U.S. DEPARTMENT OF ENERGY

Office of Science

COMMUNIQUE

3 February 2020

*Comm*unique provides a biweekly review of recent Office of Science Communications and Public Affairs work, including feature stories, science highlights, social media posts, and more. This is only a sample of our recent work promoting research done at universities, national labs, and user facilities throughout the country. *Please note that some links may expire after time.*

For the Arctic, an Epic Investigation

The largest research expedition to the central Arctic began on September 20, 2019, more than ten years after it was conceived. Researchers traveled to the heart of the Earth's northernmost polar region on behalf of the Multidisciplinary Drifting Observatory for the Study of Arctic Climate (MOSAiC). The Department of Energy's Atmospheric System Research Program is funding some of the research that will come out of the campaign and the Atmospheric Radiation Measurement user facility is providing more than more than 50 atmospheric instruments, including the first scanning radars to operate in the arctic ice pack.

Click here to read more about the MOSAiC expedition and the Department of Energy's involvement.

NEWS CENTER

The Office of Science posted 51 news pieces between 1/21/2020 and 2/2/2020, including 26 university articles and 23 pieces from the labs and user facilities.

A team from the Joint Genome Institute uncovered a broad diversity of large and giant viruses, offering insights into how these viruses interact with their hosts, how they may impact their host communities, and what their role may be in carbon and other nutrient cycles.

A UC San Diego research group is studying how water interacts with metal-organic frameworks, shedding light on the water absorption process inside these frameworks in order to move closer to develop materials that address global water scarcity.

To meet the growing demand for battery production, scientists at Oak Ridge National Laboratory are developing a material that can be used to recover lithium from brine waste at geothermal power plants.

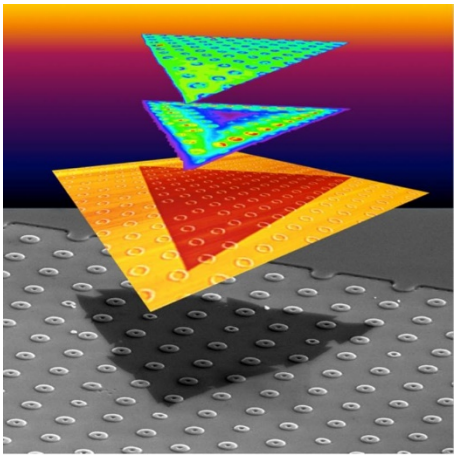
Using a forecast attribution framework to study individual storms, a team led by Stony Brook University researchers found that Hurricane Florence was larger and produced more extreme rainfall than forecasted due to climate change.

Turbulence causes heat loss that weakens fusion energy experiments. Scientists at Princeton Plasma Physics Laboratory have modeled a key source of this turbulence, paving the way to mitigate this problem and improve future fusion experiments.

Northeastern University researchers have used a powerful computer model to probe cuprates, materials that can be both insulators and superconductors. This new model offers explanations about the material's properties and presents a step toward quantum computing.

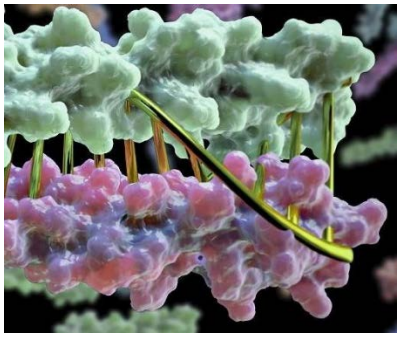
SCIENCE HIGHLIGHTS

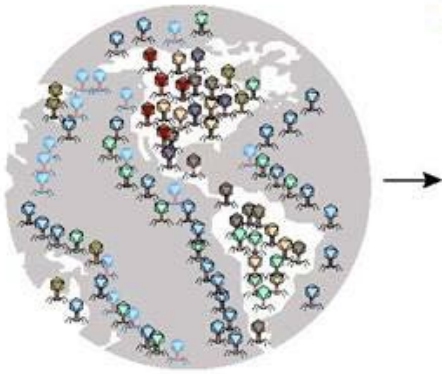
The Office of Science posted six highlights spotlighting BES, BER, and ASCR between 1/21/2020 and 2/2/2020.



Researchers from Oak Ridge National Laboratory grew and stretched 2D crystal films to change their properties. This method can provide a new way for scientists to tailor how they make and determine the properties of these materials, an ability critical for energy collection and quantum information science applications.

Researchers from the University of Washington used computing to design 3D protein structures and pair them perfectly. A general method for creating protein pairs may have applications in designing medicine and biomaterials.





Researchers from Livermore Lab and Ohio State University developed open-source software that can classify viruses in ways previous tools could not. This tool provides a new standard for classifying viruses from field and other environmental samples.

