U.S. DEPARTMENT OF ENERGY

Office of Science

COMMUNIQUE

April 5, 2021

*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.*

UCF Researchers Use Advanced Light to Reveal How Different Biofuels Behave

Vehicles have evolved to become more efficient and sophisticated, but their fuel hasn't necessarily evolved along with them. The Department of Energy (DOE) is determined to identify cleaner burning and renewable alternatives to gasoline, and through the work of two University of Central Florida researchers, DOE is one step closer to that goal.

Research engineer Anthony C. Terracciano and Associate Professor Subith Vasu have developed a model that will help engine designers, fuel chemists, and federal agencies determine whether certain biofuels should be implemented as an alternative fuel for vehicles.

Read more about how the team used Office of Science user facilities to study promising biofuels.

NEWS CENTER

The Office of Science posted 29 news pieces between 3/22/2021 and 4/5/2021.

Researchers at DOE's Lawrence Berkeley National Laboratory and Cornell University have channeled the universe's earliest light – the cosmic microwave background (CMB) – to solve a missing-matter mystery and learn new things about galaxy formation. Their work could help us to better understand dark energy and test Einstein's theory of general relativity.

Scientists have gained new understanding of the physics behind magnetic reconnection, a process through the universe that converts magnetic to kinetic energy. The discovery from researchers at DOE's Princeton Plasma Physics Laboratory and their collaborators could lead to a greater ability to predict space weather that can disrupt communications satellites and electrical networks.

Based on work done at the Joint Center for Energy Storage Research at DOE's Argonne National Laboratory, spin-off company Form Energy recently signed its first contract with one of the largest utility cooperatives in the country. The work at JCESR first described how a specific battery chemistry could have major advantages for long-discharge applications.

A new way to search for materials may make it much faster to develop solar technologies in the future. Researchers at DOE's Oak Ridge National Laboratory have combined robotics and machine learning to study metal halide perovskites — thin, lightweight, flexible materials with outstanding properties for harnessing light.

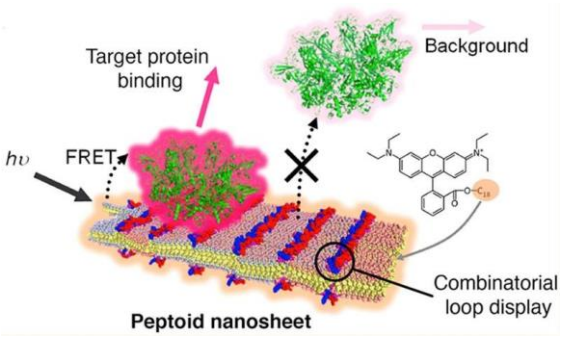
Scientists at DOE's Ames Laboratory and their partners from Clemson University have discovered a green, low-energy process to break down polystyrene, a widely-used type of plastic. The process, which deconstructs the plastic in a single step at room temperature without harmful solvents, could lead to new recycling technologies.

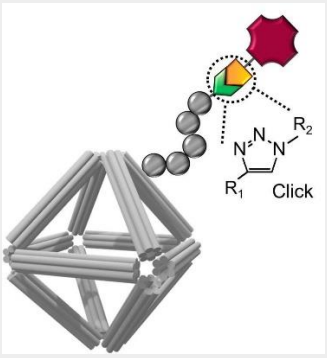
Researchers at DOE's SLAC National Laboratory, Pacific Northwest National Laboratory, and the University of Washington have made new insights into light-absorbing molecules. They've captured the motions of solvent molecules that influence how electrons driven by light move in a molecular complex for the first time. This could potentially lead to more efficient, clean energy sources.

SCIENCE HIGHLIGHTS

The Office of Science posted seven new highlights between 3/22/2021 and 4/5/2021.

