2020

A Spotlight on the R&D of Federal Laboratories

Diver Augmented Vision Device (DAVD)

See inside cover for details

FLC

Federal Laboratory Consortium for Technology Transfer

On the Cover

Diver Augmented Vision Device

The Diver Augmented Vision Device (DAVD) provides a diver with high-resolution, visual data display inside a KM-37 dive helmet, which dramatically increases a diver's capabilities, effectiveness, efficiency, and safety while conducting missions. The DAVD was developed by a joint team of engineers from Naval Surface Warfare Center Panama City Division (NSWC PCD) and Coda Octopus Group, Inc., working under a Cooperative Research and Development Agreement under the sponsorship of NAVSEA 00C and the Office of Naval Research. The DAVD system was initially developed for the military, commercial, first responder, and scientific diving communities. NSWC PCD is collaborating with NASA to use DAVD for analog mission training to simulate future missions on the Moon and Mars.

Naval Surface Warfare Center Panama City Division

The mission of Naval Surface Warfare Center Panama City Division is to conduct research, development, test, and evaluation in-service support of mine warfare systems, mines, naval special warfare systems, diving and life support systems, amphibious/expeditionary maneuver warfare systems, other missions that occur primarily in coastal (littoral) regions, and to execute other responsibilities as assigned by Commander, Naval Surface Warfare Center.

ABOUT THE FLC

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 commercialize technologies 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 touchpoint 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: Jennifer Stewart, Naval Surface Warfare Center, Corona Division
www.flcfarwest.org

2 Mid-Continent
Regional Coordinator: John Eisemann, USDA National Wildlife Research Center (NWRC)
www.flcmidcontinent.org

3 Midwest
Regional Coordinator: Jenna Dix, Naval Surface Warfare Center, Crane Division
www.flcmidwest.org

4 Northeast
Regional Co-Coordinators: Laurie Bagley, Princeton Plasma Physics Laboratory (PPPL); David Lee, CCDC Armaments Center
www.flcnortheast.org

5 Mid-Atlantic
Regional Coordinator: Jack E. Pevenstein, National Institute of Standards and Technology
www.flcmidatlantic.org

6 Southeast
Regional Coordinator: Paige George, Naval Surface Warfare Center, Panama City Division
www.flcsoutheast.org

Windsondes

The strongest and deadliest tornadoes form from a specific type of thunderstorm—the supercell. However, important areas inside supercell thunderstorms remain unexplored. In 2019- 2020, scientists hit the road to study these powerful storms as part of the field project TORUS, or Targeted Observation by Radars and UAS of Supercells. Among the tools used in the project are swarms of radiosondes that take measurements of the atmosphere. Windsondes are small weather balloons with attached instrumentation that can be launched every 30–60 seconds from a field vehicle, allowing researchers to have many of them in the air at once.

Photo credit: NOAA NSSL

DECEMBER 2019

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22 Hanukkah (begins at sundown)	23	24	25 Christmas Day	26 Kwanzaa	27	28
29	30	31 New Year's Eve				

NOAA National Severe Storms Laboratory

The NOAA National Severe Storms Laboratory serves to enhance NOAA's capabilities to provide accurate and timely forecasts and warnings of hazardous weather events. NSSL accomplishes this mission through research to advance the understanding of weather processes, research to improve forecasting and warning techniques, and development of operational applications. NSSL transfers new scientific understanding, techniques, and applications to the National Weather Service.

www.nssl.noaa.gov

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NOVEMBER 2019

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JANUARY 2020

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QUICK REFERENCE

Brain on a Chip

Lawrence Livermore National Laboratory's iCHIP (in vitro chip-based human investigational platform) is a miniature external replication of a human organ, integrating biology and engineering with multielectrode arrays. "Brain-on-a-chip"—the newest embodiment of an integrated system—evaluates the effects of potentially harmful chemicals, viruses, and drugs on humans without relying on animal or human test subjects. The device simulates the central nervous system by recording activity from multiple cell types deposited and grown onto a small platform embedded with microelectrode arrays. Researchers have also developed "chip platforms" for the heart, central nervous system, and peripheral nervous system.

Photo credit: Julie Russell

Lawrence Livermore National Laboratory

JANUARY

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SUN	MON	TUE	WED	THU	FRI	SAT
			1 New Year's Day	2	3	4
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19	20 Martin Luther King, Jr. Day	21	22	23	24	25
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Lawrence Livermore National Laboratory

Lawrence Livermore National Laboratory's defining responsibility is ensuring the safety, security and reliability of the nation's nuclear deterrent. Livermore's mission is broader than stockpile stewardship, as dangers ranging from nuclear proliferation and terrorism to energy shortages and climate change threaten national security and global stability. LLNL's science and engineering are being applied to achieve breakthroughs for counter-terrorism and nonproliferation, defense and intelligence, energy and environmental security.

www.llnl.gov

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DECEMBER 2019

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FEBRUARY 2020

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QUICK REFERENCE

MedUSA Hybrid Machine Introduces Next-Generation Manufacturing

At the Department of Energy (DOE) Manufacturing Demonstration Facility at Oak Ridge National Laboratory (ORNL), researchers are working with Lincoln Electric to optimize MedUSA, a three-robot hybrid machine combining additive and subtractive manufacturing with pick-and-place capabilities. ORNL is creating controls for automation, enabling next-generation manufacturing.
Sponsor: The Department of Energy's Office of Energy Efficiency and Renewable Energy's (EERE) Advanced Manufacturing Office (AMO)

