FLC

Federal Laboratory Consortium
for Technology Transfer

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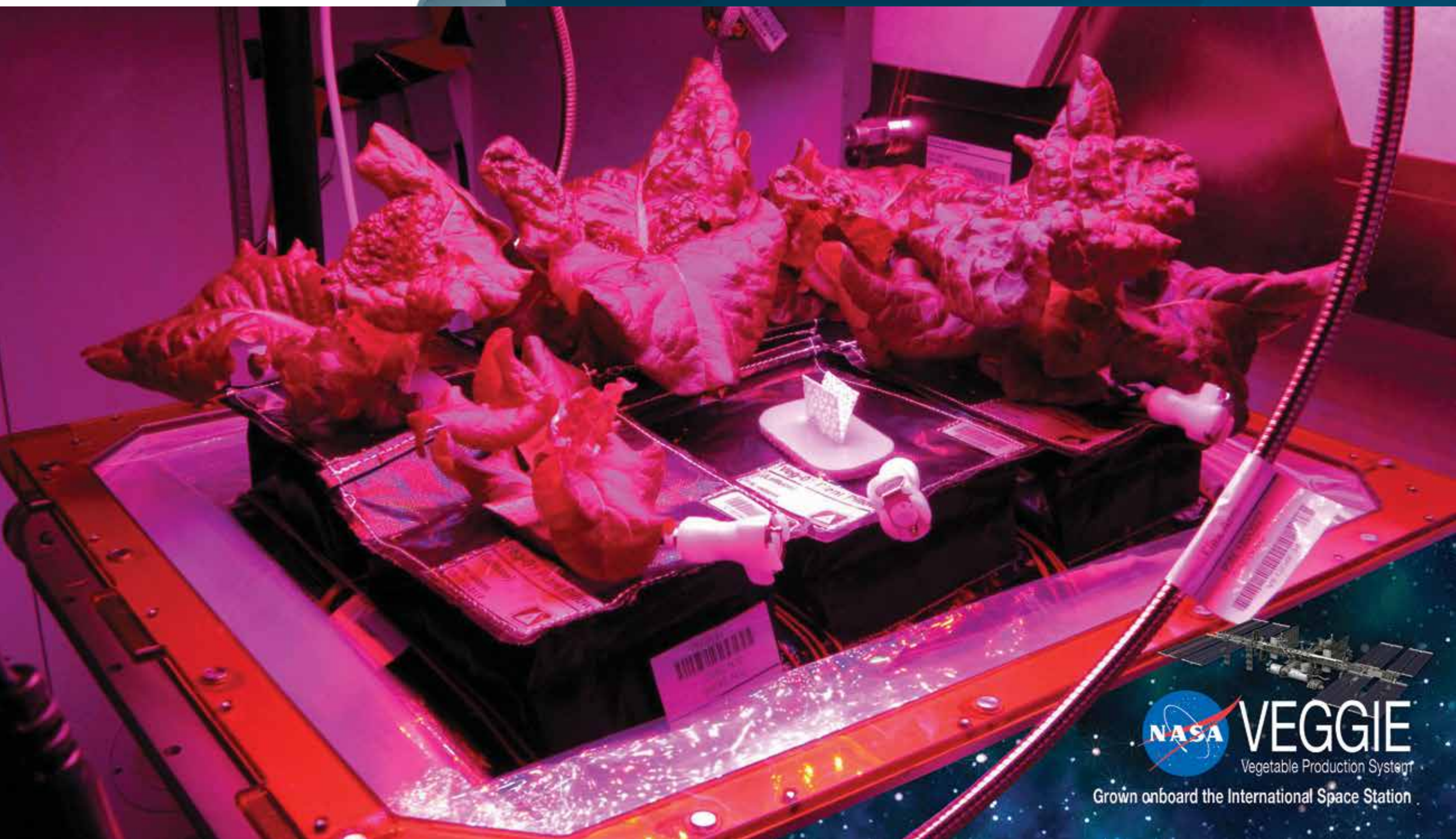
2016

A Collection of Images From the Federal Laboratory System



On the Cover

VEGGIE, an International Space Station (ISS) investigation, proves we can grow “out of this world” red romaine lettuce. The ISS is a hotbed for microgravity research. Astronauts test and demonstrate concepts to further human space exploration. VEGGIE provides lighting and nutrient supply for plants in the form of a low-cost growth chamber and planting “pillows.” Plants can be cultivated for educational outreach, fresh food, and even recreation for crew members during long-duration missions. The investigation can benefit agricultural practices on Earth by designing systems that use valuable resources, such as water, more efficiently.

NASA’s Kennedy Space Center

Researchers at NASA’s Kennedy Space Center in Florida continue a long history of innovation as the nation’s premiere spaceport providing support for both government and commercial launch vehicles and spacecraft. Developments by the scientists and engineers working at Kennedy labs and its unique facilities are critical to the future success of space exploration, and also play important roles in improving the quality of life for all Americans.

www.nasa.gov/centers/kennedy

KENNEDY SPACE CENTER

“Outredgeous” red romaine lettuce growing in a plant pillow filled with growth media and controlled-release fertilizer.

NASA astronaut Steve Swanson with the VEGGIE facility aboard the International Space Station.

Photo credit: NASA/Giola Massa

About the FLC

FLC
Federal Laboratory Consortium
for Technology Transfer

Formally chartered by the Federal Technology Transfer Act of 1986, the Federal Laboratory Consortium for Technology Transfer (FLC) is a nationwide network of over 300 federal laboratories, agencies, and research centers that fosters commercialization best practice strategies and opportunities for accelerating technologies from out of the lab and into the marketplace. The American taxpayers' investment in our national laboratories' research and development (R&D) efforts has spurred scientific and technological breakthroughs that can return dividends for our economy, such as creating new industries, businesses, and jobs, when introduced to the marketplace.

