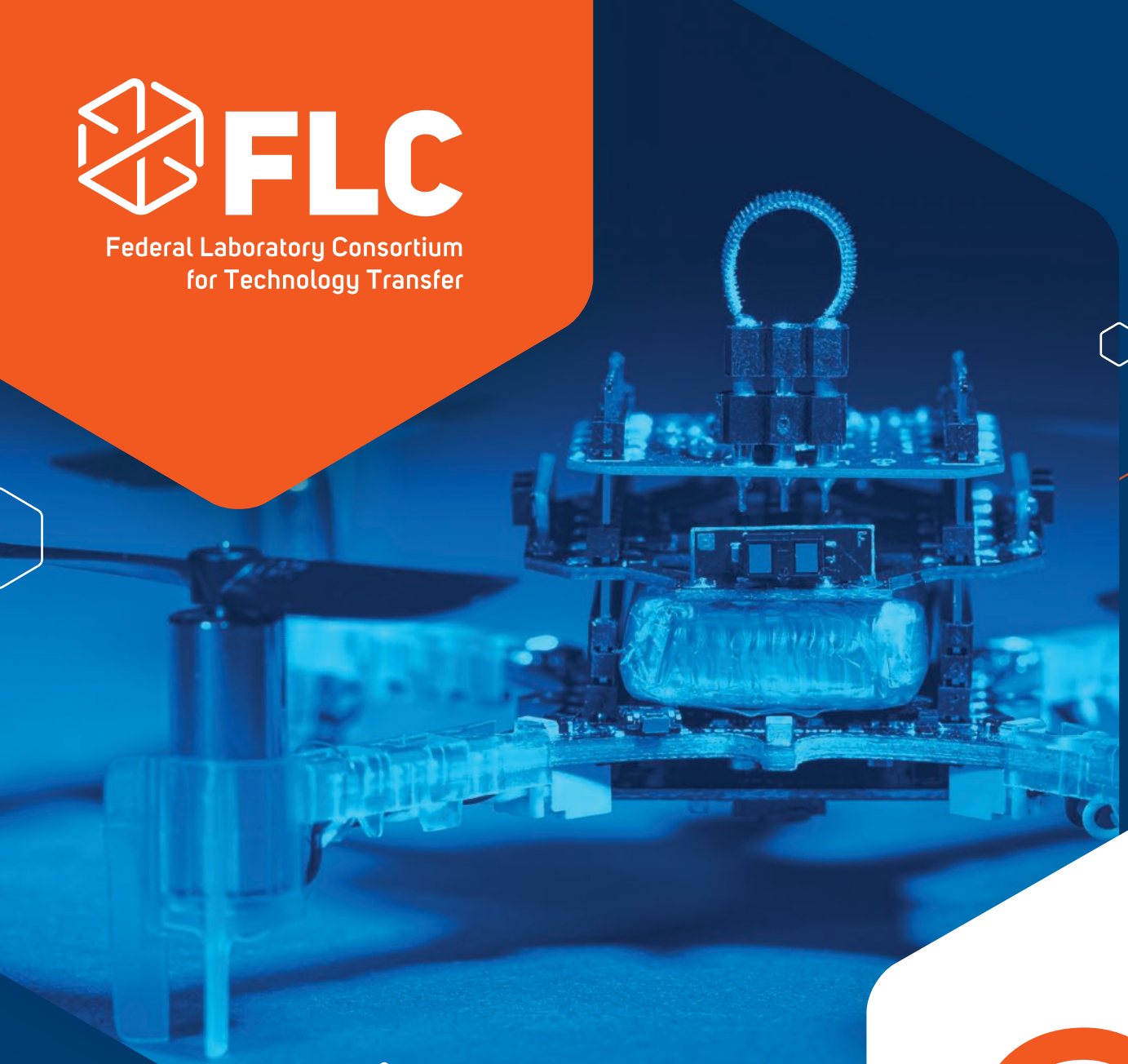
FLC

Federal Laboratory Consortium
for Technology Transfer

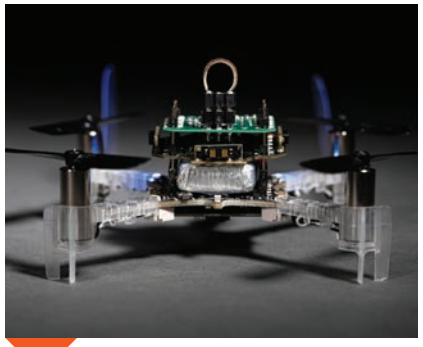


2022

FEDERAL R&D IN PICTURES

2022 PLANNER AT A GLANCE

DECEMBER 2021



JANUARY 2022

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

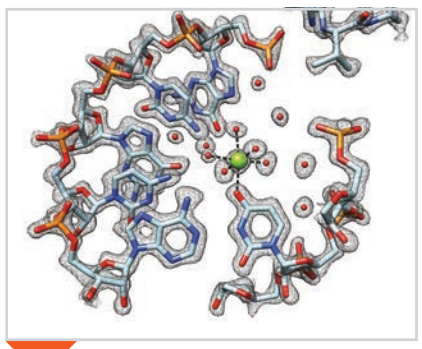
AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