Photo credit: Carlos Jones, ORNL

OAK RIDGE National Laboratory | UT-BATTELLE

FEBRUARY

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	President's Day					
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UT-Battelle, LLC/Oak Ridge National Laboratory (ORNL)

Oak Ridge National Laboratory provides exceptional researchers with distinctive equipment and unique facilities to solve some of the nation's most compelling challenges. As the largest U.S. Department of Energy (DOE) open science laboratory, ORNL's mission is to deliver scientific discoveries and technical breakthroughs that will accelerate the development and deployment of solutions in clean energy and global security while creating economic opportunities for the nation.

www.ornl.gov
https://ut-battelle.org

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JANUARY

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QUICK REFERENCE

Inside a Crown Fire with the Fire and Smoke Model Evaluation Experiment

Prescribed stand-replacement fire in the Fishlake National Forest, Utah, June 2019. Forest fire temperatures can exceed 2,000°F. Fire intensity affects smoke, local weather, and forest recovery. Forest Service scientists with the Pacific Northwest Research Station, Rocky Mountain Research Station, and partners used LiDAR, radar, aircraft and satellite imagery, weather and atmospheric measurements, and ground monitoring to study the fuel consumed, fire behavior and its impacts on the vegetation. Other data from the fire are being used to validate and improve models that help land managers predict fire and smoke severity, and to improve firefighter safety standards and guidelines.

USDA | FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

Photo credit: USDA Forest Service

MARCH

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USDA Forest Service Pacific Northwest Research Station

The Fire and Smoke Model Evaluation Experiment (FASMEE) is a large-scale interagency effort to identify how fuels, fire behavior, fire energy and meteorology interact to determine the dynamics of smoke plumes, the long-range transport of smoke, and local fire effects. Partners include the U.S. Forest Service, Joint Fire Science Program, NOAA, NASA, National Science Foundation, Department of Defense, University of Washington, Desert Research Institute, and Tall Timbers Research Station.

www.fs.usda.gov/pnw

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FEBRUARY

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APRIL

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QUICK REFERENCE

Eggs Are Utilized at CDC as Part of Preparing Influenza Viruses for Use in Egg-based Vaccine Manufacturing

A Centers for Disease Control (CDC) microbiologist demonstrates “candling” an embryonated chicken egg by employing a bright lamp placed behind the egg to reveal its contents through the translucent shell. Researchers assess the viability of each egg used in the isolation of influenza viruses.

CDC uses eggs to grow candidate vaccine viruses (CVVs) that are used for the production of influenza vaccines. The egg-based flu vaccine production process begins with CVVs from CDC or another laboratory partner in the World Health Organization Global Influenza Surveillance and Response System (See https://www.cdc.gov/flu/about/season/vaccine-selection.htm). CVVs are then injected into fertilized eggs and incubated for several days to allow virus replication.

Photo credit: CDC Photography, James Gathany

APRIL

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SUN	MON	TUE	WED	THU	FRI	SAT
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5	6	7	8 Passover (begins at sundown)	9	10	11
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Centers for Disease Control and Prevention (CDC)

The National Center for Immunization and Respiratory Diseases' (NCIRD) mission is the prevention of disease, disability, and death through immunization and by control of respiratory and related diseases. Our challenge is to effectively balance our efforts in the domestic and global arenas, as well as accommodate the specific needs of all populations at risk of vaccine-preventable diseases—from children to older adults.

www.cdc.gov

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MARCH

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MAY

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QUICK REFERENCE

Small Modular Nuclear Reactor - Micro Reactor

Los Alamos National Laboratory (LANL) partnered with NASA-Glenn Research Center to design a small modular micro reactor. KiloPower for space uses nuclear fission to produce heat that is transferred via heat pipes to a small Stirling engine power converter to produce electricity. KiloPower guarantees performance and generates 500-1,000 watts of power. This safe, simple, compact design minimizes hazards because it uses uranium instead of plutonium. LANL is collaborating with Westinghouse Electric Company to commercialize the eVinci™ Micro Reactor, which uses low-enriched, non-weapons grade uranium for remote terrestrial power generation. These micro reactors won a 2019 FLC Mid-Continent Award for Technology Development.
Patent pending.

Los Alamos NATIONAL LABORATORY EST. 1943

NNSA National Nuclear Security Administration

Photo credit: James Cruz, Los Alamos National Laboratory

MAY

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Los Alamos National Laboratory (LANL)

Los Alamos National Laboratory is a multidisciplinary research institution dedicated to enhancing national security by ensuring the safety and reliability of the U.S. nuclear stockpile, and developing technologies to reduce threats from weapons of mass destruction while solving problems related to energy, environment, infrastructure, health, and global security concerns. Triad National Security, LLC, operates the Lab for the Department of Energy's National Nuclear Security Administration (NNSA).

www.lanl.gov/feynmancenter

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APRIL

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JUNE

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QUICK REFERENCE

NOAA's SOS Explorer

Science On a Sphere Explorer™ (SOSx) Mobile, an app for personal mobile devices, tells earth science stories by playing visually stunning movies on a virtual globe. SOS Explorer Mobile is the latest addition to a family of data-viewing tools created by NOAA, CIRES, and CIRA scientists in NOAA's Global Systems Division in Boulder, Colorado. On the SOSx Mobile app, users can interact with streaming data visualizations—zooming, rotating, scrolling through time, taking guided tours through datasets, and watching embedded educational videos—with over 120 datasets, including climate models, 360-degree underwater photographs, and the entire 2017 hurricane season.