The FLC's mission is to promote, educate, and facilitate federal technology transfer (T2) among its member labs and institutions so they can easily reach their commercialization goals and create social and economic impacts with new innovative technologies. Through the various resources, education and training, tools, and services the FLC creates and provides for its members, federal labs are better able to create partnerships, navigate the commercialization process, and achieve market success.

By serving as the touchstone for T2 communication, education, and open data services tools, the FLC plays a central role in providing the skilled T2 workforce that our country desperately needs. These highly motivated T2 professionals are the driving force behind improving federal labs' ability to effectively partner with the private sector. The FLC strives to support the dedicated individuals who make up the federal laboratory system by continuing to serve as a gateway for industry, government, and academia to access R&D in an effort to stimulate our nation's economic health.

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FLC Regions

1 Far West
Regional Coordinator: Brian Suh
Space and Naval Warfare (SPAWAR) Systems Center Pacific
www.flcfarwest.org

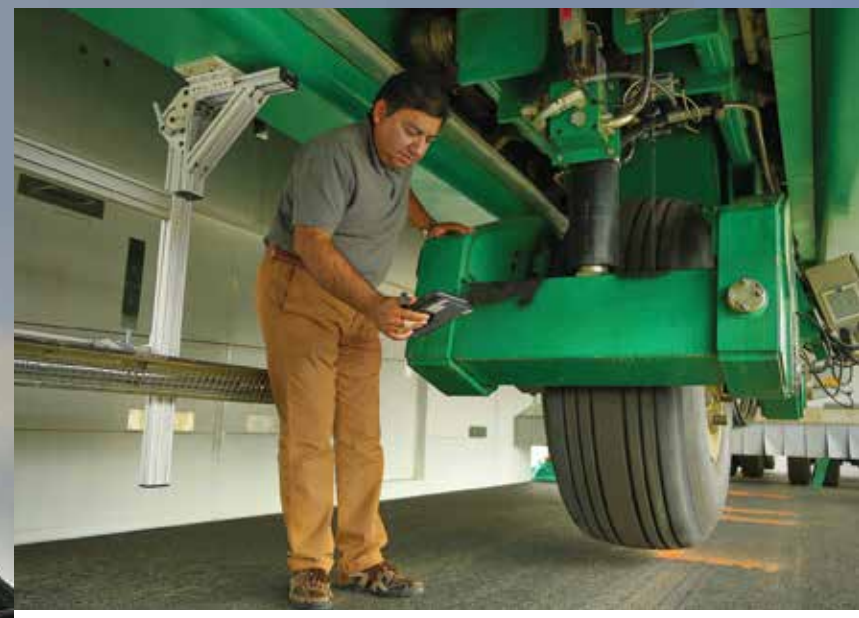
2 Mid-Continent
Regional Coordinator: Jack James
NASA Johnson Space Center
www.flcmidcontinent.org

3 Midwest
Regional Coordinator: John Dement
Indiana Office of Defense Development
www.flcmidwest.org

4 Northeast
Regional Coordinator: Valerie Larkin
Naval Undersea Warfare Center Division Newport
www.flcnortheast.org

5 Mid-Atlantic
Regional Coordinator: Dr. Robert Griesbach
USDA-Agricultural Research Service
www.flcmidatlantic.org

6 Southeast
Regional Coordinator: Jeremy Benton
Y-12 National Security Complex
www.flcsoutheast.org



Heavy Vehicle Simulator

The Heavy Vehicle Simulator-Airfields Mark VI (HVS-A) is used for full-scale accelerated pavement tests to study the performance of greener/sustainable technologies and materials such as various types of asphalt at high aircraft tire pressures and pavement temperatures. The HVS-A is capable of applying a maximum wheel load of 100,000 pounds. Results will be used to develop Federal Aviation Administration (FAA) Standards/Specifications. HVS-A is stationed at the FAA's National Airport Pavement and Materials Research Center (NAPMRC) in Atlantic City, N.J.

Photo credit: Laurie Zaleski and Michael Gross

William J. Hughes Technical Center

The William J. Hughes Technical Center (WJHTC) is a component of the Federal Aviation Administration (FAA), whose continuing mission is to provide the safest, most efficient aerospace system in the world. The WJHTC performs research, development, testing and evaluation, and provides operational support to ensure and enhance the safety of the nation's civil aerospace system. Through a series of initiatives known collectively as NextGen, the WJHTC is helping to shape the future of aviation.

www.tc.faa.gov

December 2015

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6 Chanukah (begins at sundown)	7 Pearl Harbor Day	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22 First Day of Winter	23	24	25 Christmas Day	26 Kwanzaa (begins)
27	28	29	30	31		

November 2015

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January 2016

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3-Dimensional Printed Shelby Cobra

Researchers printed the replica Shelby Cobra at the Department of Energy's Manufacturing Demonstration Facility at Oak Ridge National Laboratory (ORNL) using the Big Area Additive Manufacturing (BAAM) machine, which can manufacture strong, lightweight composite parts without the need for tooling. The new BAAM system, which was jointly developed by ORNL and Cincinnati Incorporated, is 500 to 1000 times faster and capable of printing polymer components 10 times larger than today's industrial additive machines in sizes greater than 1 cubic meter.

