

Innovation Brief

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“Cosmic Concrete” Made from Extra-Terrestrial Dust Is Twice as Strong as Regular Concrete

[In an article published in the journal Open Engineering](#), the University of Manchester research team demonstrated that ordinary potato starch can act as a binder when mixed with simulated Mars dust to produce a concrete-like material. When tested, StarCrete had a compressive strength of 72 Megapascals (MPa), which is over twice as strong as the 32 MPa seen in ordinary concrete.

Scientists Unlock Key to Drought-Resistant Wheat Plants with Longer Roots

[Growing wheat in drought conditions may be easier in the future](#). Researchers at the University of California found the right number of copies of a specific group of genes can stimulate longer root growth, enabling wheat plants to pull water from deeper supplies.

Ultrafast Beam-Steering Breakthrough

[In a major breakthrough in the fields of nanophotonics](#) and ultrafast optics, a Sandia National Laboratories research team has demonstrated the ability to dynamically steer light pulses from conventional, so-called incoherent light sources, which was reported in the current issue of the journal Nature Photonics. The work was funded by the Department of Energy's Office of Science.

Two Technical Breakthroughs Make High-Quality 2D Materials Possible

[Researchers from Washington University have been looking](#) to replace silicon in electronics with materials that provide a higher performance and lower power consumption while also having scalability. An international team is addressing that need by developing a promising process to develop high-quality 2D materials that could power next-generation electronics.

Novel Air Filter Captures Wide Variety of Pollutants

[An air filter made out of corn protein instead of petroleum](#) products can concurrently capture small particulates as well as toxic chemicals like formaldehyde that current air filters can't. The research could lead to better air purifiers, particularly in regions of the world that suffer from very poor air quality.

New Water Treatment Zaps 'Forever Chemicals' for Good

[Engineers at the University of British Columbia](#) have developed a new water treatment that removes "forever chemicals" from drinking water safely, efficiently -- and for good. Forever chemicals, formally known as PFAS (per- and polyfluoroalkyl substances) are a large group of substances that make certain products non-stick or stain-resistant.

Novel Design Helps Develop Powerful Microbatteries

[Researchers at the University of Illinois Grainger College](#) of Engineering have created a high-voltage microbattery (> 9 V), with high-energy and -power density, unparalleled by any existing battery design. The team recently published their paper "Serially integrated high-voltage and high-power miniature batteries" in Cell Reports Physical Science.