the light-emitting diodes (LEDs) or organics LEDs (OLEDs) used. LEDs and OLEDs are the ideal solutions for flexible displays because they do not require a backlight, therefore reducing the overall display depth. However, inorganic LEDs are typically rigid and inflexible, owing to the glass, ceramics or composite substrates commonly used, alongside the materials used in the emissive and conductive layers. Even when embedded or bonded onto soft polymers, they are limited in their elongation and are still susceptible to crack formation from repeated deformation.Conversely, OLEDs are generally less rigid and can be produced in thin-film forms. The challenge, however, is developing thin-film, flexible OLEDs that can be produced cheaply whilst maintaining high efficiencies – a subject of ongoing research.Researchers have already found that the multi-thin-film structure of many OLEDs leads to trapped photons, which means that only 20-30% of energy flow radiates outside the device.

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