Download for free on Apple App Store or Google Play.

Photo credit: Eric Hackathorn

JUNE

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NOAA/CIRES/CIRA

The Global Systems Division (GSD) of the Earth System Research Laboratory (ESRL) at NOAA conducts world-class applied research and directed development resulting in technology transfer of environmental data, models, products, and services that enhance environmental understanding, with the outcome of supporting commerce, supporting NWS in protecting life and property, and promoting a scientifically literate public.

www.noaa.gov
www.cires.colorado.edu
www.cira.colostate.edu

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MAY

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JULY

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QUICK REFERENCE

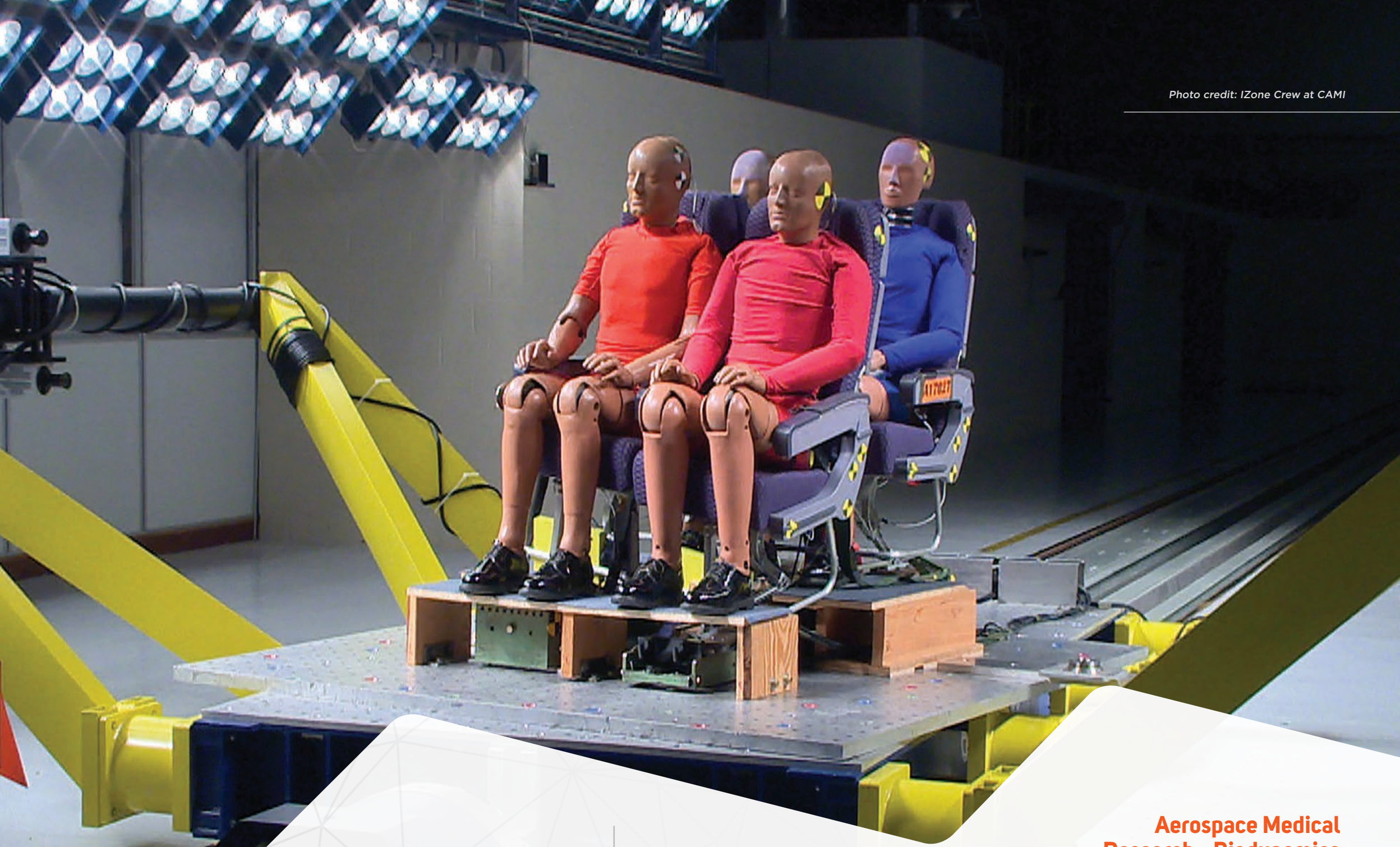

Photo credit: IZone Crew at CAMI

Aerospace Medical Research - Biodynamics

The Biodynamics Team of the Aerospace Medical Research Division tests crashworthiness of various aircraft seat configurations. Anthropomorphic test devices (dummies) equipped with multiple sensors are strapped into aircraft seats, and monitored during high-speed crash simulations. The risk of injury is determined for occupants in a range of seating configurations, including side and oblique-facing seats, child restraints, and different passenger positions. Findings are used to support FAA rulemaking and assist designers in building safer seats.

