VOLUME 1 ISSUE 3

VEDAVYASA INSTITUTE OF TECHNOLOGY

JULY 2021

TECH NEWS

RECENT UPDATES ON TECHNOLOGY

Prepared By S2 Students under the Guidance of DSH (Department Of Science and Humanities)

NEW SOFT ELECTRONICS DON'T BREAK, EVEN WHEN PUNCTURED

A team of researchers has created a new type of soft electronics, paving the way for devices that are self-healing, reconfigurable, and recyclable. These skin-like circuits are soft and stretchy, sustain numerous damage events under load without losing electrical conductivity, and can be recycled to generate new circuits at the end of a product's life. Current consumer devices, such as phones and laptops, contain rigid materials that use soldered wires running throughout. The soft circuit developed by Bartlett's team replaces these inflexible materials with soft electronic composites and tiny, electricity-conducting liquid metal droplets. The liquid metal droplets are initially dispersed in an elastomer, a type of rubbery polymer, as electrically insulated, discrete drops. To make circuits, we introduced a scalable approach through embossing, which allows us to rapidly create tunable circuits by selectively connecting droplets. We can then locally break the droplets apart to remake circuits and can even completely dissolve the circuits to break all the connections to recycle the materials, and then start back at the beginning. The circuits are soft and flexible, like skin, continuing to work even under extreme damage. If a hole is punched in these circuits, the metal droplets can still transfer power. Instead of cutting the connection completely as in the case of a traditional wire, the droplets make new connections around the hole to continue passing electricity. The circuits will also stretch without losing their electrical connection, as the team pulled the device to over 10 times its original length without failure during the research. At the end of a product's life, the metal droplets and the rubbery materials can be reprocessed and returned to a liquid solution, effectively making them recyclable. From that point, they can be remade to start a new life, an approach that offers a pathway to sustainable electronics. While a stretchy smartphone has not yet been made, rapid development in the field also holds promise for wearable electronics and soft robotics. These emerging technologies require soft, robust circuitry to make the leap into consumer applications. This work gets closer to creating soft circuitry that could survive in a variety of real-world applications. Image shows current passes through a self-healing circuit

For more details :
https://www.printedelectronicsworld.com/articles/24140/new-soft-electronics-dont-break-even-when-punctured?rsst2id=1,4,8&userid=25937

AMRUTHA ,S4

SMART GADGET
CLIP ON SMART PHONE CAMERA LENS

If you love to take pictures with your phone but find the camera's capabilities a little bit limiting, a clip on camera is available in the market. The clip-on camera lenses feature sturdy aluminium and glass construction. The bundle contains a 180-degree fisheye lens, a 0.4x super wide-angle lens, and a 10x macro zoom lens for detailed close-up shots. The metal housing is also water and dust-resistant. The universal clip-on design works with most popular brands of Android phones as well as the latest Apple iPhones.

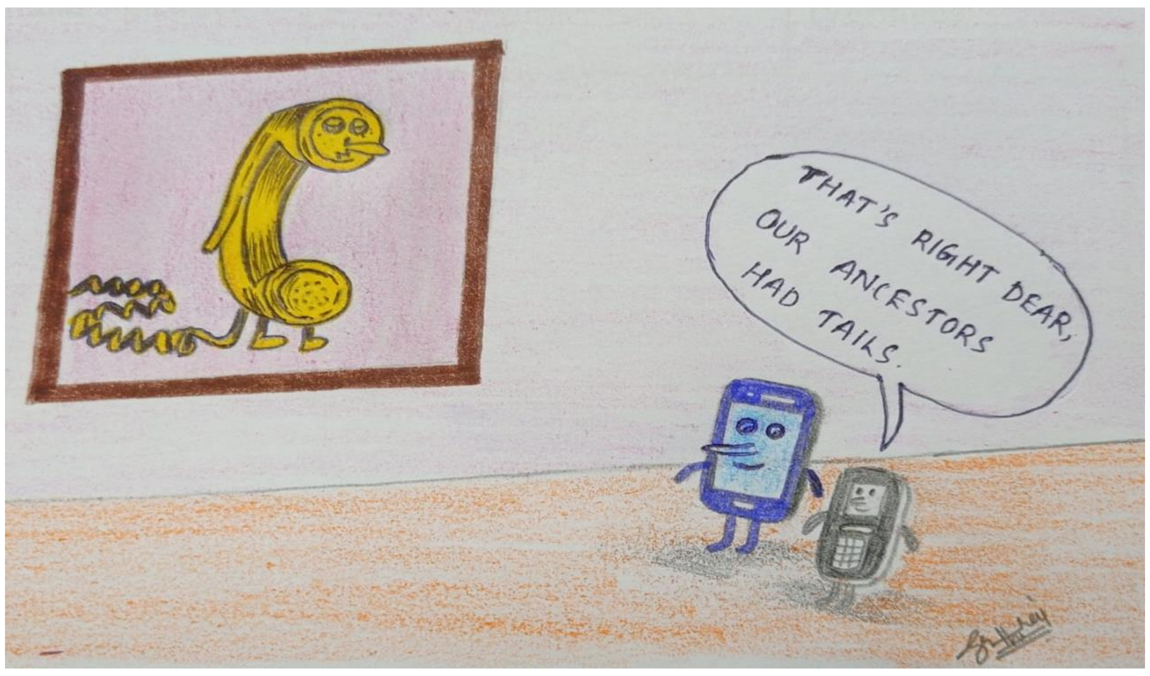
SKIN IN THE GAME TRANSFORMATIVE APPROACH USES HUMAN BODY TO RECHARGE SMART WATCHES