IN THE NEWS

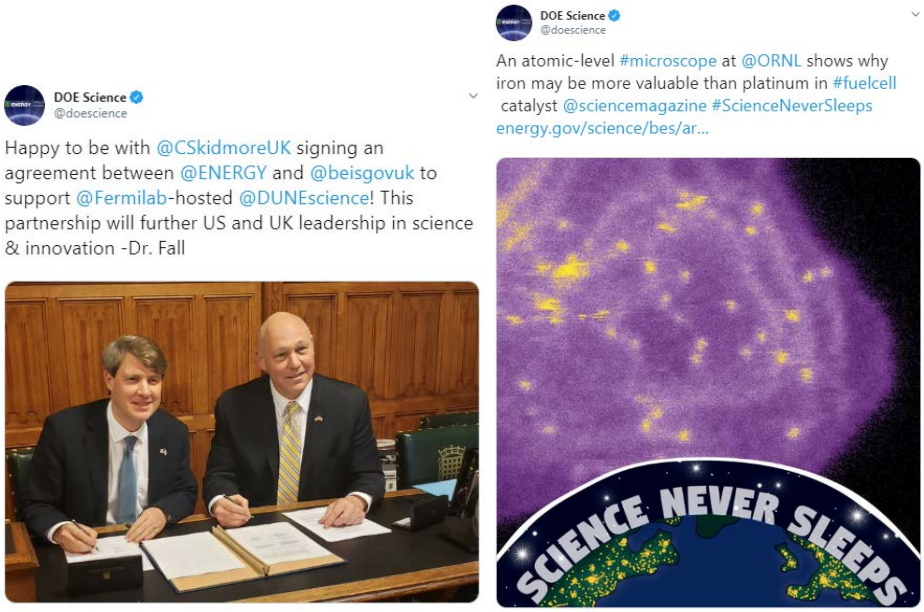
Gizmodo: This Locked Cabinet Holds The Answer To One Of The Biggest Questions In Particle Physics
Scientists from Fermilab hope this year to unveil the measurement from the Muon g-2 experiment, a study probing the Standard Model of particle physics for cracks.

WIRED: How to Levitate Objects With Sound (and Break Your Mind)
Physicists at Argonne National Laboratory are levitating objects with sound, a technique poised to deliver advances in pharmacology, chemistry, and even robotics.

Smithsonian Magazine: Ancient Bat Guano Reveals Thousands of Years of Human Impact on the Environment
A molecular biologist at Pacific Northwest National Laboratory has found that radiocarbon dating is easier to perform with high precision in guano than stalagmites or lake sediment cores.

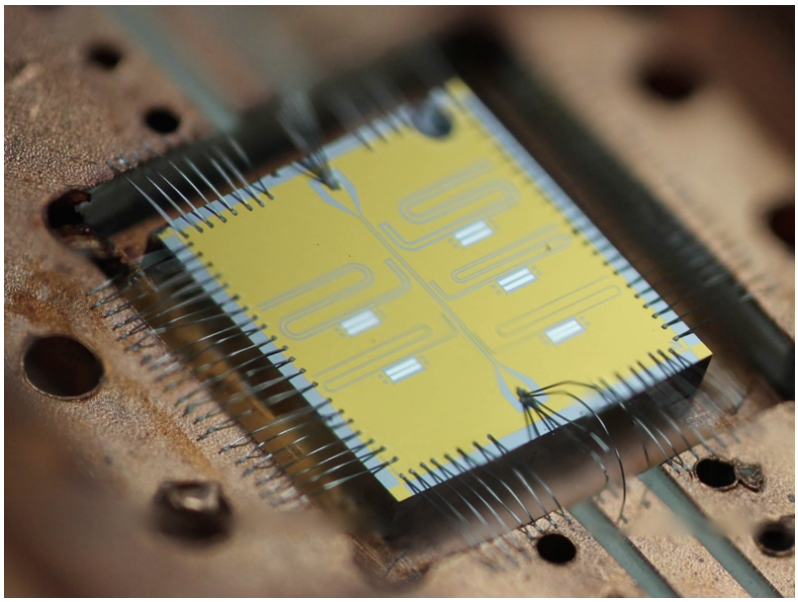
TOP TWEETS

The Office of Science sent out 53 tweets between 1/21/2020 and 2/2/2020. Here are our two most popular from the past two weeks:



BY THE NUMBERS

$625 Million for Up to Five Quantum Information Science Research Centers



The Department of Energy announced $625 million for the development of two to five multidisciplinary Quantum Information Science (QIS) Research Centers, to be established over the next five years. Quantum physics may hold the key to vast technological improvements in computing, sensing, and communication. Quantum computing may be able to solve problems in minutes that would take lifetimes on today's computers. Quantum sensors could act as extremely high-powered antennas for the military. Quantum communication systems could be nearly unhackable. But the knowledge and capacity to take advantage of these benefits doesn't exist—yet. The QIS Research Centers will draw on both quantum physics and information theory to develop a soup-to-nuts understanding of quantum systems.

END NOTES

VIDEO: Insect bites + Warmer climate = Double trouble for plants

A new study from the Michigan State University-DOE Plant Research Laboratory looks to improve crop loss models. The study shows that caterpillar-infested tomato plants, in their efforts to fight off the pests, do not adapt well to rising temperatures. The model predicts that, in a warming climate, herbivores and pests will cause more damage to agricultural crops.

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No. 28: 3 February 2020