JULY

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SUN	MON	TUE	WED	THU	FRI	SAT
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						Independence Day
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FAA Civil Aerospace Medical Institute (CAMI)

The Civil Aerospace Medical Institute (CAMI) is the medical certification, education, research, and occupational medicine wing of the Office of Aerospace Medicine under the Federal Aviation Administration's Aviation Safety organization. The mission of the Aerospace Medical Research Division is "to develop new and innovative ways to support FAA regulatory and advisory missions to improve the safety of humans in civilian aerospace operations" by applying science, medicine, bioengineering, and technology.

www.faa.gov

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JUNE

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AUGUST

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QUICK REFERENCE

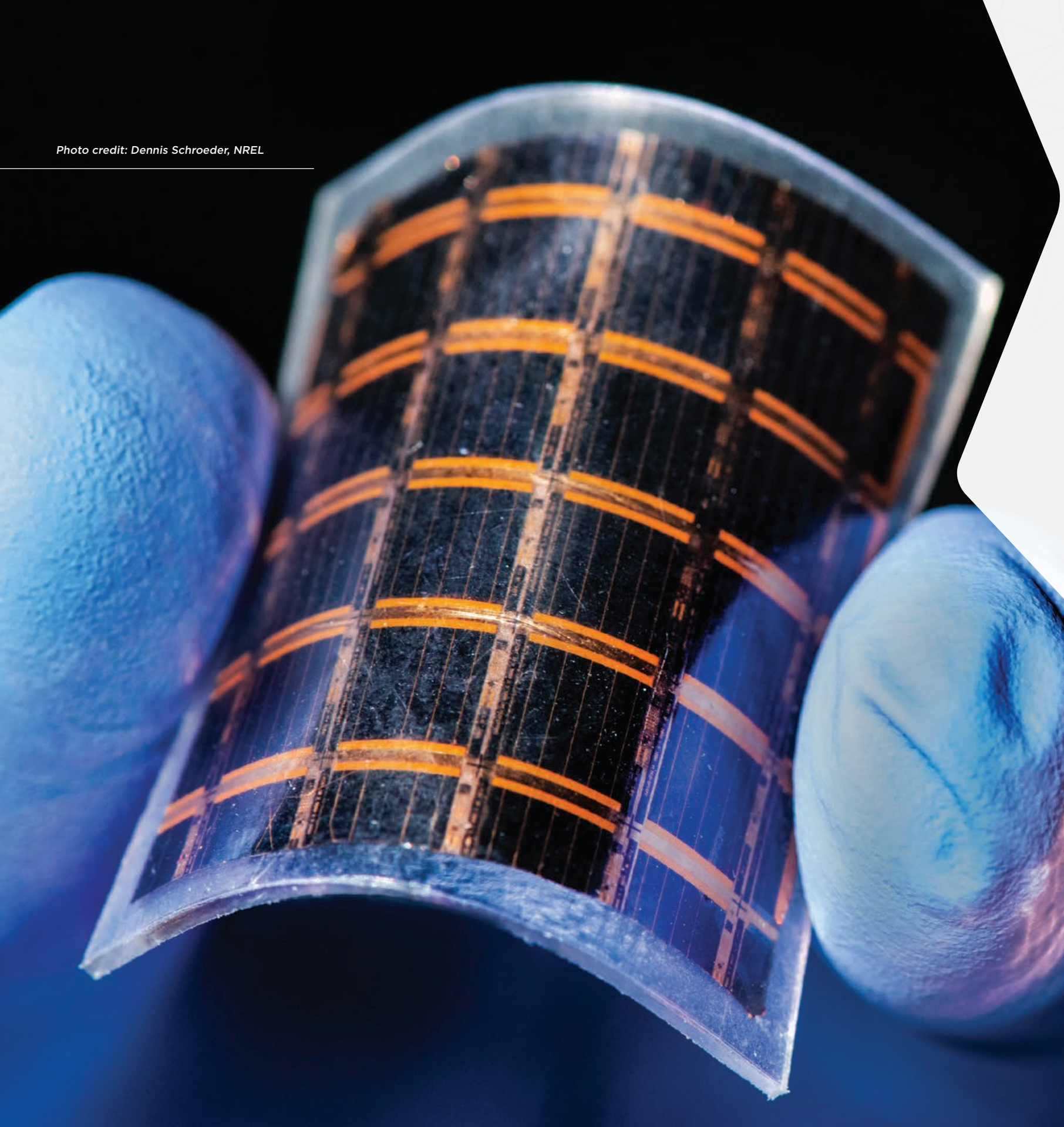

Photo credit: Dennis Schroeder, NREL

Flexible Solar

Using their improved dynamic hydride vapor-phase epitaxy (D-HVPE) process, NREL scientists produced a flexible, high-efficiency multijunction solar cell using gallium arsenide (GaAs)—a material previously considered too expensive to use anywhere but in space. With the reduced manufacturing costs, solar cells using this technology could potentially enter markets where their high efficiency of converting sunlight into electricity would prove desirable and competitive.

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

AUGUST

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National Renewable Energy Laboratory (NREL)

The National Renewable Energy Laboratory (NREL) advances the science and engineering of energy efficiency, sustainable transportation, and renewable power technologies and provides the knowledge to integrate and optimize energy systems. NREL's goal is to minimize the use of energy, materials, and water while carrying out its mission, and takes pride in its world-class research, talented staff, sustainable campus, and results that positively impact our local, national, and global communities.

www.nrel.gov

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JULY

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SEPTEMBER

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QUICK REFERENCE

The Alarm Resolution Technology Program

The detection of explosives, precursors, and illicit drugs is a dangerous and arduous task for field agents, not only due to the hazards of exposure with such materials but also because of the inherent risks of handling toxic chemicals. Researchers with the Alarm Resolution Technology Program at Transportation Security Laboratory (TSL) are evaluating the system performance of spectrometers that detect and identify materials by their chemical signatures and provide the nomenclature of the substance under scrutiny without having to handle them. The application for these handheld devices could possibly be used for resolving alarms at airport checkpoints in the future.