As smart watches are increasingly able to monitor the vital signs of health, including what's going on when we sleep, a problem has emerged: those wearable, wireless devices are often disconnected from our body overnight, being charged at the bedside. Human skin is a conductible material. So there arises a question "Why can't we instrument daily objects, such as the office desk, chair and car steering wheel, so they can seamlessly transfer power through human skin to charge up a watch or any wearable sensor while the users interact with them? It's like, using human skin as a wire. Then we can motivate people to do things like sleep tracking because they never have to take their watch off to charge it. Human tissue is used as a transfer medium for power. In this device we have an electrode that couples to the human body, which you could think of as the red wire, if you're thinking of a traditional battery with a pair of red and black wires. The conventional black wire is established between two metal plates that are embedded on the wearable device and an instrumented everyday object, which becomes coupled (or virtually connected) via the surrounding environment when the frequency of the energy carrier signal is sufficiently high in the hundreds of megahertz (MHz) range. There is no sensation to the person who comes into contact with the power transmitter because this is way beyond the frequency range that the human can actually perceive. The prototype currently doesn't produce enough power to continuously operate a sophisticated device such as an Apple Watch but could support ultra-low-power fitness trackers like Fitbit Flex and Xiaomi Mi-Bands.We imagine in the future as we further optimize the power that's consumed by the wearable sensors, we could reduce and ultimately eliminate the charging time. Image shows Sunghoon Ivan Lee demonstrates how the wearable device is charged by the contact of his left forearm with the power transmitter below the keyboard.

For more details: https://www.youtube.com/watch?v=zrJwZRauO4E

BINSILA , S2

CARTOON CORNER



Ms. SRUTHI C K
AP, DSH

AMAZING FACTS:

"Some metals are so reactive that they explode on contact with water"

NOVEL SMART CEMENT CAN BE USED TO BUILD MORE DURABLE ROADS AND CITIES

By introducing nanoparticles into ordinary cement, researchers have formed a smarter, more durable and highly functional cement. Forces of nature have been outsmarting the materials we use to build our infrastructure since we started producing them. Ice and snow turn major roads into rubble every year; foundations of houses crack and crumble, in spite of sturdy construction. With cement being the most widely consumed material globally and the cement industry accounting for 8% of human-caused greenhouse gas emissions, hence turned to nanore inforced cement to look for a solution. Nano materials reduce the carbon footprint of cement composites. By using an innovative method called scratch testing. By this testing, they could efficiently form predictions on the material's properties in a fraction of the time. The method tests fracture response by applying a conical probe with increasing vertical force against the surface of microscopic bits of cement. By this method is applied directly at the micrometer and nanometer scales, which saves a considerable amount of time. And then based on this, we can understand how materials behave, how they crack and ultimately predict their resistance to fracture. Here graphene nano platelets, a material rapidly gaining popularity in forming smart materials, were used to improve the resistance to fracture of ordinary cement. Incorporating a small amount of the nanomaterial also was shown to improve water transport properties including pore structure and water penetration resistance, with reported relative decreases of 76% and 78%, respectively. Introducing green concrete that employs lighter, higher-performing cement will reduce its overall carbon footprint by extending maintenance schedules and reducing waste. Smart materials allow cities to meet the needs of growing populations in terms of connectivity, energy and multi functionality. Carbon-based nanomaterials including graphene nanoplatelets are already being considered in the design of smart cement-based sensors for structural health monitoring.
For more details:
https://www.sciencedaily.com/releases/2021/06/210621133921.htm

