



U.S. DEPARTMENT OF
ENERGY

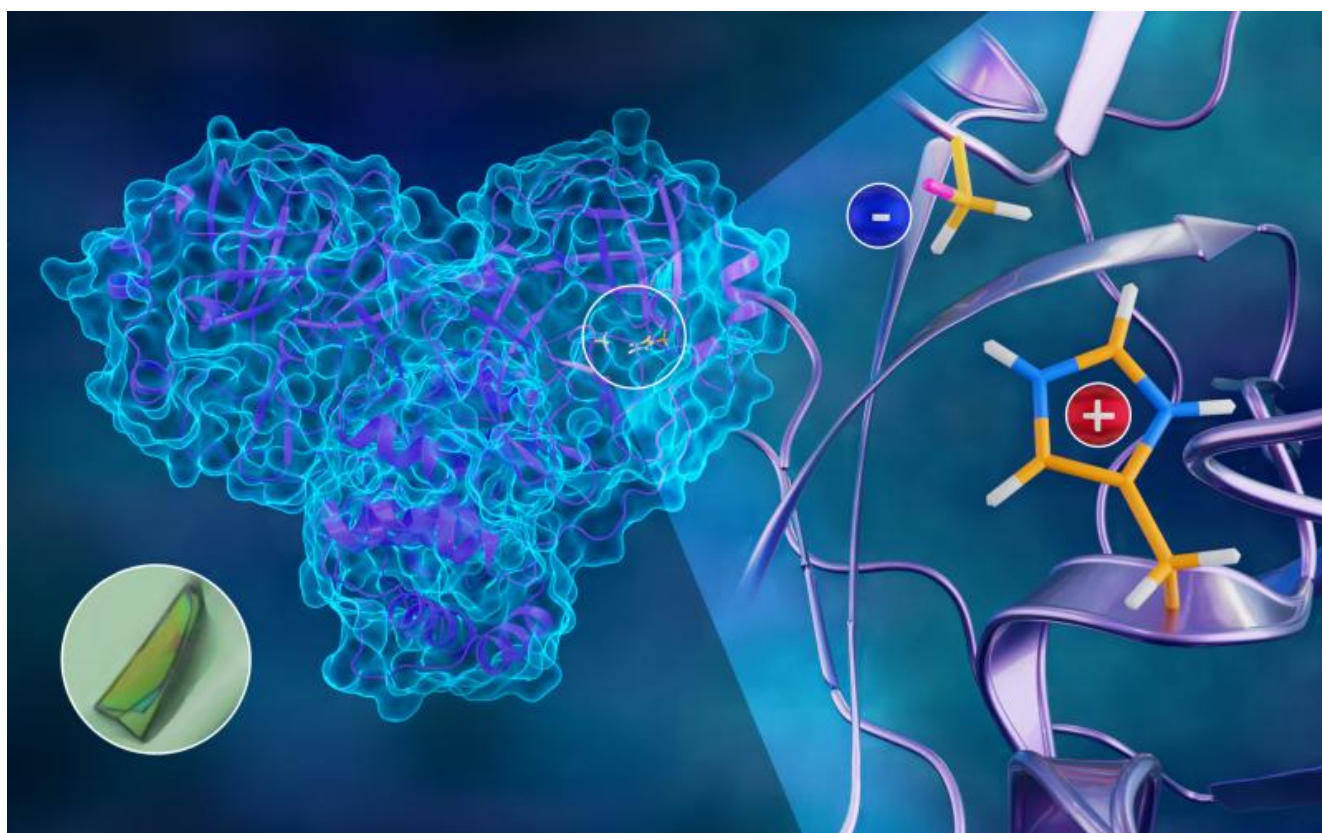
COMMUNIQUE

Office of Science

9 November 2020

Communique 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.*

On Monday, 11/23, *Communique* will begin to be distributed via GovDelivery, an email distribution service. If you would like to continue to receive *Communique*, please subscribe [here](#).



Neutrons chart atomic map of COVID-19's viral replication mechanism

To better understand how the novel coronavirus behaves and how it can be stopped, scientists have completed a three-dimensional map that reveals the location of every atom in an enzyme molecule critical to SARS-CoV-2 reproduction. Researchers at Oak Ridge National Laboratory used neutron scattering to identify key information to improve the effectiveness of drug inhibitors designed to block the virus's replication mechanism.