Photo credit: Oak Ridge National Laboratory

Oak Ridge National Laboratory

ORNL is a multi-program science and technology laboratory managed for the U.S. Department of Energy by UT-Battelle, LLC. Scientists and engineers at ORNL conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science, increase the availability of clean, abundant energy, restore and protect the environment; and contribute to national security.

www.ornl.gov

January

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December 2015 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	February 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29				1 New Year's Day	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18 Martin Luther King, Jr. Day	19	20	21	22	23
24 31	25	26	27	28	29	30

Mobile Phone Microscope for Parasite Detection

Scientists from the National Institute of Allergy and Infectious Diseases (NIAID) and the University of California, Berkeley, developed a mobile phone video microscope to measure blood levels of the parasitic filarial worm *Loa loa*. The device, CellScope Loa, automatically captures and analyzes videos of the microfilariae's motion, enabling quantification of microfilariae in blood from a finger prick in less than 2 minutes. Researchers predict three workers could screen about 200 people during the 4-hour midday window when *Loa* circulates at its peak in the blood. This device can assist public health efforts to eradicate river blindness and elephantiasis.

Photo credit: NIAID

National Institute of Allergy and Infectious Diseases

The Laboratory of Parasitic Diseases

The Laboratory of Parasitic Diseases

The Laboratory of Parasitic Diseases (LPD) at the National Institute of Allergy and Infectious Diseases (NIAID) conducts basic and applied research on the prevention, control, and treatment of a variety of parasitic and bacterial diseases of global importance. The work of the group is largely directed toward the identification of immunological and molecular targets for disease intervention. LPD includes a clinical group that conducts patient-centered research at the National Institutes of Health Clinical Center, as well as international field studies in India, Latin America, and Africa.

www.niaid.nih.gov

February

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 Groundhog Day	3	4	5	6
7	8	9	10	11	12 Lincoln's Birthday	13
14 Valentine's Day	15 President's Day	16	17	18	19	20
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January 2016

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March 2016

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27	28	29	30	31		

Light Detection And Ranging Point-Cloud of Helheim Glacier

The Cold Regions Research and Engineering Laboratory's Riegl VZ-6000 terrestrial laser scanner collects data at Helheim Glacier, Southeast Greenland, under the aurora borealis. Pictured is a detailed view of crevasses in Light Detection And Ranging data collected at Helheim Glacier. These identifiable surfaces are used to make displacement measurements between repeat LiDAR scans, allowing researchers to measure velocities across the entire glacier. Each point is colored by surface reflectance, showing variations in the ice surfaces.

Photo credit: Adam LeWinter, research physical scientist

US Army Corps of Engineers

ERDC
Engineer Research and Development Center

U.S. Army Engineer Research and Development Center

As one of the most diverse engineering and scientific research organizations in the world, the U.S. Army Engineer Research and Development Center (ERDC) conducts R & D in support of the soldier, military installations, and the Corps of Engineers' civil works mission, as well as for other federal agencies, state authorities and municipal authorities, and with U.S. industries through innovative work agreements. ERDC has a staff of approximately 2,500 federal employees and contractors, and an annual research program exceeding $1 billion.

www.erdc.usace.army.mil

March

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13 Daylight Savings Begins	14	15	16	17 St. Patrick's Day	18	19
20 First Day of Spring	21	22	23	24	25 Good Friday	26
27 Easter	28	29	30	31		

February 2016

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April 2016

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3-MW Wind Turbine

A technician inspects the blades of a 3-MW wind turbine at the National Wind Technology Center (NWTC) at the National Renewable Energy Laboratory (NREL). The turbine and its blade design are being tested at the NWTC as part of a Cooperative Research and Development Agreement (CRADA) between NREL and a power-generation company. NREL works with hundreds of partners within industry, government, academia, small business, international organizations, and nonprofits to advance the use of clean energy technologies in the marketplace.

Photo credit: Dennis Schroeder

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

The National Renewable Energy Laboratory (NREL)

The National Renewable Energy Laboratory is the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research and development. From scientific discovery to accelerating market adoption, NREL deploys its deep technical expertise and capabilities to drive the transformation of our nation's energy systems. NREL research leads to industry partnerships that solve energy problems and improve lives.

www.nrel.gov

April

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March 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	May 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31				1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22 Passover (begins at sundown) Earth Day	23
24	25	FLC National Meeting April 26-28, 2016 • Chicago, IL for more information, visit meeting.federallabs.org			29	30

Plankton Nets

A researcher on board the National Oceanic and Atmospheric Administration (NOAA) Research Vessel Laurentian deploys a plankton net during a 2015 cruise offshore Muskegon, Michigan, as a part of the Lake Michigan Cooperative Science and Monitoring Initiative (CSMI). The Lake Michigan CSMI project supports the examination of benthic and pelagic components of the food web to better understand the movement of nutrients from inshore to offshore and spatial coupling of the food web that has been disrupted by invasive mussels. Nets are used to sample zooplankton and larval fish, which are important indicators in the health of Lake Michigan.

Photo credit: National Oceanic and Atmospheric Administration

Great Lakes Environmental Research Laboratory

Great Lakes Environmental Research Laboratory

The Great Lakes Environmental Research Laboratory (GLERL) and its partners conduct innovative research on the dynamic environments and ecosystems of the Great Lakes to provide information for resource use and management decisions that lead to safe and sustainable ecosystems, ecosystem services, and human communities.

www.glerl.noaa.gov

May

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8 Mother's Day	9	10	11	12	13	14
15	16	17	18	19	20	21 Armed Forces Day
22	23	24	25	26	27	28
29	30 Memorial Day	31				

April 2016

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June 2016

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Safety Testing/Mock explosives

The Transportation Security Laboratory (TSL) designs and manufactures a wide variety of mock explosives as well as mock improvised explosive devices for testing systems and training screeners and law enforcement officers. Robin Guerrera inserts a small amount of explosive into a tiny mock bomb used by the TSL's accelerated rate calorimeter, which measures the stability parameters of an explosive substance. The results are used to ensure that all of the different kinds of explosives the TSL uses to make sure bomb screening systems used by Department of Homeland Security work, and are stored and handled safely. Patrick Sasso prepares simulated explosives that are nontoxic and nonenergetic, but mimic the key detectable physical or chemical features that bomb screening systems look for.

