Weekly Discovery

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3 September 2018 - 7 September 2018

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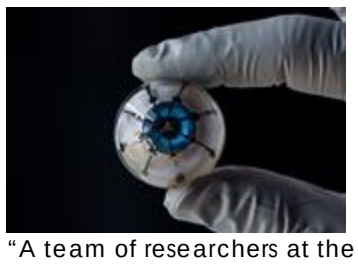
3D PRINTING

Research Brief: Researchers 3D Print Prototype for 'Bionic Eye'



"A team of researchers at the University of Minnesota have, for the first time, fully 3D printed an array of light receptors on a hemispherical surface. This discovery marks a significant step toward creating a 'bionic eye' that could someday help blind people see or sighted people see better."

Source: University of Minnesota (28 August 2018)

ARCHITECTURE

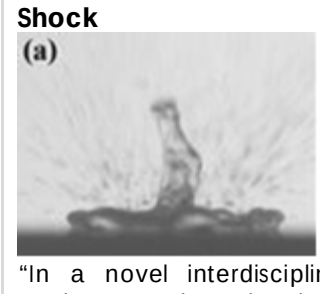
Ballet Mécanique Apartment Block Has Walls That Unfold to Form Balconies and Sunshades

"Manuel Herz Architects has completed a housing block in Zurich, with dynamic facades that transform into balconies for its five apartments. On all four sides of the three-storey Ballet Mécanique, the walls on the two lowest levels are opened using hydraulics to form colourful balconies and sunshades."

Source: Dezeen (3 September 2018)

COATING TECHNIQUE

Nanoparticle Coating Protects Ceramic Materials from Thermal Shock

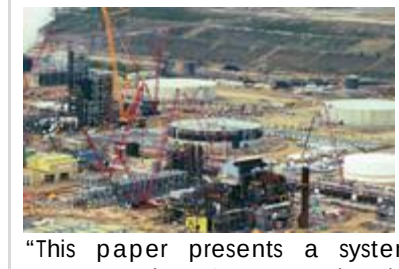


"In a novel interdisciplinary approach, engineers at the University of New Mexico now report in a paper in AIP Advances using a cheap, simple, water-repelling coating to prevent thermal shock in ceramics."

Source: Materials Today (30 August 2018)

DIGITAL FABRICATION

Automated Crane Planning and Optimization for Modular Construction

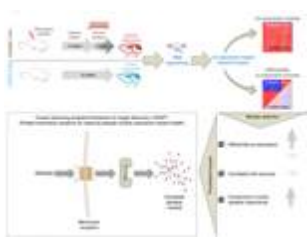


"This paper presents a system, called Automated Crane Planning and Optimization, to automate the above-mentioned analysis for a large-scale project. This system is validated on actual modular projects."

Source: Automation in Construction (November 2018)

DRUG DELIVERY

A Systems-Level Framework for Drug Discovery Identifies Csf1R as an Anti-Epileptic Drug Target

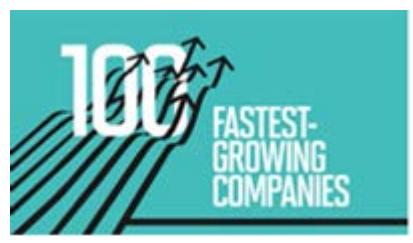


"Using a systems genetics approach and starting from gene expression data from the target tissue, CRAFT (Causal Reasoning Analytical Framework for Target discovery) provides a predictive framework for identifying cell membrane receptors with a direction-specified influence over disease-related gene expression profiles."

Source: Nature Communications (3 September 2018)

INDUSTRY PLAYERS

100 Fastest-Growing Companies



"Fortune's annual list of the world's Fastest-Growing Companies ... offers a good vantage point from which to examine the trends driving the global economy, such as the continued ascendance of the technology sector."

Source: Fortune (September 2018)
Available @ SUTD Library (Call Number HF5001 FOR)

MATERIALS SCIENCE

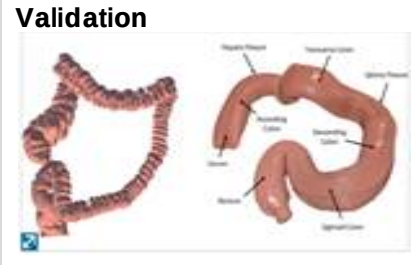
Morphosis Weaves Textile Research Facility Facade from Reinforced Fibre

"Aramid, the material Morphosis chose for the interconnected sunshade system, is a reinforced fibre manufactured by Kolon that has five times the tensile strength of iron. It is used in everything from bullet-proof vests to aircraft parts."