[Click here to read more about how neutron experiments are helping to reveal weaknesses in SARS-CoV-2 and to aid drug design.](#)

NEWS CENTER

The Office of Science posted 58 news pieces between 10/26/2020 and 11/8/2020.

Researchers at [SLAC National Accelerator Laboratory](#) are using the Stanford Synchrotron Radiation Lightsource to study plastics and the processes that break them down in order to find more efficient ways to upcycle them.

Researchers at [Princeton Plasma Physics Laboratory](#) have gained a better understanding of an improved confinement method that could enable a fusion reactor to be built smaller and less expensively.

The first beam of the PIP-II Injector Test Facility at [Fermilab National Accelerator Laboratory](#) has been accelerated, ushering in a new era of operation.

[UC San Diego](#) scientists envisioned a test of the role quantum mechanics plays in the structure of the universe, demonstrating a new way that researchers may look for answers to science's biggest mysteries.

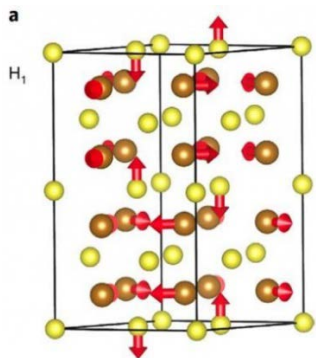
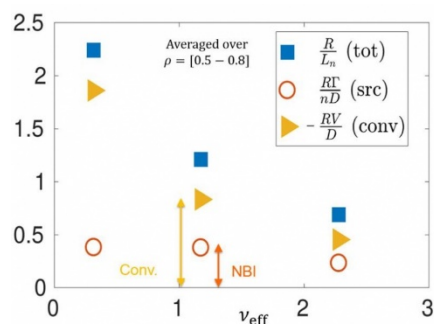
Scientists at the [University of Delaware](#) have discovered that cells from different species of bacteria can combine into unique hybrid cells, a phenomenon that may affect everything from human health to energy research.

Researchers from the [University of New Mexico](#) have found a path to create more specific nanoscale devices, potentially improving technologies like light-based biosensors.

SCIENCE HIGHLIGHTS

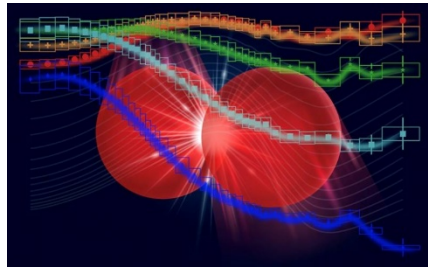
The Office of Science posted four new highlights between 10/26/2020 and 11/8/2020.

Scientists at the [DIII-D National Fusion Facility](#) have found that in high-confinement plasmas, the density in the center of the plasma rises naturally, solving a challenge in the design of fusion reactors and revealing a path to increasing their efficiency.



With neutron and X-ray scattering and computational modeling, researchers from [Duke University](#) have made new insights into multiferroics, a rare material with potential applications in information storage and spintronics computing.

By measuring the loss of energy of a “fast” quark or gluon, scientists from [Oak Ridge National Laboratory](#) are gaining new knowledge about the conditions that existed shortly after the Big Bang.



IN THE NEWS

Wall Street Journal: Electric-car batteries get a boost from artificial intelligence

Researchers at Argonne National Laboratory are using artificial intelligence to speed up the development of lithium-ion batteries that are safer and faster to charge.

Popular Science: Glimpse the gold mine where scientists are searching for dark matter

The Sanford Underground Research Facility, an “elaborate camera trap buried a mile below the Black Hills of South Dakota,” is searching for dark matter, hoping to reveal the makeup of the universe.

