

# Weekly Discovery

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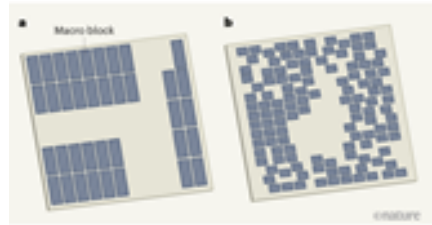
14 June - 18 June 2021

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

**ARTIFICIAL INTELLIGENCE**  
**AI System Outperforms Humans In Designing Floorplans For Microchips**



"A machine-learning system has been trained to place memory blocks in microchip designs. The system beats human experts at the task, and offers the promise of better, more-rapidly produced chip designs than are currently possible."

Source: [Nature](#) (9 June 2021)

**AUTOMOTIVE**  
**How Artificial Intelligence Is Changing The Future Of Air Transportation**



"While a lot of the innovation in AI and machine learning applications has been focused on revolutionizing the internet and digital connectivity, Dr. Wei is part of a group of researchers focused on expanding those benefits into transforming air transportation for physical connectivity and future mobility."

Source: [Tech Xplore](#) (11 June 2021)

**BIOTECHNOLOGY**  
**Bacteria Serves Tasty Solution To Plastic Crisis**



"Scientists have devised a novel way of tackling the mounting issue of plastic pollution... by using bacteria to transform plastic waste into vanilla flavouring. Read more in [Green Chemistry](#)."

Source: [University of Edinburgh](#) (10 June 2021)

**DIGITAL STORAGE**  
**Could All Your Digital Photos Be Stored As DNA?**



"Digital storage systems encode text, photos, or any other kind of information as a series of 0s and 1s. This same information can be encoded in DNA using the four nucleotides that make up the genetic code: A, T, G, and C. For example, G and C could be used to represent 0 while A and T represent 1."

Source: [MIT](#) (10 June 2021)

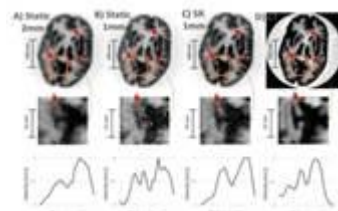
**GADGETS**  
**The iPhone 12 Mini Makes Me Sick (Literally)**



"Manufacturers don't like to talk about OLED display flicker, but for the sensitive, it's a nightmare."

Source: [IEEE Spectrum](#) (11 June 2021)

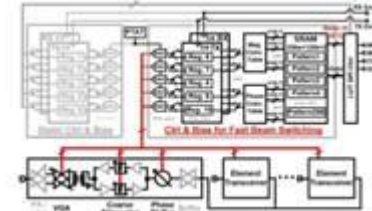
**IMAGING TECHNOLOGIES**  
**New Super-Resolution Technique Allows for More Detailed Brain Imaging**



"A new imaging technique has the potential to detect neurological disorders—such as Alzheimer's disease—at their earliest stages, enabling physicians to diagnose and treat patients more quickly."

Source: [Society of Nuclear Medicine and Molecular Imaging](#) (13 June 2021)

**INTERNET**  
**Novel Fast-Beam-Switching Transceiver Takes 5G To The Next Level**



"Scientists at Tokyo Institute of Technology (Tokyo Tech) and NEC Corporation have jointly developed a 28-GHz phased-array transceiver that supports efficient and reliable 5G communications. The proposed transceiver outperforms previous designs in various regards by adapting fast beam switching and a leakage cancelation mechanism."

Source: [Tech Xplore](#) (11 June 2021)

**MACHINE LEARNING**  
**New Form Of Silicon Could Enable Next-Gen Electronic And Energy Devices**



"Predicting crystal structure descriptors (rather than the entire crystal structure) offers an efficient method to infer a material's properties, thus expediting materials design and discovery. Read more in [Journal of Chemical Information and Modeling](#)."

Source: [Lawrence Livermore National Laboratory](#) (10 June 2021)

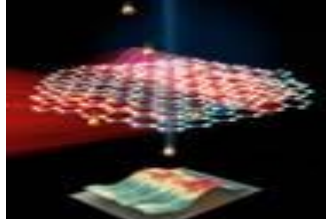
**MATERIALS**  
**UMASS AMHERST Researchers Create Self-Sustaining, Intelligent, Electronic Microsystems From Green Material**



"A research team from the University of Massachusetts Amherst has created an electronic microsystem that can intelligently respond to information inputs without any external energy input, much like a self-autonomous living organism."

Source: [UMASS Amherst](#) (7 June 2021)

**MATERIALS SCIENCE**  
**Nano Optics Breakthrough: Researchers Observe Sound-Light Pulses in 2D Materials for the First Time**



"Using an ultrafast transmission electron microscope, researchers from the Technion - Israel Institute of Technology have, for the first time, recorded the propagation of combined sound and light waves in atomically thin materials. Read more in [Science](#)."

Source: [SciTech Daily](#) (12 June 2021)

**METALENS**  
**Novel Liquid Crystal Metalens Offers Electric Zoom**



"Researchers from Cornell's School of Applied and Engineering Physics and Samsung's Advanced Institute of Technology have created a first-of-its-kind metalens - a metamaterial lens - that can be focused using voltage instead of mechanically moving its components."

Source: [Cornell University](#) (10 June 2021)

**QUANTUM PHYSICS**  
**Quasiprobabilities Shed Light On Quantum Advantage**



"Quantum advantage is a hot topic, with multiple experiments approaching (and some even surpassing) the point at which a quantum technology performs better than its classical predecessor. But how often does quantum advantage arise, and under what circumstances is it possible?"

Source: [Physics World](#) (14 June 2021)

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