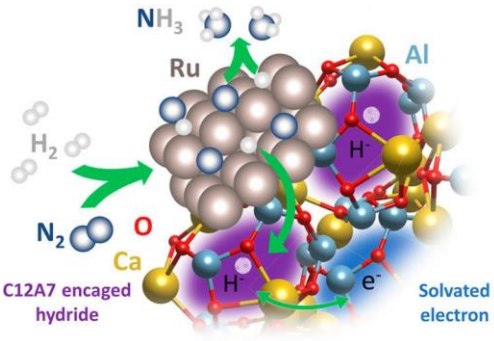
Researchers at the Molecular Foundry, an Office of Science user facility at Berkeley Lab, developed a new method to synthesize and screen libraries of peptoid nanostructures. These are artificial versions of chains of amino acids. This work will help them design structures that can target a bacterium, virus, or other microorganisms that can cause disease. This is the first rapid method for synthesizing and discovering compounds that can act like antibodies.





Scientists using several Office of Science user facilities (the Center for Functional Nanomaterials, National Synchrotron Light Source II, and the Molecular Foundry) have devised a new way to build nanomaterials that can maintain their structural integrity and functionality in ways relevant to drug delivery. The team developed a class of molecular coatings that are compatible with biological environments. The new coatings preserve the structural stability of the DNA cages in biological applications.

Neutron scattering at DOE's Oak Ridge National Laboratory unveiled new insights into the performance of a catalyst used to convert nitrogen into ammonia. Scientists found that the hydrogen atoms on the surface of the material play the most significant role in the ammonia synthesis. This catalyst could improve the efficiency of goods that require ammonia, possibly leading to lower prices and higher quality products.



IN THE NEWS

Science Magazine: **New generation of carbon dioxide traps could make carbon capture practical**
This article highlights work at DOE's Pacific Northwest National Laboratory to develop liquid organic solvents that can save energy compared to current carbon capture techniques.

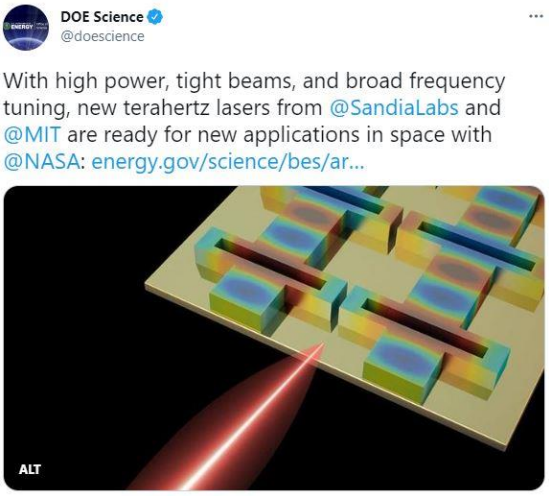
Reuters: **Climate change set to drive more deadly heat in South Asia**

This article summarizing a climate change report from the United Nations quotes Moetasim Ashfaq, a climate scientist from DOE's Oak Ridge National Laboratory.

***Fox 32 Chicago*: [How llamas are helping scientists study COVID-19]**
This video describes how scientists are using llamas to develop treatments for COVID-19 and features an interview with Andrzej Joachimiak from the University of Chicago and DOE's Argonne National Laboratory.

TOP TWEETS

The Office of Science sent out 77 tweets between 3/22/2021 and 4/5/2021. Here are the two most popular:



BY THE NUMBERS

Office of Science Funding Opportunity Announcements

The Office of Science regularly releases funding opportunity announcements. Since the beginning of the year, the Office of Science has announced 12 funding opportunities for basic science research, worth more than $420 million. Find press releases about FOAs on our website or sign up for our mailing lists that provide funding information.

END NOTES

Follow Us on Social Media

Is getting news about the DOE's Office of Science every other week not enough for you? We're on social media every day! The Office of Science Twitter account shares news articles from our laboratory and university partners, science highlights, science history, media coverage of our work, and more. Every Thursday, the Department of Energy's Instagram account features a Science Picture of the Week from the Office of Science. If you want the latest on the National Science Bowl results, they're on Twitter and Facebook.

Please see the Communique archive on Energy.gov for past issues.

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