Photo credit: ArtZ Graphics

Transportation Security Laboratory

Transportation Security Laboratory

The Homeland Security Transportation Security Laboratory (TSL) protects our nation's civilian air transportation systems. By virtue of its accomplished experts, cutting-edge facilities and partnerships, TSL offers the homeland security community and transportation security partners the ability to advance detection technology from conception to deployment through applied research, test and evaluation, assessment, certification, and qualification testing.

www.dhs.gov/transportation-security-laboratory

June

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
May 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	July 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24/31 25 26 27 28 29 30		1	2	3	4
5	6	7	8	9	10	11
12	13	14 Flag Day	15	16	17	18
19 Father's Day	20 First Day of Summer	21	22	23	24	25
26	27	28	29	30		

Sun Power

Pacific Northwest National Laboratory's thermochemical conversion device is installed in front of a concentrating solar power dish. The device converts natural gas into the more energy-rich fuel syngas, which power plants can burn to use less fuel and reduce greenhouse gas emissions.

Photo credit: Pacific Northwest National Laboratory

Pacific Northwest
NATIONAL LABORATORY

Pacific Northwest National Laboratory

For 5 decades, Pacific Northwest National Laboratory (PNNL) has been advancing science and solving America's most intractable problems in energy, national security, and the environment. PNNL is driven by its vision to understand, predict, and control the behavior of complex adaptive systems ranging from water resources to the nation's power grid. Their science and technology are inspiring and enabling the world to live prosperously, safely, and securely.

www.pnnl.gov

July

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
June 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	August 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31				1	2
3	4 Independence Day	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29	30

Computer Vision Research

A MITRE researcher uses an Oculus Rift virtual reality headset to step into an immersive compilation of video feeds in order to fully explore crime scenes, areas of surveillance, and other environments of interest. In an effort to create a decision advantage for its sponsors, MITRE is exploring new ways to quickly collect, exploit, translate, fuse, compare, model, and share information from multiple large and complex data sources so users have the information they need when and how they need it.

Photo credit: Andy Cleavenger

MITRE

MITRE Corporation

The MITRE Corporation is a not-for-profit organization that operates research and development centers sponsored by the federal government. MITRE is chartered to work in the public interest, with no commercial interests, owners, or shareholders. This lack of commercial conflicts of interest forms the basis for objectivity. MITRE assists the U.S. government with scientific research and analysis, development and acquisition, and systems engineering and integration. MITRE also has an independent research program that explores new and expanded uses of technologies to solve its sponsors' problems.

www.mitre.org

August

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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21	22	23	24	25	26	27
28	29	30	31			

July 2016

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24/31	25	26	27	28	29	30

September 2016

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18	19	20	21	22	23	24
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Elastomeric Armor for Combat Helmets

Following success in applying elastomeric armor coatings to improve combat ground vehicle protection, Principal Investigator Phillip Dudt and summer student volunteer Dante Dobbins are researching the use of these materials in advanced military combat helmets to mitigate traumatic brain injury. Under a joint Carderock-DuPont Corporation Cooperative Research and Development Agreement (CRADA), experimental helmets incorporating this coating are being evaluated. The experimental helmets are subjected to an explosive blast, and the output of pressure and acceleration sensors embedded in a mannequin are analyzed to determine material effectiveness. Findings show that the coatings have significantly decreased intracranial impulse and acceleration, parameters that have been linked to traumatic brain injury.

Photo credit: James Contreras

Naval Surface Warfare Center, Carderock Division

The Naval Surface Warfare Center, Carderock Division is a geographically distributed command with headquarters in West Bethesda, Md., and seven detachments (Norfolk, Va.; Port Canaveral, Fla.; Fort Lauderdale, Fla.; Memphis, Tenn.; Bayview, Idaho; Silverdale, Wash.; and Ketchikan, Alaska). Its mission is to provide full-spectrum R & D, test and evaluation, analyses, acquisition and fleet support for the Navy's ships, ship systems, and associated Navy logistics systems, and support to the maritime industry.

www.navsea.navy.mil/Home/WarfareCenters/NSWCCarderock

September

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August 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	October 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23/30 24/31 25 26 27 28 29			1	2	3
4	5 Labor Day	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22 First Day of Autumn	23	24
25	26	27	28	29	30	

R&D for Particle Accelerators

A scientist at the Department of Energy's Fermilab inspects equipment for a new particle accelerator. Fermilab is a leading center for the development, assembly, and testing of superconducting radio-frequency cavities, the technology of choice to generate powerful particle beams. The laboratory is also a hub for the development and construction of powerful superconducting magnets. Fermilab partners with industry and other laboratories to bring premier accelerator technologies to research projects around the world. More than 30,000 particle accelerators are in operation today, most in medicine and industry.

