

Weekly Discovery

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9 MARCH 2020 - 13 MARCH 2020

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

ARCHITECTURE
New Approach to Sustainable Building Takes Shape in Boston



"The five-story building's structure will be made from cross-laminated timber (CLT). It will be assembled on site mostly from factory-built subunits, and it will be so energy-efficient that its net carbon emissions will be essentially zero."

Source: [MIT News](#) (4 March 2020)

ARCHITECTURE
Water and Public Spaces: 19 Pools Around the World



"Swimming pools are a great example of these types of projects, since their designs often are a direct response to a variety of existing site conditions, including occupying both inside and outside spaces, assuming different forms, and incorporating a variety of finishes that might completely transform the aesthetic of the space."

Source: [ArchDaily](#) (10 March 2020)

AUTONOMOUS MACHINE
A Vietnam Helo's New Robot Brain Will Help Fight a Different Kind of Enemy



"Integrating Matrix with the Air Crane involves adding a digital fly-by-wire system, control actuators, and Sikorsky's perception software and sensor suite."

Source: [Popular Mechanics](#) (9 March 2020)

BATTERIES
Samsung Presents Groundbreaking All-Solid-State Battery Technology to 'Nature Energy'



"Researchers from the Samsung Advanced Institute of Technology (SAIT) and the Samsung R&D Institute Japan (SRJ) presented a study on high-performance, long-lasting all-solid-state batteries to Nature Energy, one of the world's leading scientific journals."

Source: [Samsung Newsroom](#) (10 March 2020)

DRONES
Drones Can Now Scan Terrain and Excavations Without Human Intervention



"Drone pilots may become superfluous in the future; new research from Aarhus University has allowed artificial intelligence to take over control of drones scanning and measuring terrain."

Source: [EurekAlert!](#) (5 March 2020)

ENERGY
New Type of Indoor Solar Cells for Smart Connected Devices



"In a future where most things in our everyday life are connected through the internet, devices and sensors will need to run without wires or batteries. In a new article in Chemical Science, researchers from Uppsala University present a new type of dye-sensitised solar cells that harvest light from indoor lamps."

Source: [Uppsala University](#) (4 March 2020)

GRAPHENE
Guardian G-Volt Masks Would Use Graphene and Electrical Charge to Repel Viruses and Bacteria



"Global interest in protective masks has surged in recent months, due to ongoing coronavirus outbreaks around the world. However, the company, which is based in New York, said it had taken five years to design and test the mask."

Source: [dezeen](#) (6 March 2020)

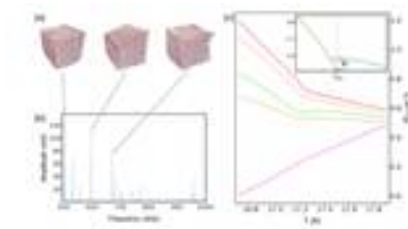
INNOVATION
Flight of the GermFalcon: How a Potential Coronavirus-Killing Airplane Sterilizer Was Born



"GermFalcon uses a set of mercury lamps to bathe the airline cabin, bathrooms, and galley in ultraviolet-C light. Unlike UV-A and UV-B, that 200 to 280 nanometer wavelength doesn't reach the surface of the Earth from the sun, because it's strongly absorbed by nitrogen in the air."

Source: [IEEE Spectrum](#) (9 March 2020)

MACHINE LEARNING
Machine Learning Illuminates Material's Hidden Order



"A Cornell collaboration led by physicist Brad Ramshaw, the Dick & Dale Reis Johnson Assistant Professor in the College of Arts and Sciences, used a combination of ultrasound and machine learning to narrow the possible explanations for what happens to this quantum material when it enters this so-called 'hidden order'." Read more [here](#).

Source: [EurekAlert!](#) (6 March 2020)

OPEN ACCESS
Publishers Roll Out Alternative Routes to Open Access



"In the push for 'open access' (OA) - making scientific papers immediately free to everyone - it's easy to forget that publishing costs haven't vanished. They have simply shifted from subscriptions paid mostly by university librarians to fees charged to authors ... Now, two nonprofit publishers of prominent journals have debuted new ways to support OA journals without shifting the burden entirely to authors."

Source: [Science Magazine](#) (9 March 2020)

QUANTUM COMPUTING
A Computer Science Proof Holds Answers for Math and Physics



"An advance in our understanding of quantum computing offers stunning solutions to problems that have long puzzled mathematicians and physicists ... now a [landmark proof](#) has combined them while solving a raft of open problems in computer science, physics, and mathematics."

Source: [Wired](#) (8 March 2020)

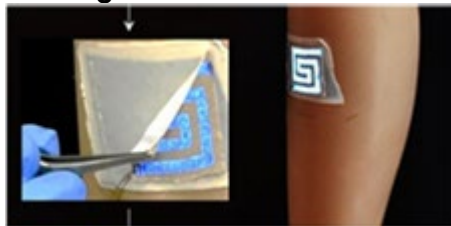
SENSORS
Skin-like, Flexible Sensor Lets Robots Detect Us



"A new sensor for robots is designed to make our physical interactions with these machines a little smoother—and safer. The sensor, which is now being commercialized, allows robots to measure the distance and angle of approach of a human or object in close proximity."

Source: [IEEE Spectrum](#) (9 March 2020)

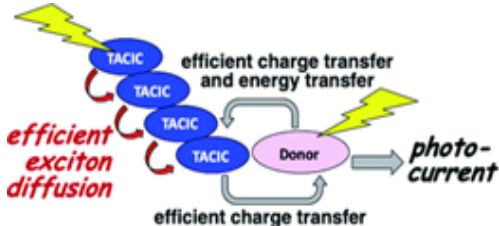
SMART TEXTILES
Light-Emitting Textiles for Smart Clothing



"A team of researchers from the University of Windsor, Canada, reports a new technique for the fabrication of light-emitting textiles that deposits metal directly on the individual fibers of an ultrasheer fabric. The [method](#) produces a wearable, conductive and highly stretchable electronic textile."

Source: [Optics & Photonics News](#) (5 March 2020)

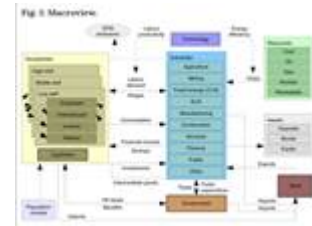
SOLAR CELLS
Exciting Tweaks for Organic Solar Cells



"A molecular tweak has improved organic solar cell performance, bringing us closer to cheaper, efficient, and more easily manufactured photovoltaics. The new design approach targets the molecular backbone of the cell's power-generating layer."

Source: [Science Daily](#) (5 March 2020)

SUSTAINABILITY
Feasible Alternatives to Green Growth



"A new breed of radical proposals have been advanced to manage a fair low-carbon transition. In this spirit, we develop a dynamic macrosimulation model to investigate the long-term effects of three scenarios: green growth, policies for social equity, and degrowth."

Source: [Nature Sustainability](#) (9 March 2020)

WOMEN IN ARCHITECTURE
Get to Know 10 Women Leaders in Architecture and Real Estate



"Each of these women has carved a unique path to success, but all are united by their professional drive, their passion to support other women, and their sheer tenacity."

Source: [Forbes](#) (8 March 2020)