SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

We SHARE to inspire and ignite ideas!

19 - 23 December 2022

DECARBONISATION

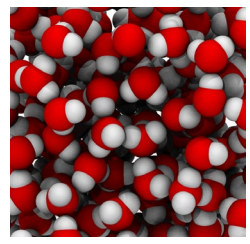
Risk Of Population Disruption As A Result Of Decarbonisation

"Research led by University of Queensland (UQ) and including the University of Göttingen analysed the effects of decarbonisation strategies by linking global resource inventories with demographic systems to generate a matrix showing the risks and benefits. The research suggests that increased demand for energy transition metals (ETMs) could be more disruptive to some communities than winding back production of thermal coal."

Source: goettingen! (15 December 2022)

MACHINE LEARNING

Using Machine Learning To Better Understand How Water Behaves

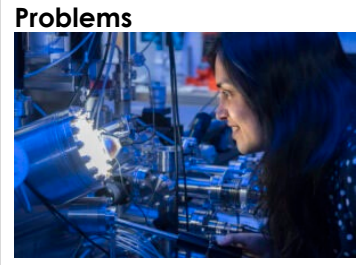


"Now, new research from the Georgia Institute of Technology uses machine learning models to better understand water's phase changes, opening more avenues for a better theoretical understanding of various substances. With this technique, the researchers found strong computational evidence in support of water's liquid-liquid transition that can be applied to real-world systems that use water to operate."

Source: GATech (16 December 2022)

MATERIALS

A Shield For 2d Materials That Adds Vibrations To Reduce Vibration Problems



- Ultra-thin, liquid-metal-printed oxide can improve performance of your transistor by suppressing vibrational resistance
- Counterintuitively, this occurs by adding extra phonons (vibrations) into the system

This oxide can protect your transistor against further processing

Source: FLEET (15 December 2022)

MATERIALS

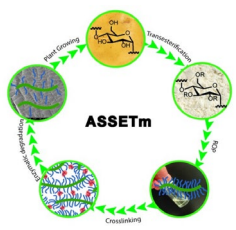
Gold-Based Passive Heating For Eyewear

"Researchers from ETH Zurich have developed a new transparent gold nanocoating that harnesses sunlight to heat the lenses of glasses, thereby preventing them from fogging in humid conditions. This coating could potentially also be applied to car windshields.."

Source: ethz (12 December 2022)

MATERIALS

Wearable Electronics From Starch To Prevent E-Waste

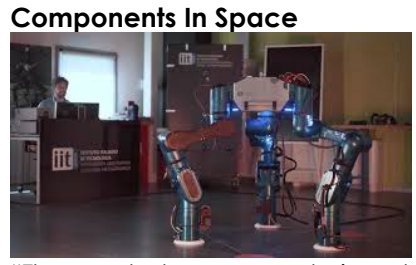


"Soft, wearable sensors can improve our lives, but these soft and stretchable electronic devices are nearly impossible to recycle. As a result, this electronic waste usually ends up in landfills or polluting the environment. Polymer scientists from the University of Groningen have developed a starch-based polymer that makes it possible to create a fully biodegradable soft material for sensors."

Source: RUG (15 December 2022)

ROBOT

MARM, The New Three-Leg Robot To Transport Weights And Manipulate Components In Space

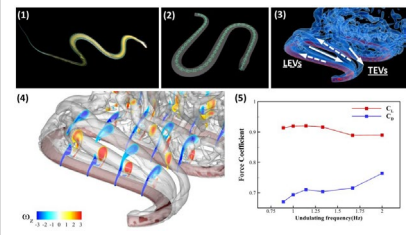


"The robot was designed and manufactured by IIT's Human and Humanoid Centered Mechatronics Lab, coordinated by Nikolaos Tsagarakis, in collaboration with Leonardo S.p.A and GMV. The MARM robot represents the last generation of robot realized by Nikolaos Tsagarakis' team, therefore his research group at IIT designed and produced also the humanoid robot WALK-MAN and the Centaur-like robot CENTAURO, and is working on the modular configurable collaborative robot CONCERT funded by the EU."

Source: EurekalertI (16 December 2022)

ROBOTICS

Flying Snakes Help Scientists Design New Robots



"In Physics of Fluids, by AIP Publishing, researchers from the University of Virginia and Virginia Tech explored the lift production mechanism of flying snakes, which undulate side-to-side as they move from the tops of trees to the ground to escape predators or to move around quickly and efficiently. The undulation allows snakes to glide for long distances, as much as 25 meters from a 15-meter tower."

Source: AIP (13 December 2022)

ROBOTICS

Watch This Robot Do 'The Worm' When Temperature Changes

"A new gelatinous robot that crawls, powered by nothing more than temperature change and clever design, brings "a kind of intelligence" to the field of soft robotics."

Source: JHU (15 December 2022)

URBAN STUDIES

Harnessing Smartphones To Track How People Use Green Spaces

"A new study demonstrates how anonymized GPS data from people's smartphones can be used to monitor the public's use of parks and other green spaces in urban areas, which could help inform their management."

Source: Eurekalert! (16 December 2022)

VR

CityU Researchers Develop Wireless, Ultrathin 'Skin VR' To Provide A Vivid, 'Personalized' Touch Experience In The Virtual World

"Enhancing the virtual experience with the touch sensation has become a hot topic, but today's haptic devices remain typically bulky and tangled with wires. A team led by the City University of Hong Kong (CityU) researchers recently developed an advanced wireless haptic interface system, called WeTac, worn on the hand, which has soft, ultrathin soft features, and collects personalised tactile sensation data to provide a vivid touch experience in the metaverse."

Source: CityU (16 December 2022)

VR

When Using Virtual Reality As A Teaching Tool, Context And 'Feeling Real' Matter

"The context in which we learn things can help us remember them better," said Jesse Rissman, the paper's corresponding author and a UCLA associate professor of psychology. "We wanted to know if learning foreign languages in virtual reality environments could improve recall, especially when there was the potential for two sets of words to interfere with each other."

Source: UCLA (15 December 2022)

WEARABLES

Wearable Skin Patch Monitors Hemoglobin In Deep Tissues

"A team of engineers at the University of California San Diego has developed an electronic patch that can monitor biomolecules in deep tissues, including hemoglobin. This gives medical professionals unprecedented access to crucial information that could help spot life-threatening conditions such as malignant tumors, organ dysfunction, cerebral or gut hemorrhages and more."

Source: UCSD (16 December 2022)