Photo credit:

FAA/WJHTC Advanced Imaging (L. Zaleski and M. Gross)

SEPTEMBER

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SUN	MON	TUE	WED	THU	FRI	SAT
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	Labor Day					
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The DHS Transportation Security Laboratory (TSL)

The TSL, part of the Department of Homeland Security Science and Technology Directorate, helps protect our nation's civilian air transportation systems. By virtue of its accomplished experts, cutting-edge facilities, and technology partnerships, the TSL offers the homeland security community and its transportation security partners the ability to advance detection technology from conception to deployment through applied research, test and evaluation, assessment, and certification testing.

www.dhs.gov/science-and-technology/transportation-security-laboratory

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AUGUST

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OCTOBER

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QUICK REFERENCE

AFRL New Mexico Maker Hub

The Air Force Research Laboratory (AFRL) New Mexico Maker Hub located at Kirtland Air Force Base, NM, is a collaborative space with the mission of creating a community where members can create, learn, explore, repair, invent, and more. Members have access to powerful tools and resources for prototyping and manufacturing. The AFRL New Mexico Maker Hub is available for use to anyone with access to Kirtland Air Force Base, and can be used for mission-related and personal projects.

Photo credit:
Kip Malone Photography

OCTOBER

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		Columbus Day				
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AFRL New Mexico

The Air Force Research Laboratory is dedicated to leading the discovery, development, and integration of technologies for air, space and cyberspace at nine technology centers across the country.

AFRL New Mexico is home to two centers, Directed Energy and Space Vehicles, which employ 1,800 scientists, engineers and mathematicians. They are civil servants and contractors working in cutting-edge technologies in collaboration with the nation's top academic and industry leaders.

www.afresearchlab.com

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SEPTEMBER

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NOVEMBER

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QUICK REFERENCE

Diagnostic to Detect Diabetic Retinopathy

A noninvasive diagnostic system to detect diabetic retinopathy (DR), this system records the electrical function of the eye from skin electrodes. The system fully covers both eyes so that dark adaptation can occur in a controlled manner under a variety of settings, allowing the technician to work and conduct testing while the room remains illuminated. The device screens for DR, negating the need for long, multistep flash protocols. Furthermore, it automatically processes and analyzes recordings to provide diagnostic information. This solution remedies the current shortcomings of clinical electroretinography (ERG), improving routine screening for DR in the primary care or ophthalmology clinic.