ABIJITH, S2

ENOMAD UNO - A PORTABLE HYDROPOWER GENERATOR

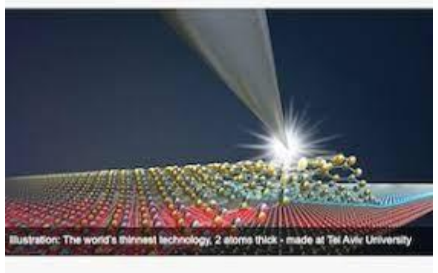
The lightweight turbine generates and stores enough power to charge any USB device you connect to it. Once it's fully charged (which takes about four and a half hours), it can power up to three smartphones or tablets — and if you're near running water or can pull it through water behind a boat, you'll be able to recharge it as much as we want It actually charges devices twice as fast as the regular outlets in your house. Once you get back home, you can boost the battery life by plugging it into the wall, so it'll be ready to go when it's needed again. That makes it a convenient option for a backup power source in the event of an emergency. It also has a patented modular design so that its application is extended from back-up battery to lantern, speaker, Wi-Fi router, and much more. Everything is all-in-one and completely customizable. it believes that the ability to charge using water flow makes the Enomad Uno stand out from the crowd. More reliable than solar and more efficient than wind, water is one of the world's most powerful renewable energy resources, and it's all around us," reads the company website. "Enomad Uno is chargeable by water,not only does it minimize the environmental impact of your energy consumption, but it allows users to take an active role in experiencing how energy is produced and used.

For more details: https://dornob.com/enomad-uno-a-portable-hydropower-generator-for-hikers-and-survivalists/ .

.

YEDUNANDAN K, S2

THE WORLD'S THINNEST TECHNOLOGY- TWO ATOMS THICK



According to the researchers, the new technology proposes a way for storing electric information in the thinnest unit known to science, in one of the most stable and inert materials in nature. The allowed quantum-mechanical electron tunneling through the atomically thin film may boost the information reading process much beyond current technologies. Current state-of-the-art devices consist of tiny crystals that contain only about a million atoms (about a hundred atoms in height, width, and thickness) so that a million of these devices can be squeezed about a million times into the area of one coin, with each device switching at a speed of about a million times per second. The researchers used a two-dimensional material:one-atom-thick layers of boron and nitrogen, arranged in a repetitive hexagonal structure. In their experiment, they were able to break the symmetry of this crystal by artificially assembling two such layers. In its natural three-dimensional state, this material is made up of a large number of layers placed on top of each other, with each layer rotated 180 degrees relative to its neighbours (antiparallel configuration). The symmetry breaking we created in the laboratory, which does not exist in the natural crystal, forces the electric charge to reorganize itself between the layers and generate a tiny internal electrical polarization perpendicular to the layer plane. When we apply an external electric field in the opposite direction the system slides laterally to switch the polarization orientation. The switched polarization remains stable even when the external field is shut down. In this, the system is similar to thick three-dimensional ferroelectric systems, which are widely used in technology today. This miniaturization and flipping through sliding will improve today's electronic devices, and moreover, allow other original ways of controlling information in future devices. In addition to computer devices, researchers expect that this technology will contribute to detectors, energy storage and conversion, interaction with light, etc.
For more detailes: https://scitechdaily.com/breakthrough-the-worlds-thinnest-technology-only-two-atoms-thick/

.

ASWIN MANOJ,S2

Do You Know?

- First computer mouse was made out of wood in 1964.
- First Cell Phone call was in New York city in 1973.
- Water Integrator is a computer that is run on water.
- You can visit the world's first Web Page even today.

  Click here : http://info.cern.ch/hypertext/WWW/TheProject.html
- You can code programs using White Spaces.
- Lee Dee Forest is considered as the father of Artificial Intelligence.
- Abacus is the first calculating device.
- In 1956, 5 Megabytes (5MB) of data weighed a ton.
- Email is older than World Wide Web.
- Second largest search engine is You Tube.
- The world's first Camera took eight hours to snap a photo.

PREVIOUS PUZZLE #2 ANSWER

D	F	H	G	B	E	J	X	W	P
G	W	A	L	B	W	W	S	R	D
N	K	Y	N	K	N	I	V	E	S
E	I	A	M	R	F	E	E	F	B
G	R	A	P	H	I	T	E	I	E
C	A	G	C	R	E	M	P	N	U
M	A	T	Y	L	O	Z	R	I	Y
C	H	O	N	A	Y	N	T	N	C
A	F	A	T	I	G	U	E	G	E
S	Y	A	N	M	R	V	Q	P	U

(1) APRON
(2) GRAPHITE
(3) REFINING
(4) KNIVES
(5) FATIGUE

STAFFS IN CHARGE: Dr. Nimmy John V , Ms. Neethu Ravindran, Ms. Ashitha T

ACKNOWLEDGEMENT: DIRECTOR, PRINCIPAL, HEAD OF THE DEPARTMENT, FACULTIES AND STUDENTS

"Even though at home, VVIT ians are exploring the technical world....... LET'S INSPIRE...... LET'S GROW....."