Photo credit: Reidar Hahn

Fermilab

Fermi National Accelerator Laboratory is America's premier laboratory for particle physics and accelerator research, funded by the U.S. Department of Energy. By inventing, building and operating some of the largest and most complex scientific instruments in the world, scientists at Fermilab expand humankind's understanding of matter, energy, space, and time. More than 4,000 scientists from universities and laboratories in 36 countries use Fermilab and its accelerators, detectors, and computers for their research.

www.fnal.gov

Fermilab

October

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
September 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	November 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30					1
2 Rosh Hashanah (begins at sundown)	3	4	5	6	7	8
9	10 Columbus Day	11 Yom Kippur (begins at sundown)	12	13	14	15
16	17	18	19	20	21	22
23 30	24 Halloween 31	25	26	27	28	29

Floating Ultrasonic Transducer

NASA Langley has developed a novel floating ultrasonic transducer. Most ultrasonic scanners require the use of a liquid coupling agent (e.g., water, gel, oil) to make good contact between the probe and the surface being scanned. However, some surfaces are sensitive to moisture and/or contamination created by these agents. Originally developed to inspect NASA aerospace structures, the floating ultrasonic transducer has applications in a variety of industries, including oil, gas, chemical, manufacturing, aerospace and defense, power generation (including solar), and medical.

Photo credit: NASA

LANGLEY
RESEARCH
CENTER

NASA Langley

The Aeroacoustics Branch (AaB) and Structural Acoustics Branches (SAB) at NASA Langley Research Center are 2 of 19 branches within the Research Directorate. Personnel in the AaB plan and conduct research to understand, predict, and control the noise of air vehicles, with an emphasis on the fluid mechanics and acoustics of jets, engine nacelles and liners, rotors and propellers, atmospheric sound propagation, and acoustic flight testing. The objectives of the research in both branches include understanding the noise generation process; developing prediction methods for acoustics, flow fields, and structural response; and identifying and demonstrating noise control technologies.

www.nasa.gov/centers/langley

November

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6 Daylight Savings Ends	7	8 Election Day	9	10	11 Veterans Day	12
13	14	15	16	17	18	19
20	21	22	23	24 Thanksgiving Day	25	26
27	28	29	30			

October 2016

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December 2016

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Scanning Electron Micrograph of the Red Palm Mite

Scanning electron micrograph of the red palm mite, *Raoiella indica*, using a low-temperature scanning electron microscope (LTSEM). The image was created by flash-freezing a mite specimen (while still alive) at -321°F and coating it with platinum. The procedure freeze-frames the mite in time, allowing detailed examination of its features, physiology, behavior, and interaction with its immediate surroundings. Imparting color to the high-magnification images helps further reveal critical, but often subtle, morphological differences between mite species, such as the size, shape, or number of setae (sensory organs) on their bodies.

Photo credit: Ronald Ochoa

USDA ars

USDA Systematic Entomology Laboratory

The Systematic Entomology Laboratory conducts research to develop comprehensive classifications, hypotheses of relationships, and identification tools for insects and mites on a world basis in support of U.S. agriculture and natural resources; provides identifications and associated taxonomic services to federal, state, and private organizations involved in research and action programs; develops and maintains, in cooperation with the Smithsonian Institution, the U.S. National Collection of Insects and Mites, a vital resource for insect and mite research and identification services; and develops digital and molecular identification tools and databases of taxonomic and biological information.

www.ars.usda.gov

December

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
November 2016 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	January 2017 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31			1	2	3
4	5	6	7 Pearl Harbor Day	8	9	10
11	12	13	14	15	16	17
18	19	20	21 First Day of Winter	22	23	24 Chanukah (begins at sundown)
25 Christmas Day	26 Kwanzaa (begins)	27	28	29	30	31

National Spherical Torus Experiment-Upgrade (NSTX-U)

The National Spherical Torus Experiment-Upgrade (NSTX-U) at the Princeton Plasma Physics Laboratory (PPPL) will produce research that may open a path toward developing fusion energy as a safe, abundant, and environmentally sound means of generating electricity. Future fusion power plants will use plasmas consisting of the hydrogen isotopes deuterium and tritium, whose reactions release large amounts of energy. Achieving this will require the creation of sufficient temperature and pressure in the plasma by containing it inside magnetic fields.

Photo credit: Elle Starkman and Jame Chrzanowski

PPPL
PRINCETON
PLASMA PHYSICS
LABORATORY

Princeton Plasma Physics Laboratory

The U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL) is a collaborative national center for fusion energy research. The Laboratory advances the coupled fields of fusion energy and plasma physics research and, with collaborators, is developing the scientific understanding and key innovations needed to realize fusion as an energy source for the world. An associated mission is providing the highest quality scientific education.

www.pppl.gov

January

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 New Year's Day	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16 Martin Luther King, Jr. Day	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

December 2016

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February 2017

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

Featured Technologies

Ponar Grab ▼

A ponar grab, a tool for taking sediment samples from hard bottoms, is used by researchers from the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS) Great Lakes Science Center off the coast of Ludington, Mich., to sample benthic communities during a July 2015 Cooperative Science and Monitoring Initiative (CSMI) cruise on the U.S. Geological Survey Research Vessel Sturgeon.

Photo credit: James Gathany

Tobacco Testing ▶

The Center for Disease Control's Division of Laboratory Sciences (DLS) Tobacco Laboratory uses automated smoking machines for cigarette testing in combination with advanced analytical techniques such as mass spectrometry. The Laboratory investigates individual and population exposures to the chemicals in tobacco products. The Laboratory is unique because it measures toxic and addictive substances found in tobacco products, in smoke and other emissions, and in people who use tobacco products or are exposed to secondhand smoke.

