

# Weekly Discovery

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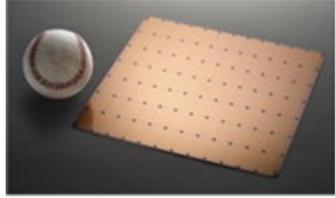
26 AUGUST 2019 - 30 AUGUST 2019

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## AI CHIP 6 Things to Know About the Biggest Chip Ever Built



"On Monday at the IEEE Hot Chips symposium at Stanford University, startup Cerebras unveiled the largest chip ever built. It is roughly a silicon wafer-size system meant to reduce AI training time from months to minutes. It is the first commercial attempt at a wafer-scale processor since Trilogy Systems failed at the task in the 1980s."

Source: [IEEE Spectrum](#) (21 August 2019)

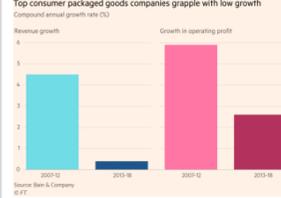
## AGRICULTURE Multispectral Imaging Flies High to Help Boost Crop Yields



"One of the newly adopted tools for remotely assessing the health of plants is multispectral imaging, which measures the light reflected by fields and orchards over different wavelength ranges. Changes in reflectance can indicate that crops have become stressed, prompting field teams to investigate and potentially intervene before a small-scale problem becomes more widespread."

Source: [Physics World](#) (20 August 2019)

## BIG DATA Big Brands Turn to Big Data to Rekindle Growth



"One such provider, Zappi, has signed up dozens of consumer companies to its self-service platform. It allows marketers to set up their own studies and quickly test ideas with panels of people selected by age, income, or location." Click [here](#) to register for your FT account.

Source: [Financial Times](#) (26 August 2019)

## BIOENGINEERING Using DNA as a Memory Tape



"MIT researchers describe a new technology that uses DNA for information processing and storage in living cells. Using a system called DOMINO the technology can execute cascades of DNA writing events - where one DNA mutation event triggers another - in response to biological signals."

Source: [Cosmos Magazine](#) (23 August 2019)

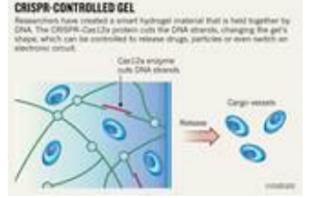
## BIOPRINTING Bioprinting Complex Living Tissue in Just a Few Seconds



"Researchers from EPFL and the University Medical Center Utrecht in the Netherlands have developed an extremely fast optical method for sculpting complex shapes in stem-cell-laden hydrogels and then vascularizing the resulting tissue. Their groundbreaking technique stands to change the field of tissue engineering."

Source: [EPFL](#) (23 August 2019)

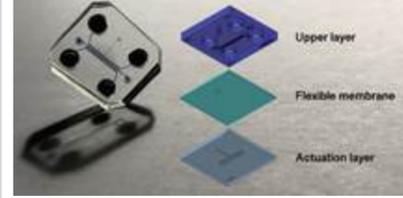
## BIOTECHNOLOGY CRISPR Cuts Turn Gels into Biological Watchdogs



"Is there anything CRISPR can't do? Scientists have wielded the gene-editing tool to make scores of genetically modified organisms, as well as to track animal development, detect diseases and control pests. Now, they have found yet another application for it: using CRISPR to create smart materials that change their form on command."

Source: [Nature](#) (22 August 2019)

## BIOTECHNOLOGY Osteoarthritis: A Chip 'Mimics' the Disease to Devise Effective Drugs



"A sophisticated chip the size of a coin in which cartilage can be cultivated and which can later be subjected to mechanical stress such that it generates the effects of Osteoarthritis (OA)."

Source: [EurekAlert!](#) (23 August 2019)

## DEEP LEARNING How Ergonomic Is Your Warehouse Job? Soon, an App Might Be Able to Tell You



"UW researchers have used deep learning to develop a new system that can monitor factory or warehouse workers and tell them how risky their behaviors are in real time."

Source: [University of Washington](#) (19 August 2019)

## GRAPHENE Breakthrough Graphene Technology Could Create Next Generation of Super Computers



"Scientists have developed a new method to create graphene interconnects for faster computers, but the technology could take a while to be adopted by the semiconductor industry."

Source: [Small Caps](#) (22 August 2019)

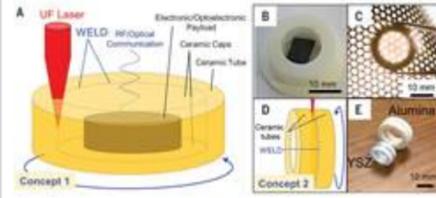
## HYDROGEN TECHNOLOGY Proton Technologies Claims Pollution-Free Hydrogen Breakthrough



"Low-cost hydrogen from oil fields with no emissions can power the whole world using mostly existing infrastructure."

Source: [Asia Times](#) (20 August 2019)

## MANUFACTURING Ultrafast Laser Welding of Ceramics



"The process uses an ultrafast pulsed laser to melt ceramic materials along the interface and fuse them together. It works in ambient conditions and uses less than 50 watts of laser power, making it more practical than current ceramic welding methods that require heating the parts in a furnace."

Source: [Science](#) (23 August 2019)

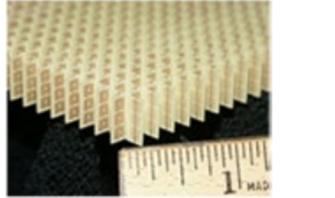
## MATERIALS SCIENCE This Polymer Will Self-Destruct in 3... 2...



"Researchers have developed a polymer that disappears in an instant when you push a button to trigger an internal mechanism or the sun hits it. The material, which is currently being tested in military uses, could also have non-military uses. Kohl imagines an environmental sensor that could accurately study a region with minimal interaction, and then dissolve once its study is over."

Source: [Popular Mechanics](#) (26 August 2019)

## METAMATERIALS Report: Metamaterials Poised for Commercial Growth



"The company's recently published report, [Metamaterials Market Forecast](#), argues that the market for "metamaterial devices," starting from a near-zero base today, could soar to some US\$10.7 billion in 2030. Driving that growth, according to Lux: 5G in the near term, sensors - and especially lidar - in the long term."

Source: [Optics & Photonics News](#) (22 August 2019)

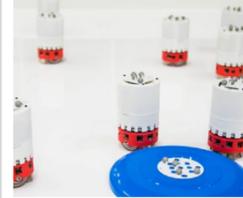
## PHYSICS Physicists Create World's Smallest Engine



"The research explains how random fluctuations affect the operation of microscopic machines like this tiny motor. In the future, such devices could be incorporated into other technologies to recycle waste heat and thus improve energy efficiency."

Source: [Trinity College Dublin](#) (22 August 2019)

## ROBOTICS Robots Learn Swarm Behaviors, Aim to Escape the Lab



"This could lead to robotic swarms which are able to continuously and independently adapt in the wild, to meet the environments and tasks at hand. By making the evolved controllers understandable to humans, the controllers can also be queried, explained and improved."

Source: [Engineering.com](#) (23 August 2019)

## SENSOR A Battery-Free Sensor for Underwater Exploration



"A battery-free underwater 'piezoelectric' sensor invented by MIT researchers transmits data by absorbing or reflecting sound waves back to a receiver, where a reflected wave decodes a 1 bit and an absorbed wave decodes a 0 bit - and simultaneously stores energy."

Source: [MIT News](#) (20 August 2019)