SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

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5 - 9 July 2021

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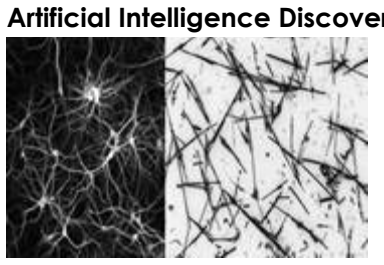
AI

'Edge Of Chaos' Opens Pathway To Artificial Intelligence Discoveries

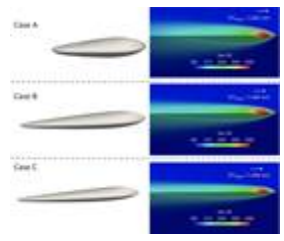


"Some neuroscience theories suggest the human brain operates best 'at the edge of chaos'. Now scientists in Australia and Japan have found that keeping a nanowire network at the edge of becoming chaotic is the best state for it to produce useful results."

Source: University of Sydney (29 June 2021)

AI

Using AI To Predict 3D Printing Processes



"Additive manufacturing has the potential to allow one to create parts or products on demand in manufacturing, automotive engineering, and even in outer space. However, it's a challenge to know in advance how a 3D printed object will perform, now and in the future."

Source: UNIVERSITY OF TEXAS (1 July 2021)

ARCHITECTURE

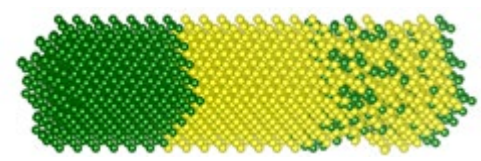
What Are The Warning Signs Before A Building Collapses?

"Cracking—particularly wide-open cracks in the structural elements—crushing, and spalling of concrete, and potential signs of rebar corrosion, are the ones that would require further evaluation by professionals."

Source: Northeastern University (2 July 2021)

ARTIFICIAL INTELLIGENCE

Physicists Teach AI to Simulate Atomic Clusters

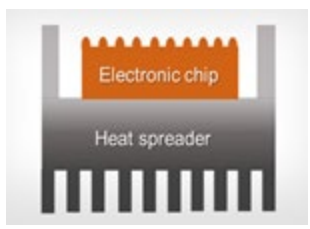


"The idea, published in June, in *npj Computational Materials*, was to train machine-learning models to predict energy bands from 16-atom arrangements, then feed the models larger arrangements and see if they could predict their energy bands."

Source: IEEE Spectrum (2 July 2021)

COMPUTER TECHNOLOGY

Novel Heat-Management Material Keeps Computers Running Cool



"UCLA engineers have demonstrated successful integration of a novel semiconductor material into high-power computer chips to reduce heat on processors and improve their performance."

Source: UCLA (29 June 2021)

COVID 19

Free Access to Thousands of COVID-19 Research Documents

" Experts say the COVID-19 virus is likely to be around for some time, even with vaccines, as it continues to spread and mutate. There are still many unknowns, so it's important to keep researching the coronavirus. That's why IEEE is making thousands of COVID-related research documents that have been published in its journals available for free."

Source: IEEE Spectrum (1 July 2021)

EDUCATION

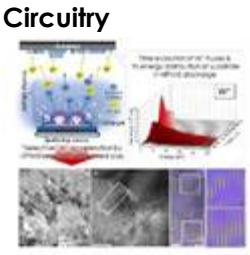
High-Resolution Microscope Is Made From LEGO Bricks

"A fully functional modular microscope has been built using LEGO bricks and low-cost smartphone lenses. Designed by researchers, teachers and schoolchildren in Germany, the instrument is easy to build, yet it can resolve micrometre-sized objects such as individual living cells."

Source: Physics World (5 July 2021)

MATERIALS

Stress-Free Path To Stress-Free Metallic Films Paves The Way For Next-Gen Circuitry

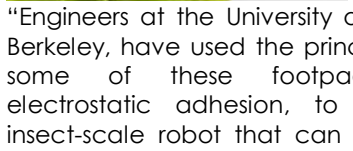


"Researchers from Tokyo Metropolitan University have used high power impulse magnetron scattering (HiPIMS) to create thin films of tungsten with unprecedentedly low levels of film stress. By optimizing the timing of a "substrate bias pulse" with microsecond precision, they minimized impurities and defects to form crystalline films with stresses as low as 0.03 GPa, similar to those achieved through annealing. Their work promises efficient pathways for creating metallic films for the electronics industry.."

Source: EUREKALERT (3 July 2021)

ROBOTICS

Insect-Sized Robot Navigates Mazes With The Agility Of A Cheetah

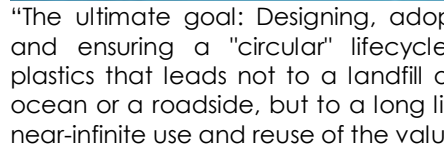


"Engineers at the University of California, Berkeley, have used the principle behind some of these footpads, called electrostatic adhesion, to create an insect-scale robot that can swerve and pivot with the agility of a cheetah, giving it the ability to traverse complex terrain and quickly avoid unexpected obstacles."

Source: UNIVERSITY OF CALIFORNIA - BERKELEY (2 July 2021)

SUSTAINABILITY

Rethinking Plastics

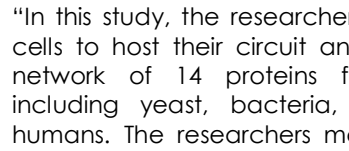


"The ultimate goal: Designing, adopting and ensuring a "circular" lifecycle for plastics that leads not to a landfill or an ocean or a roadside, but to a long life of near-infinite use and reuse of the valuable resources and applications they represent."

Source: UNIVERSITY OF DELAWARE (1 July 2021)

SYNTHETIC BIOLOGY

Synthetic Biology Circuits Can Respond Within Seconds

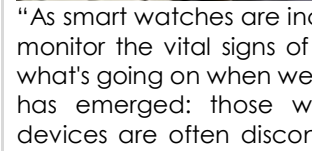


"In this study, the researchers used yeast cells to host their circuit and created a network of 14 proteins from species including yeast, bacteria, plants, and humans. The researchers modified these proteins so they could regulate each other in the network to yield a signal in response to a particular event."

Source: MIT (1 July 2021)

WEARABLES

Skin In The Game: Transformative Approach Uses The Human Body To Recharge Smartwatches



"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."

Source: UNIVERSITY OF MASSACHUSETTS AMHERST (1 July 2021)