Photo credit: Megan Ewald

Ground Vehicle Simulation Laboratory ▶

The Ground Vehicle Simulation Laboratory, located at the U.S. Army Garrison-Detroit Arsenal, is a state-of-the-art facility that provides total capability for vehicle components and full vehicle characterization and durability testing. The facility maintains more than 15 test equipment pieces. One unique testing apparatus is the Suspension Parameter Identification Evaluation Rig (SPIdER). The SPIdER accurately characterizes the suspension system, typically the greatest source of a vehicle's dynamic structural behavior. Most vehicles can be evaluated on the SPIdER without modification or disassembly.

Photo credit: U.S. Army Research, Development and Engineering Command

Featured Technologies

Free Space Optical Communications ▼

Free-space optical (FSO) communications, or wireless laser communications, has been around for over 40 years. Only recently have components decreased enough in size, weight, power, and cost to make systems more deployable. FSO communications provides dramatically higher bandwidths compared to all other wireless methods and addresses limitations in communications in undersea environments. SSC Pacific is developing innovations in FSO communications, including a system that automatically selects the ideal laser wavelength for undersea communications.

SPAWAR Systems Center PACIFIC

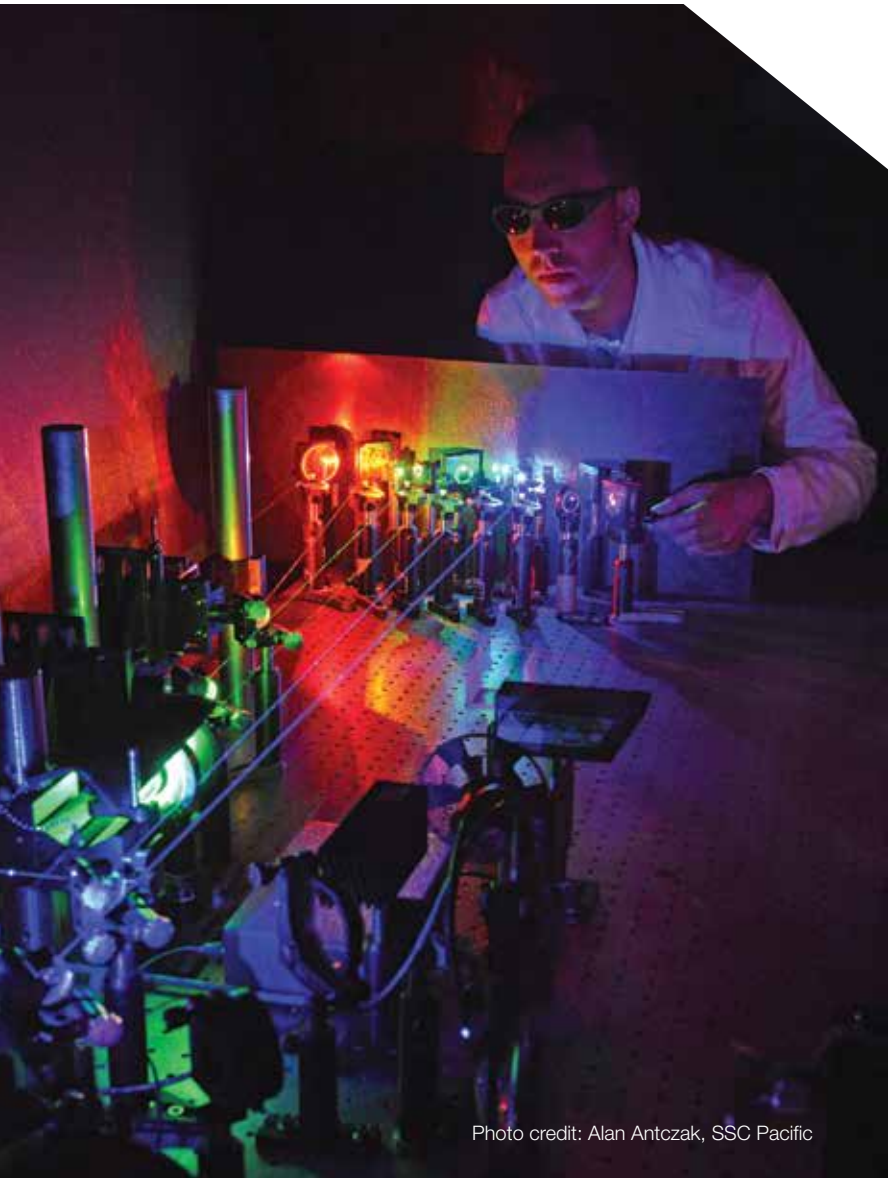