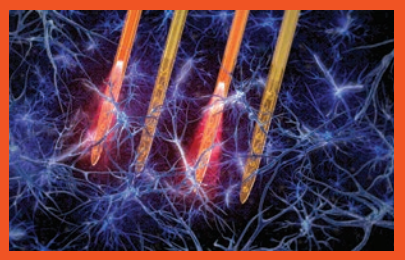
DECEMBER

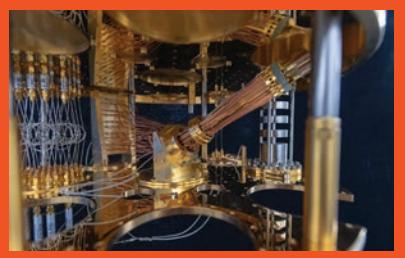


JANUARY 2023

LAB TECH EXTRAS

There were too many great Planner submissions this year to fit into just 14 months, so please check out the "Extras" section following January 2023 for bonus photos of six additional amazing FLC technologies.





....and more!

THANK YOU to all of the federal laboratories that submitted photos of their innovative technologies!

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 new, innovative technologies and create social and economic impacts. The FLC creates and provides resources such as education and training, tools and services, so that 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 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.

@federallabs

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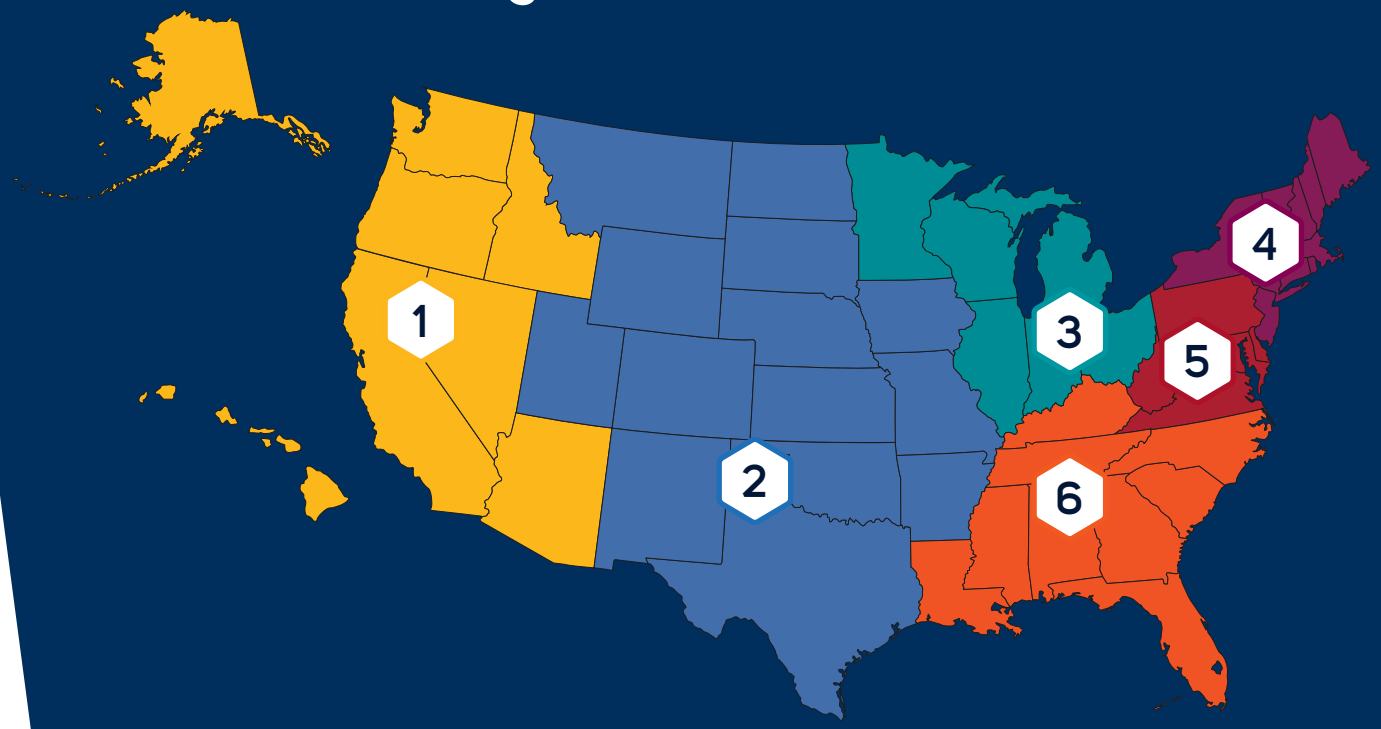
FLC Regions