VA | U.S. Department of Veterans Affairs

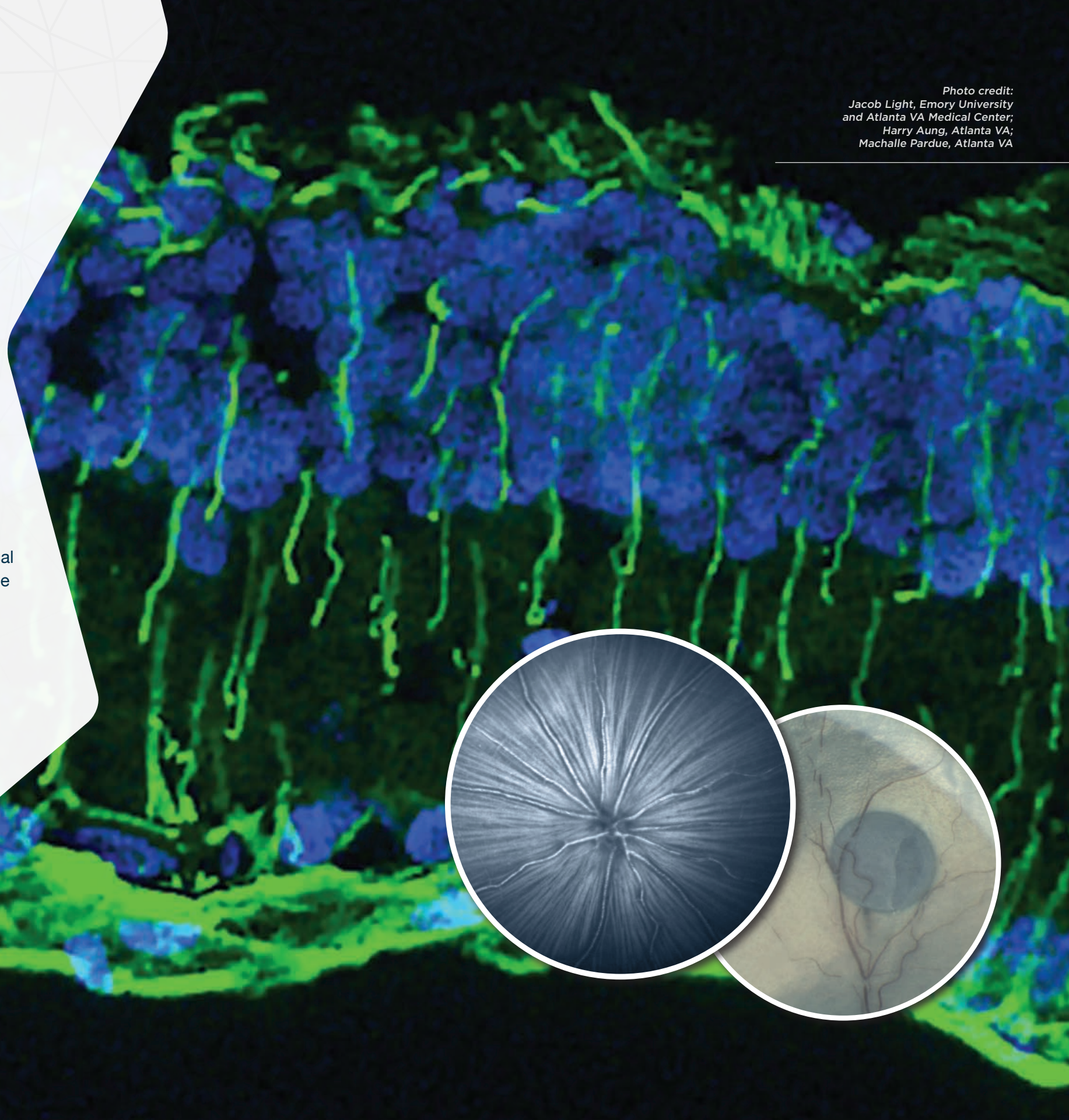

Photo credit:
Jacob Light, Emory University and Atlanta VA Medical Center;
Harry Aung, Atlanta VA;
Machalle Pardue, Atlanta VA

NOVEMBER

FLC
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SUN	MON	TUE	WED	THU	FRI	SAT
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		Election Day				
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			Veterans Day			
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				Thanksgiving		
29	30					

Department of Veterans Affairs

Atlanta VA Center for Visual and Neurocognitive Rehabilitation is focused on enhancing veterans' health by conducting research on the rehabilitation of visual and related neurological impairments, from the basic science of repair mechanisms through the development of creative rehabilitative interventions to improve function and social reintegration. Dr. Pardue's lab is focused on developing novel screening and treatment strategies for people with vision loss, to include diabetic retinopathy and retinal degenerations.

www.va.gov

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OCTOBER

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DECEMBER

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27	28	29	30	31		

QUICK REFERENCE

Photo credit: ©David Hills

Artificial Intelligence (AI) and Robotics

As the use of robots in the manufacturing, medical and service fields increases, it's critical that we ensure these devices can interact safely with humans. Enter AI. NIST computer scientists have trained a robot to recognize when a human coworker is not paying attention while working on a task together and to stop moving in the human's space when that happens. Doing so ensures the safety of the human—and the robot. This research is part of NIST's work to establish test methods and metrics for assessing and assuring the effective teaming of humans and machines.

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

DECEMBER

FLC
Federal Laboratory Consortium for Technology Transfer

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SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17 Hanukkah (begins at sundown)	18	19
20	21	22	23	24	25 Christmas Day	26 Kwanzaa
27	28	29	30	31 New Year's Eve		

National Institute of Standards and Technology (NIST)

NIST promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology in ways that enhance economic security and improve our quality of life. NIST is a non-regulatory agency of the U.S. Department of Commerce.

To learn more about NIST, visit:

www.nist.gov

NOTES

NOVEMBER

S	M	T	W	T	F	S
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8	9	10	11	12	13	14
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29	30					

JANUARY 2021

S	M	T	W	T	F	S
					1	2
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24/31	25	26	27	28	29	30

QUICK REFERENCE

Automated Vehicles Working Together

Cooperative Driving Automation (CDA) supports and enables automated vehicles to cooperate through communication between vehicles, infrastructure devices capable of communication, and road users, such as pedestrians and bicyclists. CARMA[SM] is part of the U.S. Department of Transportation (USDOT) effort advancing research and development to accelerate market readiness and deployment of CDA. Once deployed, CDA has the potential to improve transportation efficiency, facilitate freight movement, and reduce crashes caused by human error.

U.S. Department of Transportation
Federal Highway Administration

Photo credit: Saxton Transportation Operations Laboratory, FHWA

JANUARY 2021

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SUN	MON	TUE	WED	THU	FRI	SAT
					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	25	26	27	28	29	30
31						

Federal Highway Administration/Turner Fairbank Highway Research Center

The Federal Highway Administration's Turner-Fairbank Highway Research Center (TFHRC), a federally owned and operated national research facility located in McLean, Virginia, houses more than 16 laboratories, support facilities, and data sets; and conducts applied and exploratory advanced research in vehicle-highway interaction, nanotechnology, and a host of other types of transportation research in safety, pavements, highway structures and bridges, human-centered systems, operations and intelligent transportation systems, and materials.