Photo credit: Alan Antczak, SSC Pacific

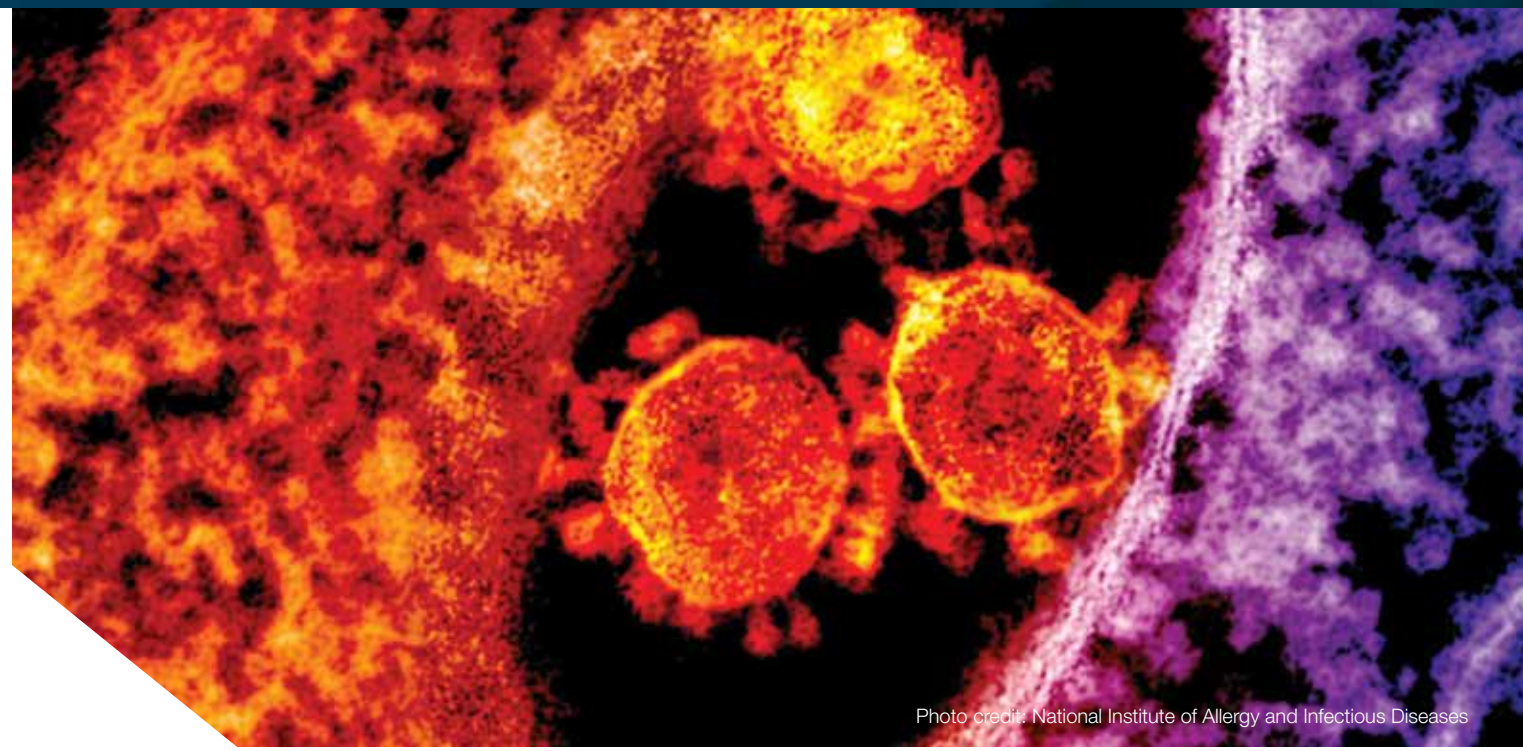

Photo credit: National Institute of Allergy and Infectious Diseases

MERS-CoV Disease ▲

Since the Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak began in 2012, National Institute of Allergy and Infectious Diseases (NIAID) researchers have focused on understanding how the virus causes disease and how it can be treated effectively. Researchers used marmosets after predicting in computer models that the animals could be infected with MERS-CoV based on the binding properties of the virus. They found that MERS-CoV infection in marmosets closely mimics the severe pneumonia experienced by people infected with MERS-CoV, giving scientists the best animal model yet for testing potential treatments.

NIH National Institute of Allergy and Infectious Diseases

Shape Sensing ▼

SansEC is a NASA-developed wireless sensor technology that is damage-tolerant and requires no electrical connections. The sensor is able to make measurements from a distance such that a 100-milliwatt signal at a 30-foot distance still generates an excellent sensor response with signal/noise greater than 30 db. Unlike other sensors, a SansEC sensor can be designed for a variety of measurements that are unrelated to each other—like temperature and fluid level—and easily switch from one to another or do both simultaneously.