1 Far West
Regional Coordinator:
David Nicholson,
USDA Agricultural Research Service,
Pacific West Area

2 Mid-Continent
Regional Coordinator:
David Kistin
Sandia National Laboratories

3 Midwest
Regional Coordinator:
Sabra Tomb,
Air Force Research Laboratory

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

5 Mid-Atlantic
Regional Coordinator:
Vladimir Popov, Frederick National Laboratory for Cancer Research

6 Southeast
Regional Coordinator:
Paige George,
Naval Surface Warfare Center,
Panama City Division

Photo credit: ©Rebecca Jacobson/NIST

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

New Uses for Optical Frequency Combs

The National Institute of Standards and Technology (NIST) and its joint laboratory JILA were integral in developing optical frequency combs, which precisely measure frequencies of light. Initially developed to advance atomic clocks, optical frequency combs can also detect and identify molecules in the air. NIST and JILA Fellow Jun Ye (left) and graduate student Qizhong Liang (right) stand over a table-top setup that uses an optical frequency comb to detect disease in breath, including COVID-19. A breath sample is collected offsite, connected to the system in a cabinet below the table, and analyzed with the optical frequency comb technology.

DECEMBER 2021

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SUN	MON	TUE	WED	THU	FRI	SAT
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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19 Anniversary of Bayh-Dole Act	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 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.

www.nist.gov

NOVEMBER 2021

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JANUARY 2022

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QUICK REFERENCE

NOTES

Photo credit: ©Mark Stone/ University of Washington

Smellicopter: Autonomous Bio-hybrid Odor Sensing Drone

This autonomous bio-hybrid drone uses a moth's antenna as a sensor to navigate a small palm sized drone upstream to find the source of an airborne plume. This drone is the first flying bio-hybrid system to successfully perform odor localization in a confined space while autonomously navigating and successfully detecting and avoiding obstacles. This technology can be used to help drones find the source of an airborne chemical in areas that require faster, more sensitive odor processing or in situations that are too dangerous for humans, such as gas leaks or disaster areas.

MUNITIONS DIRECTORATE

JANUARY 2022

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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 Martin Luther King, Jr. Day	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Air Force Research Laboratory, Munitions Directorate

The primary role of the Air Force Research Laboratory Munitions Directorate is to develop, integrate and transition science and technology breakthroughs into air-launched munitions for defeating ground, air, and space targets to assure the superiority of U.S. Air and Space Forces. The directorate's emphasis is on weapons capability to operate with complete autonomy and high accuracy in all environmental conditions, enabling the user to make a dramatic impact on targets.

www.afrl.af.mil

NOTES

DECEMBER 2021

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FEBRUARY 2022

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27	28					

QUICK REFERENCE

Photo credit: ©Joe Harrison, JH Photography Inc.

VA | U.S. Department of Veterans Affairs

Sensorized Prosthetic Hands to Promote Embodiment

Deployed to foreign conflicts, Americans in the military face deadly threats and catastrophic injuries that can amputate a limb in an instant. U.S. Department of Veterans Affairs (VA) offers world-class healthcare, including prosthetic devices that allow veterans to regain what was lost. But some veterans forgo prosthetics because they don't provide sensory feedback.

Jacob Segil, PhD, Research Healthcare Scientist for the VA's Rehabilitation R&D Service, has advanced the state of the art, developing new fingertip sensor technology that allows amputees to regain the sense of touch. Veterans can regain lost function and restore their sense of wholeness after a traumatic loss.