Source: Dezeen (30 August 2018)

MEDICAL DEVICE

A Modular Endoscopy Simulation Apparatus (MESA) for Robotic Medical Device Sensing and Control Validation



"The simulator presented here will aid in future feedback control, localization, and autonomy development for robotic endoscopes ... The combined synthetic colon and MESA platform allow for affordable and repeated benchtop testing of colon simulations at an accessible scale, ahead of costly miniaturization for in vivo surgical testing."

Source: IEEE Robotics and Automation Letters (October 2018)

PHOTOSYNTHESIS

Scientists Pioneer a New Way to Turn Sunlight into Fuel

"A new study used semi-artificial photosynthesis to explore new ways to produce and store solar energy. They used natural sunlight to convert water into hydrogen and oxygen using a mixture of biological components and human-made technologies."

Source: Science Daily (3 September 2018)

PRINTING TECHNOLOGY

Printing with Sound

"Harvard University researchers have developed a new printing method that uses soundwaves to generate droplets from liquids with an unprecedented range of composition and viscosity. This technique could enable the manufacture of many new biopharmaceuticals, cosmetics, food and optical materials."

Source: The Harvard Gazette (31 August 2018)

QUANTUM COMPUTING

Quantum Computing: the Power to Think Outside the Box

"Quantum machines, which tap into the weirdness of quantum mechanics - a branch of physics that deals with the behaviour of sub-atomic particles - are a long-held dream in the tech world. By harnessing properties that extend beyond the limits of classical Newtonian physics, they hold the promise of exponential gains in computing power."

Source: Financial Times (3 September 2018)

RESEARCH COLLABORATIONS

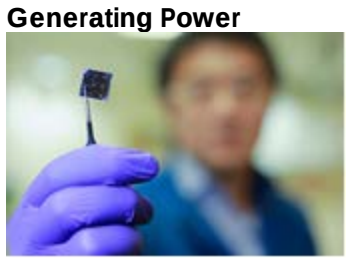
Ways to Promote and Foster Collaborative Research in Your Lab

"PIs should help students and postdocs understand the value and process of collaborative work. But junior scientists should initiate specific collaborative projects and decide together how to carry out the research."

Source: Nature (29 August 2018)

SOLAR CELLS

Dual-Layer Solar Cell Developed at UCLA Sets Record for Efficiently Generating Power



"A solar cell developed by UCLA Engineering researchers converts 22.4 percent of incoming energy from the sun, a record for this type of cell."

Source: UCLA Newsroom (30 August 2018)

TRANSPORT

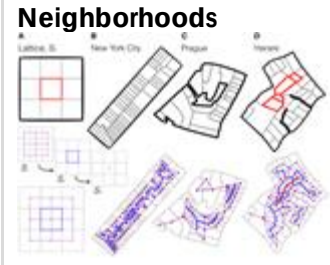
A New Digital Data Service Will Minimise Disruptive Roadworks

"The Department for Transport (DfT) is investing up to £10 million in Street Manager, a digital planning service due to launch in 2019 to replace a costly and ineffective system that will make more consistent, accurate data on roadworks available to motorists."

Source: Intelligent Transport (3 September 2018)

URBAN PLANNING

Toward Cities Without Slums: Topology and the Spatial Evolution of Neighborhoods



"Researchers show that it is possible to diagnose systematically the central physical problem of slums - the lack of spatial accesses and related services - using a topological analysis of neighborhood maps and resolved by finding solutions to a sequence of constrained optimization problems."

Source: Science Advances (29 August 2018)

VIRTUAL DRUG TRIALS

The Search for New Drugs Is Coming to Your House

"Because we bring trials to patients in their homes, we remove barriers, whether geography or time and inconvenience, that are preventing them from participating ... uses proprietary software, along with wireless devices, to conduct virtual clinical trials with drug companies – including the one with AOBiome."

Source: Fast Company (30 August 2018)

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