www.fhwa.dot.gov

NOTES

DECEMBER 2020

S	M	T	W	T	F	S
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FEBRUARY 2021

S	M	T	W	T	F	S
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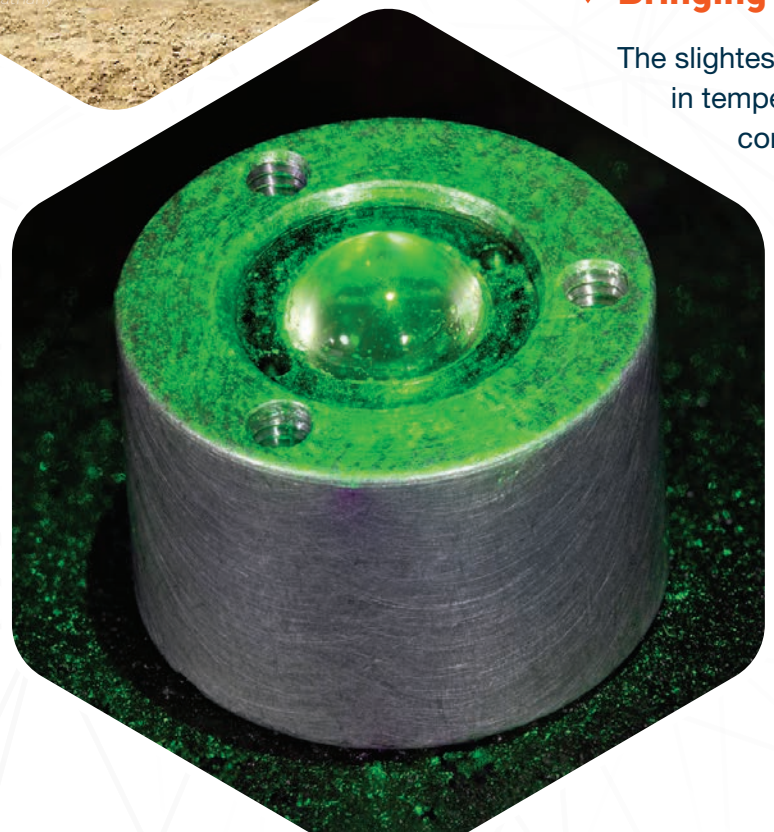
21	22	23	24	25	26	27
28						

QUICK REFERENCE

OUR FEDERAL LABS AT WORK

Air Curtain Burner Makes Biochar from Non- Woody Residues

USDA Forest Service researchers are working with Air Curtain Burner, Inc., to produce a modified air curtain burner that continuously produces biochar. Biochar is a high carbon product with a long residence time that can aid in carbon sequestration, improve water holding capacity and soil structure, and reduce nutrient leaching. By changing how long woody residues are held within the burn chamber, high quality biochar can be produced for land application. Biochar can also be used to reduce environmental contaminants to remediate mine sites. This technology is extremely valuable as biochar can help ensure success of restoration or silvicultural treatments.



Bringing It All into Focus

The slightest atmospheric interference like rain, dust, or a change in temperature can disrupt the transmission of light-based communications. Researchers at NSA are using a tiny lens to improve the integrity of signals sent through light channels. By focusing the light on a small, singular point—only 0.55 mm in diameter—NSA's Wide Field of View Concentrator significantly mitigates signal loss and increases the accuracy of high-speed data transmission. This free space optics technology can be used to boost light-based communications, increase the distance of light fidelity transmissions, assist in solar photovoltaic or heat concentration applications, and is available for license.

NATIONAL SECURITY AGENCY
TECHNOLOGY TRANSFER PROGRAM
Office of Research & Technology Applications

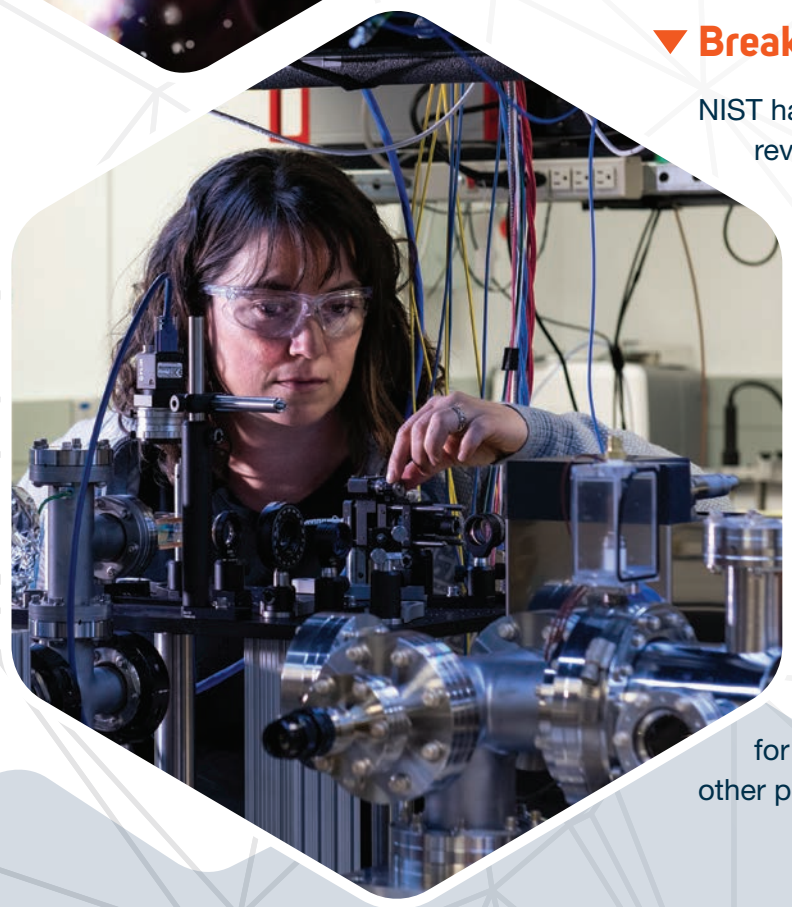
Photo credit: CDC Photography, Lauren Bishop

CDC Detection of Disease-causing Organisms in Water

A CDC microbiologist from the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Foodborne, Waterborne, and Environmental Diseases (DFWED), Waterborne Disease Prevention Branch, is shown performing membrane filtration, a special filtering technique for the detection of waterborne bacteria. For water-related research, CDC's Technology Transfer Office has facilitated more than 30 collaboration and material transfer agreements with multiple partners to advance diagnostics.