The Guardian: Terrawatch: Dust is speeding up the melting of Himalayan snow

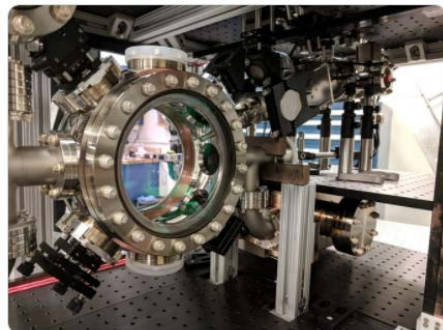
Researchers from Pacific Northwest National Laboratory used remote sensing observations and computer simulations to assess the impact of dust blowing in from Africa and Asia on Himalayan snow and ice.

TOP TWEETS

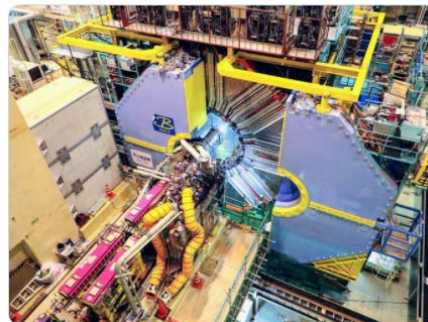
The Office of Science sent out 55 tweets between 10/26/2020 and 11/8/2020.
Here are the two most popular:



A 100-meter-deep shaft at [@Fermilab](#) — constructed for a neutrino experiment many years ago — will become home to a new quantum experiment that will explore the nature of [#DarkMatter](#) and gravitational waves [news.fnal.gov/2019/09/magis-...](#)

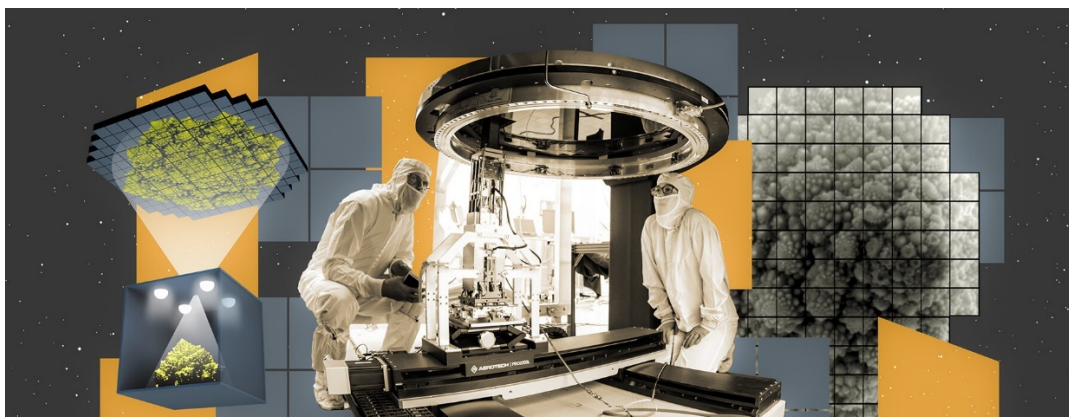


After years of planning, building, and calibration, researchers at the Belle II accelerator experiment published their first physics paper in 2020. This work, with contributions from [@PNNLab](#), searched for a possible particle could decay into [#DarkMatter](#) [pnnl.gov/news-media/bea...](#)



BY THE NUMBERS

Sensors of world's largest digital camera snap first 3,200-megapixel images



Scientists at [SLAC National Accelerator Laboratory](#) have built the world's largest digital camera, a tool that will allow the Rubin Observatory's [Legacy Survey of Space and Time](#) to provide the widest, fastest, and deepest views of the night sky ever observed. The camera, which clocks in at over two feet wide with 189 individual sensors, produces 3,200-megapixel digital photos, the largest ever taken in a single shot. Over 10 years, these massive images will help create the largest astronomical movie of all time and shed light on some of the biggest mysteries of the universe.

END NOTES

Weighing In on 'Light' Dark Matter: Q&A with Berkeley Lab's Sinéad Griffin



"The search for dark matter is the ultimate materials design challenge, because we don't know anything about dark matter. We're trying to come up with all different combinations of materials that would be able to test for different theories of what dark matter is."

Sinéad Griffin, a staff scientist in [Lawrence Berkeley National Laboratory's](#) Materials Sciences Division and Molecular Foundry, has devoted much of her career to designing a new detector material that could help find dark matter by pinning down traces of particles known as "light dark matter."

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