SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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9 Nov – 13 Nov 2020

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3D PRINTING

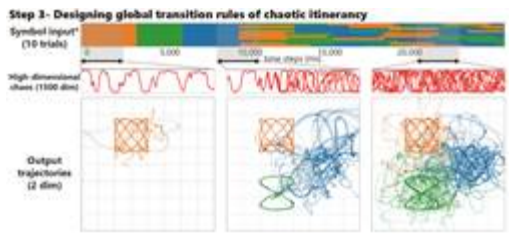
Researchers able to 3D print cancer tumours with breakthrough technology

"Researchers are now 3D printing cancer cells to help fast-track testing and better treatments for patients."

Source: 9 News (23 October 2020)

AI

Robotic AI learns to be spontaneous

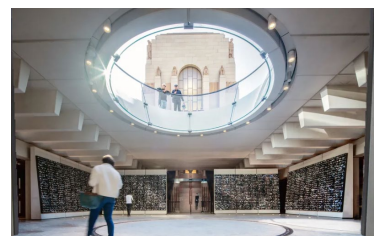


"Researchers offer an alternative machine learning-based method for designing spontaneous behaviors by capitalizing on complex temporal patterns, like neural activities of animal brains. They hope to see their design implemented in robotic platforms to improve their autonomous capabilities."

Source: University of Tokyo (11 November 2020)

ARCHITECTURE AWARD

'Above and beyond': The winners of the 2020 National Architecture Awards



"In the context of the pandemic and a rapidly changing climate, it is clear that we need to be designing in new ways and many of these projects show that architects are uniquely positioned to adapt and meet these challenges."

Source: ArchitectureAU (5 Nov 2020)

BIOMEDICAL

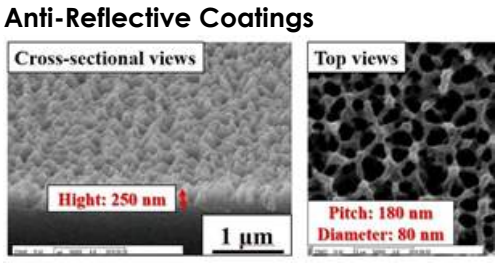
Implantable sensor could measure bodily functions -- and then safely biodegrade

"Sensors that monitor a patient's condition during and after medical procedures can be expensive, uncomfortable and even dangerous. Now, an international team of researchers has designed a highly sensitive flexible gas sensor that can be implanted in the body — and, after it's no longer needed, safely biodegrade into materials that are absorbed by the body."

Source: Pen State University (6 November 2020)

BIOMIMICRY

Nature-Inspired Design: Mimicking Moth Eyes to Produce Transparent Anti-Reflective Coatings

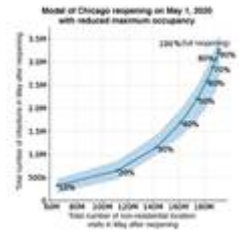


"researchers from Japan have devised a strategy to produce large area moth-eye transparent films that greatly reduce reflectance and improve transmittance. These films could be used to better the visibility of screens and enhance the performance of solar panels."

Source: Tokyo University of Science (4 November 2020)

COVID-19

Stanford-led team creates a computer model that can predict how COVID-19 spreads in cities



"A study of how 98 million Americans move around each day suggests that most infections occur at "superspreader" sites, and details how mobility patterns help drive higher infection rates among minority and low-income populations."

Source: Eurekalert (10 November 2020)

DRONES

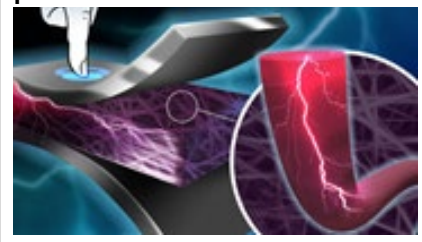
Active volcano's carbon emissions sampled by drones

'You can expect a veritable explosion of new datasets to come out as these systems [drones] become more and more commonplace,' she says. 'The influx of lots of new data means we have the opportunity and responsibility to develop tools to understand what these volcanoes are telling us.

Source: ChemistryWorld (9 Nov 2020)

ENERGY

Swirl power: how gentle body movement will charge your mobile phone

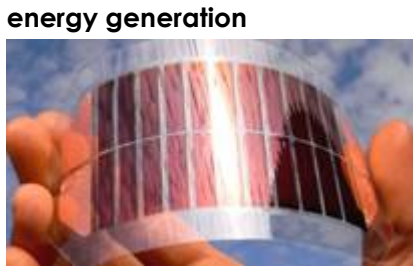


"Scientists have found a way to generate electricity from nylon, raising hopes that the clothes on our backs will become an important source of energy."