FEBRUARY

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SUN	MON	TUE	WED	THU	FRI	SAT
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20	21 Valentine's Day	22	23	24	25	26
27	28 President's Day					

Department of Veterans Affairs Artificial Limb Laboratory at the Rocky Mountain Regional VA Medical Center

The U.S. Department of Veterans Affairs (VA) Artificial Limb Laboratory at the Rocky Mountain Regional VA Medical Center focuses on developing prosthetic limb componentry, control algorithms, and neural interfaces. Dr. Segil's current work is studying the embodiment of prosthetic hands using sensory restoration techniques in close collaboration with Dr. Dustin Tyler's Functional Neural Interface laboratory at the Cleveland VA Medical Center.

www.denver.va.gov

NOTES

JANUARY

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MARCH

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QUICK REFERENCE

Photo credit: ©Dennis Schroeder/NREL

Enzymatic Degradation of Thermoplastics

Polyethylene terephthalate (PET) is a common plastic in single-use beverage bottles, clothing, and food packaging that is becoming increasingly relevant in addressing the environmental challenge of plastic pollution. A team from the BOTTLE (Bio-Optimized Technologies to keep Thermoplastics out of Landfills and the Environment) Consortium, including researchers from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) and the University of Portsmouth, is using enzymes as a sustainable method for recycling PET. An analysis shows enzyme-recycled PET is a potential improvement over conventional, fossil-based methods of PET production across a broad spectrum of energy, carbon, and socioeconomic impacts.

NREL

MARCH

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National Renewable Energy Laboratory

The National Renewable Energy Laboratory (NREL) focuses on creative answers to today's energy challenges. From breakthroughs in fundamental science to new clean technologies to integrated energy systems that power our lives, NREL researchers are transforming the way the nation and the world use energy.

www.nrel.gov

SUN	MON	TUE	WED	THU	FRI	SAT
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20 Daylight Saving Time starts	21	22	23	24 St. Patrick's Day	25	26
27	28	29	30	31		

NOTES

FEBRUARY

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APRIL

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QUICK REFERENCE

Ship/Tow Simulator

The Engineer Research and Development Center (ERDC) Coastal & Hydraulics Laboratory (CHL) has developed a Ship/Tow Simulator that delivers unparalleled modeling and analysis of ship movements and responses. In the immersive environment of the simulator, pilots experience virtually any challenge, including currents, high wind, waves, and more. Instrumental in many successful military missions, the Ship/Tow Simulator can be used with essentially any waterway or vessel and includes a model for every U.S. harbor. The simulator has provided economical engineering solutions for enormous civil and commercial projects, such as the Port of Long Beach redesign, the Brownsville Ship Channel width reduction, the New Orleans surge barrier protection system, Charleston Harbor, and Jacksonville Harbor.

ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

ERDC CHL COASTAL & HYDRAULICS LABORATORY

Photo credit: ©ERDC; Richard (Oscar) M. Reihsmann, CIO/G-6

APRIL

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SUN	MON	TUE	WED	THU	FRI	SAT
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		FLC 2022 National Meeting				
10	11	12	13	14	15	16
					Start of Passover	
17	18	19	20	21	22	23
Easter Sunday					Earth Day	
24	25	26	27	28	29	30
		World IP Day				

USACE ERDC Coastal & Hydraulics Laboratory

The U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) Coastal & Hydraulics Laboratory (CHL) delivers solutions to the nation's most challenging water-resources problems. CHL scientists, researchers, and engineers perform analyses of ocean, estuarine, riverine, and watershed regional scale systems. With more than 1.5 million square feet of specialized physical research facilities, CHL has established expertise on issues including channel design, disaster response, beach nourishment, and fish movements.

www.erdc.usace.army.mil

NOTES

MARCH

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MAY

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QUICK REFERENCE

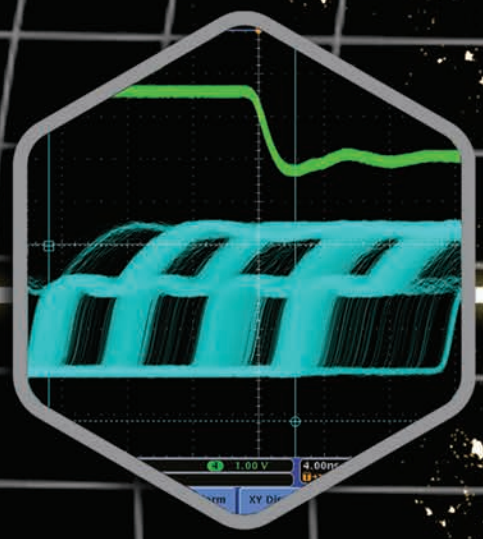
QED: Quantum Ensured Defense of the Smart Electric Grid

Quantum-Ensured Defense of the Smart Electric Grid (QED) provides a novel approach to electric grid security. