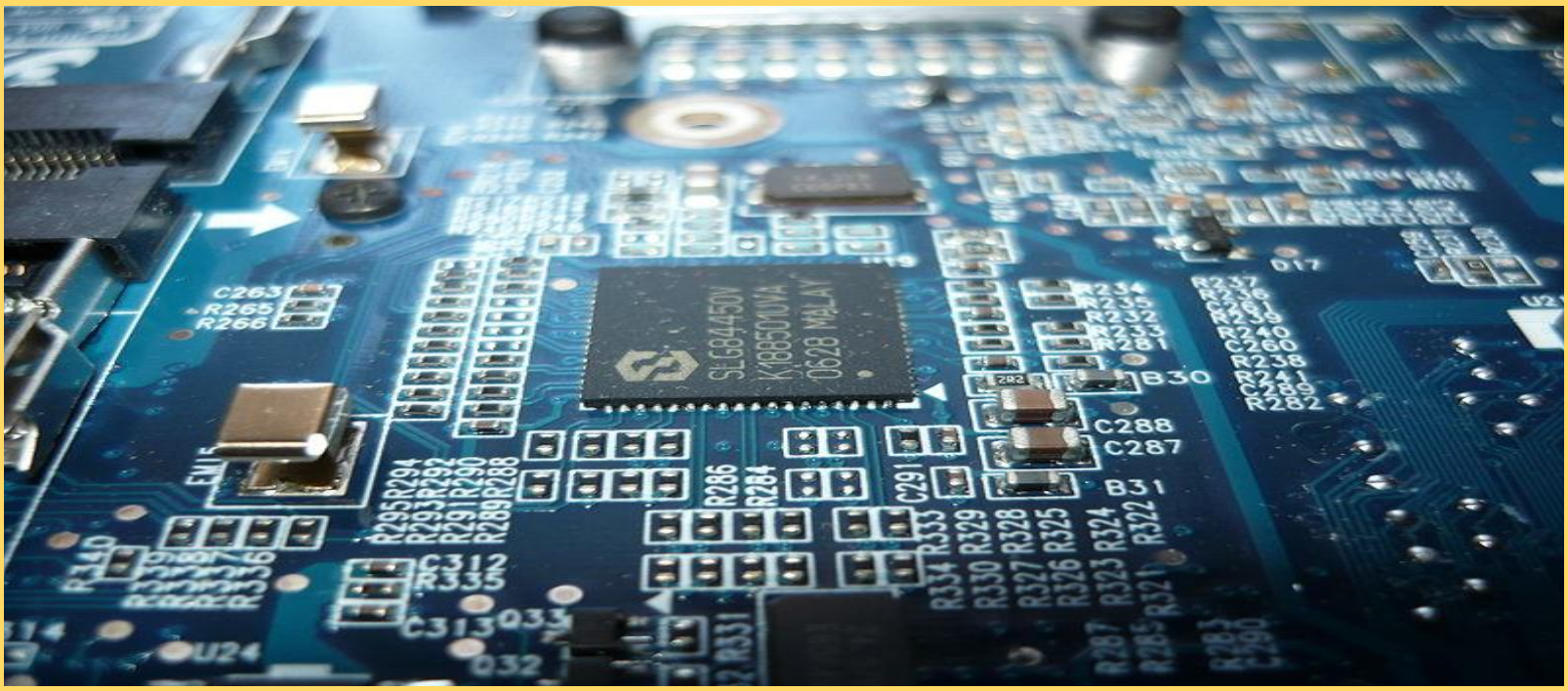
DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY: GANGURU

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING



Bi-Monthly Newsletter

TELE-ELECTRO

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Spray-on antennas may turn objects into connected technology

The exceptional conductivity of the material enables it to transmit and direct radio waves, even when it is applied in a very thin coating. (Image Source: Drexel University)

Scientists have developed a method for spraying invisibly thin antennas on to flexible materials, an advance that could turn a variety of objects and surfaces into seamless Internet of Things. Researchers from Drexel University in the US used a type of two-dimensional, metallic material called MXene, that perform as well as those being used in mobile devices, wireless routers and portable transducers.

"This is a very exciting finding because there is a lot of potential for this type of technology," said Kapil Dandekar, a professor at Drexel. "The ability to spray an antenna on a flexible substrate or make it optically transparent means that we could have a lot of new places to set up networks – there are new applications and new ways of collecting data that we can't even imagine at the moment," said Dandekar. The study published in the journal Science Advances shows that the MXene titanium carbide can be dissolved in water to create an ink or paint."This technology could enable the truly seamless integration of antennas with everyday objects which will be critical for the emerging Internet of Things," Dandekar said. "Researchers have done a lot of work with non-traditional materials trying to figure out where manufacturing technology meets system needs, but this technology could make it a lot easier to answer some of the difficult questions we've been working on for years," he said. Initial testing of the sprayed antennas suggest that they can perform with the same range of quality as current antennas, which are made from familiar metals, like gold, silver, copper and aluminum, but are much thicker than MXene antennas.

Mr.S.Chandrasekhar
Assistant professor, ECE.

India's PSLV rocket successfully puts into orbit two UK satellites

India on Sunday night successfully put into orbit two British earth observation satellites, NovaSAR and S1-4, in copy book style. Two satellites aboard the Indian rocket – Polar Satellite Launch Vehicle (PSLV) – belonged to Surrey Satellite Technologies Ltd (SSTL), UK. The satellites were put into sun synchronous orbit under commercial arrangement with Antrix Corp Ltd, the commercial arm of the Indian Space Research Organisation (ISRO), the Indian space agency. The total lift off weight of the two satellites was 889 kg.

NovaSAR weighing 445 kg is a S-Band Synthetic Aperture Radar satellite intended for forest mapping, land use and ice cover monitoring, flood and disaster monitoring. S1-4 weighing 444 kg is a high resolution Optical Earth Observation Satellite, used for surveying resources, environment monitoring, urban management and for disaster monitoring. After the successful launch, ISRO Chairman K Sivan said: "The PSLV rocket preciously placed two of our customer satellites in

583 km orbit. The success will give added energy for industry to make PSLV."

At 10.08 pm the four staged/engine PSLV-CA rocket, standing 44.4 metres tall and weighing 230.4 tonnes, blasted off from the first launch pad. With the fierce orange flame at its tail lighting up the night skies here, the rocket slowly gained speed and went up and up enthralling the people at the rocket port while the rocket's engine noise like a rolling thunder adding to the thrill. Just under 18 minutes into the flight, the rocket slung NovaSAR and S1-4 into the orbit.

Mr.Ch.Mohansai Kumar
Assistant professor,ECE

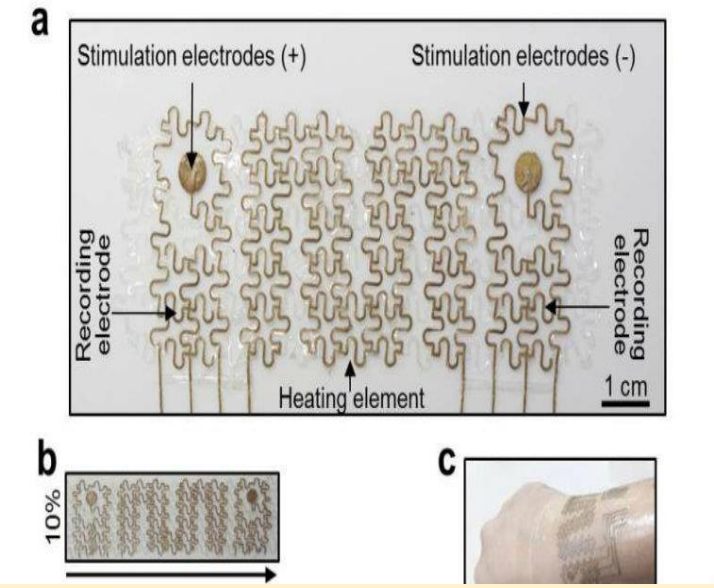
Modern human gripping capabilities evolved 500,000 years ago: Study

Hominins evolved a strong grip similar to modern human hands at least 500,000 years ago, reveals a study of ancient stone tools. The findings demonstrated that without the ability to perform highly forceful precision grips, our ancestors would not have been able to produce advanced types of stone tools like spear points. The technique involves preparing a striking area on a tool to remove specific stone flakes and shape the tool into a pre-conceived design.

This research is the first to link a stone tool production technique known as "platform preparation" to the biology of human hands, said researchers from the Britian's University of Kent. Platform preparation is essential for making many different types of advanced prehistoric stone tool, with the earliest known occurrence observed at the 500,000-year-old site of Boxgrove in West Sussex (UK)."Hand bones from before 300,000 years ago are rare, particularly when compared to other human fossils such as teeth, so the fact we can study the manipulative capabilities of our early ancestors from the stone tools they produced is incredibly exciting," said lead author Alastair Key from the varsity.For the study, detailed in the journal PeerJ, the team investigated how hands are used during the production of different types of early stone technology. Using sensors attached to the hand of skilled flint knappers (stone tool producers), the researchers were able to identify that platform preparation behaviours required the hand to exert significantly more pressure through the fingers when compared to all other stone tool activities studied.

Mr.P.Krishna Reddy
Assistant professor,ECE

Wearable electronic mesh can help monitor heart health



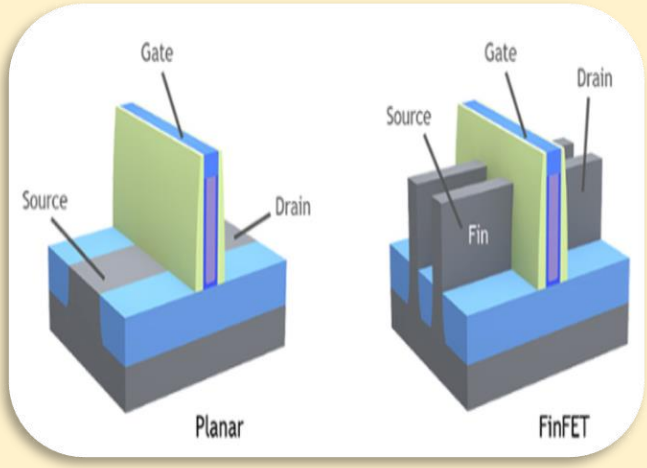
The research team has also produced a customised large mesh that fits the lower part of a swine heart. (Image: Institute for Basic Science)

Scientists have developed a soft mesh that can record signals from the heart and muscles, paving the way for a new generation of flexible wearable health monitoring devices. The implantable device,

provides information on muscle and cardiac dysfunctions, and thus could be implemented for pain relief, rehabilitation, and prosthetic motor control. It is the first soft implant that can record the cardiac activity in multiple points of a swine heart, according to a study published in the journal Nature Nanotechnology.Researchers from the Institute for Basic Science (IBS) in South Korea used the device on human skin to record the electrical activity of heart and muscles, that is electrocardiogram (ECG) and electromyogram (EMG) respectively. Its softness, elasticity and stretchability, allows the device to follow the contours of flexible joints, such as the wrist. Worn on a forearm, it simultaneously monitored EMG signals, and delivered electrical and/or thermal stimulations that could be employed in therapeutic applications.This stretchable and conductive patch is created by gold-coated silver nanowires mixed with a type of rubber, called polystyrene-butadiene-styrene (SBS). Conventional silver wire-based conductive rubbers have had limited biomedical applications because silver is toxic to the body. The gold sheath prevents both silver's leaching, and corrosion caused by air and biological fluids, such as sweat.

Mr.M.Tulasidasu
Assistant professor,ECE

FinFET Technology



The finFET is a transistor design, first developed by Chenming Hu and colleagues at the University of California at Berkeley, which attempts to overcome the worst types of short-channel effect encountered by deep submicron transistors, such as drain-induced barrer lowering (DIBL). These effects make it harder for the voltage on a gate electrode to deplete the channel underneath and stop the flow of carriers through the channel – in other words, to turn the transistor Off. By raising the channel above the surface of the wafer instead of creating the channel just below the surface, it is possible to wrap the gate around up to three of its sides, providing much greater electrostatic control over the carriers within it.

There are a number of subtly different forms of trigate transistor structure that are being described as finFETs. The architecture typically takes advantage of self-aligned process steps to produce extremely narrow features that are much smaller than the wavelength of light generally used to pattern devices on a silicon wafer. It is possible to create very thin fins - of 20nm in width or less - on the surface of a silicon wafer using selective-etching processes, although they typically cannot currently be made less than 20nm to 30nm because of the limits of lithographic resolution. The fin is used to form the raised channel. The gate is then deposited so that it wraps around the fin to form the trigate structure. As the channel is extremely thin the gate has much greater control over the carriers within it but, when the device is switched on, the shape limits the current through it to a low level. So, multiple fins are used in parallel to provide higher drive strengths.

Originally, the finFET was developed for use on silicon-on-insulator (SOI) wafers. Recent developments have made it possible to produce working finFETs on bulk silicon wafers and improve the performance of certain parameters. The steep doping profile used to control leakage into the bulk substrate has a beneficial impact on DIBL, although increased doping has a negative impact on variability.

A drive strength tunable FinFET, a method of drive strength tuning a FinFET, a drive strength ratio tuned FinFET circuit and a method of drive strength tuning a FinFET, wherein the FinFET has either at least one perpendicular and at least one angled fin or has at least one double-gated fin and one split-gated fin.

It transistors have been shown to offer comparable or better performance than finFETs. However, the relative compatibility of the bulk-silicon finFET

with existing wafer fabrication processes and today's wafer-supply chain favors the finFET for high-volume IC production at 22nm and below.

FinFETs have key advantages over planar bulk devices. They exhibit more drive current per unit area than planar devices, largely because the height of the fin can be used to create a channel with a larger effective volume but still take advantage of a wraparound gate.

The added performance capability of FinFETs can be used to achieve higher frequency numbers compared to bulk for a given power budget or lower power. The power reduction can come from two sources: reduced need for wide, high-drive standard cells; and the ability to operate with a lower supply voltage for a given amount of leakage.