Source: University of Bath (6 November 2020)

MACHINE LEARNING

Terminator salvation? New machine learning program to accelerate clean energy generation

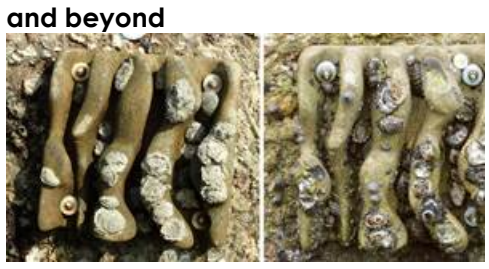


Researchers have successfully created a new type of machine learning model to predict power-conversion efficiency (PCE) of materials that can be used in next-generation organic solar cells, including 'virtual' compounds that don't exist yet. Read more in Nature.

Source: TechXplore (9 November 2020)

MATERIAL SCIENCE

Eco-engineered tiles enhance marine biodiversity on seawalls in Hong Kong and beyond

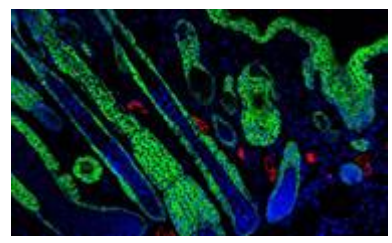


"the experimental tiles were constructed with crevices and grooved surfaces, based on the combination of ecological and engineering principles. The team attached the tiles with crevices of different depth to the vertical seawalls in Sham Shui Kok on Lantau Island and Lok On Pai in Tuen Mun in the western waters of Hong Kong for testing."

Source: City U (6 November 2020)

MATERIAL SCIENCE

Wound-healing biomaterials activate immune system for stronger skin

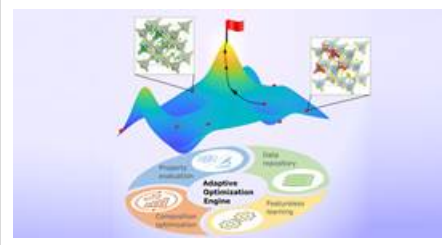


This new material, which quickly degrades once the wound has closed, demonstrates that activating an adaptive immune response can trigger regenerative wound healing, leaving behind stronger and healthier healed skin. Read more in Nature.

Source: Phys.Org (9 November 2020)

OPTIMIZATION

Optimizing the Design of New Materials

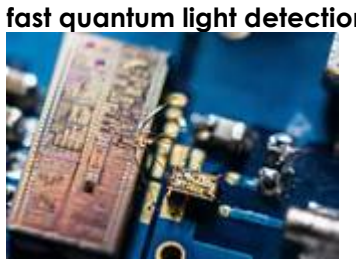


"researchers have developed a new computational approach to accelerate the design of materials exhibiting metal-insulator transitions (MIT), a rare class of electronic materials that have shown potential to jumpstart future design and delivery of faster microelectronics and quantum information systems."

Source: Northwestern University (6 November 2020)

QUANTUM PHYSICS

Combining electronic and photonic chips enables new record in super-fast quantum light detection



Bristol researchers have developed a tiny device that paves the way for higher performance quantum computers and quantum communications, making them significantly faster than the current state-of-the-art. Read more in Nature.

Source: University of Bristol (9 November 2020)

TECHNOLOGY

Grasping empathy: How new technology helps simulate children's experiences

"In a series of research projects, University of Chicago postdoctoral researcher Jun Nishida has explored new technologies that help people experience the point of view of others unlike themselves."

Source: Techxplore (2 November 2020)

TECHNOLOGY

What Is "The Empathy Gap" & What Role Does Technology Play In Fostering It?

"Modern technology" typically conjures images of sleek robots or shimmering holograms. It's all about touch screens and drones. It's efficient and inhuman. But, on the contrary, right now, we're watching contemporary tech aim itself towards something new: Intimacy."

Source: Refinery (9 November 2020)

WEARABLES

The Mobile Health Tech That Could Combat COVID-19

"In a report published by IEEE, health experts identify which wearable sensors and contact tracking apps could help."

Source: IEEE Spectrum (9 November 2020)

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