

Weekly Discovery

We SHARE to inspire and ignite ideas!

29 March – 2 April 2021

The Library publishes **9 alerts** focusing on Topics relevant to **growth and research areas** to SUTD.

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Artificial Intelligence & Data Science	Aviation	Cities
HealthCare	Robotics & Automation	Design & Innovation
Cybersecurity	Digital Design & Fabrication	Advanced Manufacturing

BATTERY
EV Batteries As Car Body? Chalmers Univ Researchers Claim Tech Breakthrough



"Researchers from Chalmers University of Technology have produced a structural battery that contains carbon fibre that serves simultaneously as an electrode, conductor, and load-bearing material."

Source: [Autocar Professional](#) (28 March 2021)

DEVICES
Experimental Hearing Implant Succeeds In Registering Brain Waves



"Researchers at KU Leuven have succeeded for the first time in measuring brain waves directly via a cochlear implant. These brainwaves indicate in an objective way how good or bad a person's hearing is. The research results are important for the further development of smart hearing aids."

Source: [EurekAlert!](#) (30 March 2021)

ENERGY
Researchers Harvest Energy From Radio Waves To Power Wearable Devices



"The researchers developed a stretchable wideband dipole antenna system capable of wirelessly transmitting data that is collected from health-monitoring sensors. The system consists of two stretchable metal antennas integrated onto conductive graphene material with a metal coating. The wideband design of the system allows it to retain its frequency functions even when stretched, bent and twisted."

Source: [PennState University](#) (25 March 2021)

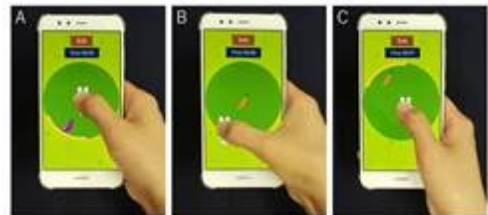
ENGINEERING
Method Offers Inexpensive Imaging At The Scale Of Virus Particles



"Using an ordinary light microscope, researchers can now obtain images with unprecedented accuracy."

Source: [MIT News](#) (29 March 2021)

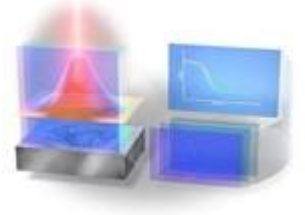
HEALTHCARE
Detecting For Carpal Tunnel Syndrome With A Smartphone Game



"A Japanese research group combined motion analysis that uses smartphone application and machine learning that uses an anomaly detection method, thereby developing a technique to easily screen for carpal tunnel syndrome."

Source: [JST](#) (15 March 2021)

MANUFACTURING
Laser Lights The Way - A New Way To Observe Laser Interactions Could Improve Laser-Based Manufacture



"For the first time, researchers have found a way to acquire such data from a production laser using low-cost equipment that could vastly improve the accuracy of items cut or etched with lasers. Given the ubiquity of lasers, this could have wide-ranging implications in laboratory, commercial and industrial applications."

Source: [The University of Tokyo](#) (29 March 2021)

MATERIAL
Copper Foam As A Highly Efficient, Durable Filter For Reusable Masks And Air Cleaners



"... researchers reporting in ACS' *Nano Letters* have transformed copper nanowires into metal foams that could be used in facemasks and air filtration systems."

Source: [American Chemical Society](#) (24 March 2021)

MATERIALS
MIT Engineers Make Filters From Tree Branches To Purify Drinking Water



"Now, the team has advanced the technology and shown that it works in real-world situations. They have fabricated new xylem filters that can filter out pathogens such as E. coli and rotavirus in lab tests, and have shown that the filter can remove bacteria from contaminated spring, tap, and groundwater."

Source: [MIT](#) (22 March 2021)

MATERIALS
Turning Wood Into Plastic



"A research team, led by YSE professor Yuan Yao and Liangbing Hu from the University of Maryland, has created a high-quality bioplastic from wood byproducts that they hope can solve one of the world's most pressing environmental issues."

Source: [Yale](#) (25 March 2021)

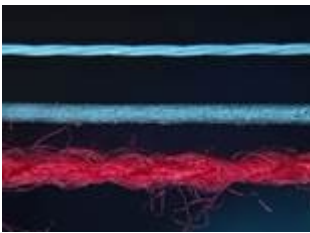
MATERIALS SCIENCE
A Promising Breakthrough For A Better Design Of Electronic Materials



"Scientists have demonstrated the role played by molecular vibrations on electron conductivity on crystals of such materials. This finding is important for applications of these molecular materials in electronics, energy and information storage."

Source: [Science Daily](#) (19 March 2021)

MATERIALS SCIENCE
"Smart Clothes" That Can Measure Your Movements



How about a wearable that can detect how you move as you do a physical activity or play a sport, and could potentially even offer feedback on how to improve your technique?

Source: [MIT Computer Science & AI Lab](#) (24 March 2021)

RENEWABLE ENERGY
Dead Power Grid Revived with Solar and Wind, Not Diesel



In today's blackouts, renewable power sources are customarily shut down and the system is restarted with outside power from traditional generators. The "smarter" inverters allowed the renewable-heavy model grid to repower itself.

Source: [Scientific American](#) (25 March 2021)

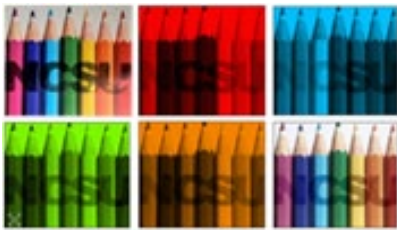
ROBOTICS
Small Robot Swimmers That Heal Themselves From Damage



Now, researchers reporting in ACS' *Nano Letters* have developed small, swimming robots that can magnetically heal themselves on-the-fly after breaking into two or three pieces.

Source: [ACS](#) (24 March 2021)

SENSORS
Mantis Shrimp Inspires Hyperspectral And Polarimetric Light Sensor



"A novel hyperspectral and polarimetric optical sensor that's small enough to fit on a smartphone has been developed by researchers in the US and Korea. The device consists of an alternating stack of polarization-sensitive organic photovoltaics (P-OPVs)."

Source: [Physics World](#) (23 March 2021)

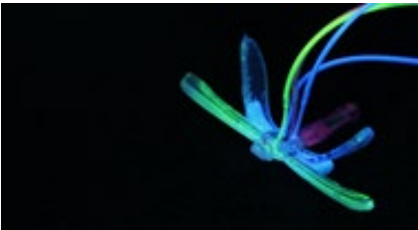
SENSORS
Track Your UV Exposure In Real Time With This DIY Meter



"Know when you've had enough sun before you get burned. An Arduino Pro Micro provides the brains of my exposure meter, integrating raw data from a UV sensor that measures the intensity of UV-A and UV-B light. The integrated results are displayed on a monochrome LCD screen originally created for Nokia feature phones."

Source: [IEEE Spectrum](#) (29 March 2021)

SOFT ROBOTICS
Soft Robotic Dragonfly Signals Environmental Disruptions



"Electronics-free DraBot uses air pressure, microarchitectures and self-healing hydrogels to watch for changes in pH, temperature and oil."

Source: [Duke University](#) (25 March 2021)