“Smart” Pyrotechnics

Naval Surface Warfare Center, Crane Division, in collaboration with Iowa State University, is developing improved energetic materials through the application of electromagnetics. Originally investigated to address propulsion in solid rocket motors, the use of energetic material dopants allow electromagnetic control of combustion by depositing microwave energy into the flame and enhancing the light emission volume and brightness of the flame. Exploration of microwave energy to dynamically control and enhance the photoemission of pyrotechnic compositions shows potential to create the next generation of “smart” pyrotechnics with controlled-on-command brightness and/or color emissions.



Breaking the Calibration Cycle

NIST has embarked on a sweeping program to revolutionize measurement services and metrology by working with industry to create a suite of intrinsically accurate, quantum-based measurement devices. These “NIST on a Chip” devices will provide practical and affordable measurement references on a factory floor or embedded in products, meaning companies will no longer need to send instruments to NIST or other standards labs for calibration. This chip simplifies the optics for laser cooling and the trapping of atoms or molecules. It measures ultra-low vacuum needed for fabricating computer chips, as well as other potential applications.

Microfluidic Artificial Lung

Microfluidic artificial lungs are a new class of artificial lungs that closely mimic the properties of the natural lung. Miniature channel dimensions enable extremely efficient gas exchange (i.e., artificial breathing), and biomimetic artificial vessels closely copy the natural cellular environment. These microfluidic artificial lungs thus promise to be more portable and have longer lifetimes and improved patient outcomes when compared to current systems, thereby enabling improved treatment for the many veterans and Americans suffering from severe lung disease. Dr. Potkay’s invention is published as international patent application WO2018187372A2. The VA is currently seeking commercial partners to advance development of the technology.

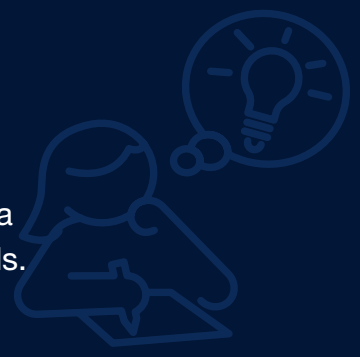
THE 7 STEPS FOR LAB-TO-MARKET SUCCESS

Meet your innovation goals by following our T2 success track!

1

STEP 1: IDENTIFY YOUR R&D NEEDS

Do you have an idea, invention, or product you'd like to further develop? Our federal laboratories have a wealth of resources and expertise that innovators can access to support various R&D or business needs. **Visit federallabs.org** to get started!



2

STEP 2: SEARCH LABORATORY RESOURCES & TECHNOLOGIES

Locate thousands of federal lab resources and techs by searching FLC Business—a database that provides innovators the ability to find and access lab information, technologies, facilities, equipment, funding and programs.

Start your search at FLCBusiness.org!

SEARCH — CONNECT — ENGAGE

3

STEP 3: FIND A SUITABLE T2 PROCESS

After you've found the lab resources you're looking to access or utilize, check out the FLC's Learning Center and T2 Toolkit to learn the ins and outs of the T2 process, how to license a technology, or the best ways to get started working with a federal lab!

FLC LEARNING CENTER: E-Learning Courses & Webinars

T2 TOOLKIT: T2 Mechanisms Database and Playbook

STEP 4: ASSESS THE NEXT STEPS FOR INNOVATION

4

Visit the T2 Mechanisms Database to get familiar with the various types of T2 agreements federal labs have available to meet your R&D needs. Then, assess suitable sample agreements to determine what information you'll need to disclose before reaching out to a laboratory representative and moving forward in the T2 process.

STEP 5: CONTACT A LABORATORY REPRESENTATIVE

5

Now that you've determined your ideal commercialization path, it's time to reach out to the lab. The laboratory representative will help you determine the best route for accessing the lab, facility, equipment or expertise you wish to utilize. Lab rep info is kept current on every lab profile in FLC Business.

NEED HELP CONNECTING? Contact the Tech Locator! locator@federallabs.org

STEP 6: NEGOTIATE AN AGREEMENT PATH

6

It's time to initiate, negotiate, and complete an agreement between you and a federal laboratory. Given the mechanism path agreed upon, this stage in the process can take some time to complete so both the laboratory and you (the private party) can achieve what they hoped to gain from the initiated agreement. The agreement will take into account all of the complex factors both parties need to consider during negotiations, such as:

THE DEVELOPMENTAL STAGE

ADDITIONAL PARTNERS

RISK VS. POTENTIAL

STEP 7: COMMERCIALIZE!

7

You've reached the end of the transfer process, and it's now time to commercialize your innovation! You're now on the path to access technology and facilities never before utilized. The lab's T2 office will follow up to ensure quality control, resolve any issues that may arise, and introduce potential third-party partners for sublicensing or joint development, among other administrative procedures.

END OF T2 SUCCESS TRACK

VISIT WWW.FEDERALLABS.ORG TO LEARN MORE ABOUT WORKING WITH FEDERAL LABS!

December 2019

January

February

March

April

May

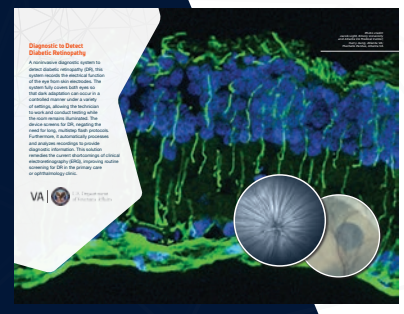
June

July

August

September

October



November

December

January 2021

FLC

Federal Laboratory Consortium for Technology Transfer

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