NASA

Photo credit: NASA

Featured Technologies

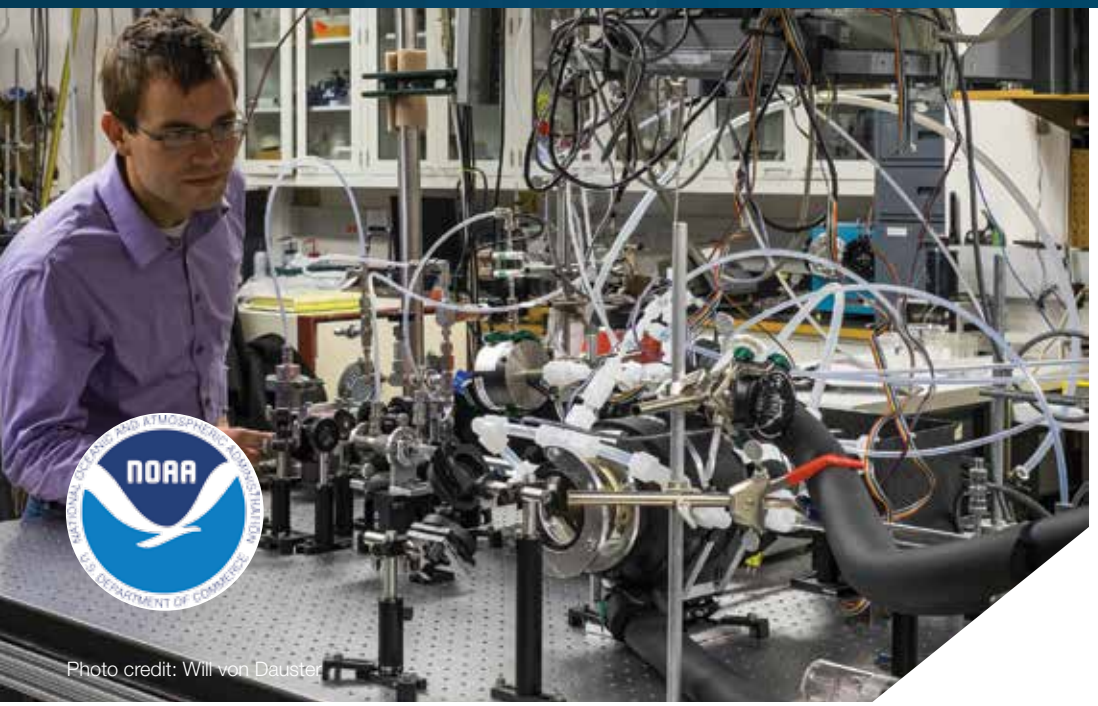

Photo credit: Will von Dauster

Atmospheric Chemical Kinetics System ▲

The complex chemistry of Earth's atmosphere involves hundreds of trace gases and particles undergoing reactions that affect the quality of the air we breathe, the climate of the planet, and the protective ozone layer in the stratosphere. The National Oceanic and Atmospheric Administration's scientists design novel, state-of-the-art systems to measure the rates and products of these atmospheric chemical reactions. The information is used in atmospheric models to decipher the important man-made and natural processes that influence Earth's atmosphere.

▼ The Art of Climate Modeling

The paint-like swirls of this visualization from Los Alamos National Laboratory depict global water-surface temperatures, with the surface texture driven by vorticity. Cool temperatures are designated by blues, and warmer temperatures by reds. Trapped regions of warmer water (red) adjacent to the Gulf Stream off the eastern coast of the U.S. indicate the model's capability to simulate eddy transport of heat within the ocean, a key component necessary to accurately simulate global climate change.

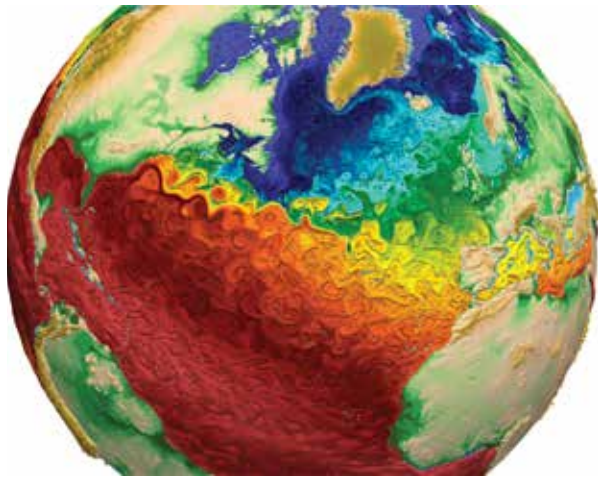

Photo credit: Los Alamos National Laboratory

Custom-Built Deposition Chamber ▶

Scientists at Brookhaven National Laboratory use this custom-built deposition chamber to manufacture atomically precise lenses that focus x-ray beams to within a single nanometer. The lenses made in this chamber are used at Brookhaven's National Synchrotron Light Source II, and will help researchers explore solutions to the grand energy challenges faced by the nation and open up new regimes of scientific discovery that will pave the way to discoveries in physics, chemistry, and biology—advances that will ultimately enhance national security and help drive the development of abundant, safe, and clean energy technologies, habitats, and populations.

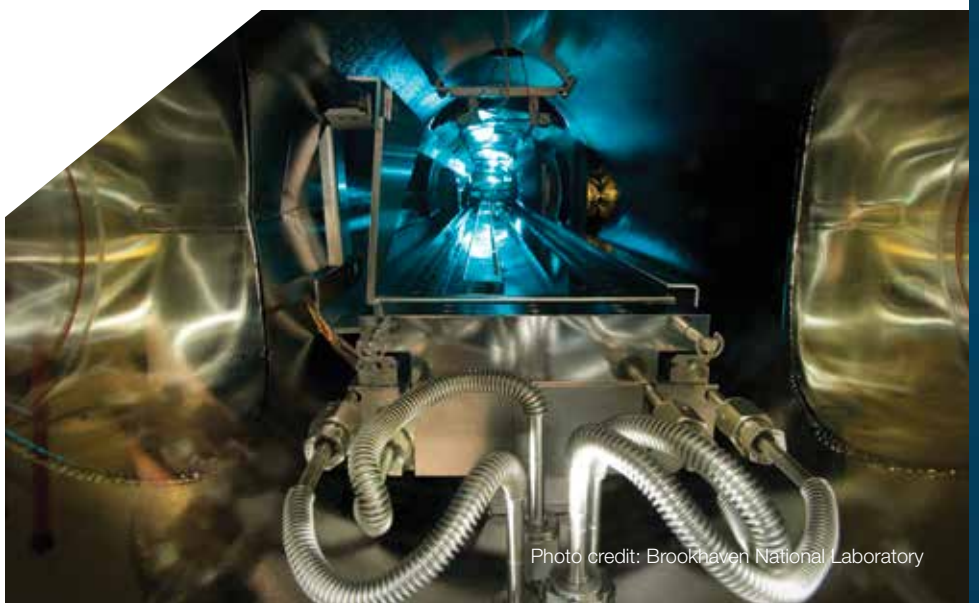

Photo credit: Brookhaven National Laboratory

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Prepared by the FLC Management Support Office in conjunction with FLC Communications Co-Chairs Sara Langdon and Al Jordan.

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