The FinFET is a technology that is used within ICs. FinFETs are not available as discrete devices. However FinFET technology is becoming more widespread as feature sizes within integrated circuits fall and there is a growing need to provide very much higher levels of integration with less power consumption within integrated circuits.

Shaik Rizwana, 158T1A0488, IV ECE B.

Seminar under Association Activity ECE

A Seminar conducted for III ECE students on 'CAREER after B.Tech with GATE' by ACE Engineering Academy on 29th August 2018 by Mr.S.Mani Mohan Trinath.

Parents Meet

The Department of Electronics and Communication Engineering had conducted a PARENTS MEET on 21 - 07 - 2018 for 2nd, 3rd and 4th year students of ECE. The Parents meet was conducted at the ECE department seminar hall which is started at 02:00 Pm and completed by 04:30 PM evening. Head of the department Dr.G.L.Madhumati, addressed the parents about different activities, policies and procedures following in the department, Professor B.L.Prakash addressed the importance of text book learning, Mr. V.Subbaraju addressed about outcome based education and later parents interacted with the respective class in charges, counselors and the subject teachers and collected suggestions and feedback forms from parents.

- Conducted a Seminar on "**Fundamentals of RF System Design**" for III & IV ECE students by Dharmendra Naik on 8.9.2018

- Engineers Day is Celebrated in ECE Department on 15.9.2018 at ECE seminar hall. In this event along with principal Dr.Ravi Kadiyala and HOD Dr.D.L.Madumati, the chief Guest Dr.M.Kamaraju, Professor GEC, Gudlavalleru has given his valuable speech and suggestions to the young Engineers.

PLACEMENTS IN ECE DEPARTMENT

List of Selected students in Department of Electronics & Communication Engineering

A. Name of Company: CINIF Technologies Limited

Date of Drive: 31-7-2018

Package: 3.60 LPA

Number of candidates selected: 20

S.No	Roll No	Name of the Student
1	158T1A0401	P.A.K.V.S.Manikanta
2	158T1A0403	G.Abhinay
3	158T1A0405	Y.Akhila
4	158T1A0410	Bhanu sai shankar
5	158T1A0412	Bhanu satya sai
6	158T1A0432	B.Jeevan
7	158T1A0439	M.Kranthi kumar reddy
8	158T1A0442	K.Lakshmi Prassana Devi
9	158T1A0474	S.Rohit
10	158T1A04A7	K.V.Ananth Ram
11	158T1A0463	Y.Naveen Sai
12	158T1A0480	B.Sai Krishna
13	158T5A0402	M.Ashish Kumar
14	158T1A04A4	P.Haranadh Rahul
15	158T1A04B0	G.V.Shanmuk Subba Rao
16	158T1A04A8	K.V.Sai Kumar
17	158T1A04B1	P.Suresh
18	168T5A0401	B.Krishna
19	168T5A0405	I.Venkat Aadi Narayana
20	168T5A0410	Md.Afridi

B.Name of Company: IbeOn Info Tech

Date of Drive: 20-08-2018

Package: 2.30 LPA

Number of candidates selected: 10

S.No	Roll No	Name of the Student
1	158T1A0403	G.Abhinay
2	158T1A0412	K.Bhanu satya sai
3	158T1A0430	G.Jahnavi
4	158T1A0442	K.Lakshmi Prassana Devi
5	158T1A0463	Y.Naveen Sai
6	158T1A0480	B.Sai Krishna
7	158T1A04A4	P.Haranadh Rahul
8	148T1A0487	M.S.S.L.Ganesh
9	158T5A0402	M.Ashish Kumar
10	158T1A04A7	K.V. AnanthRam

C.Name of Company: Path Front

Date of Drive: 21-08-2018

Package: 3.60 LPA

Number of candidates selected: 09

S.No	Roll No	Name of the Student
1	158T1A0428	Hussna Sultana
2	158T1A0430	G.Jahnavi
3	158T1A0457	Nafia Afreen
4	158T1A0459	Ch.Naga Nikitha
5	158T1A0476	G.Rushitha
6	158T1A0484	D.Samatha
7	158T1A0493	N.Sravya
8	158T1A04A4	P.Haranadh Rahul
9	158T1A04A8	K.V.Sai Kumar

D. Name of Company: SoCtronics

Date of Drive: 02-09-2018

Package: 3.60 LPA

Number of candidates selected: 01

S.No	Roll NO	Name of the Student
1	158T1A0430	G.Jahnavi

You cannot change your future. But you can change your habits. And surely your habits will change your future.

Dr.APJ Abdul Kalam

Editorial & Design team: Faculty: **Mr.S.ChandraSekhar**

Student coordinators:

S.Rohith.B.Teena.K.Namratha.S.Lohitha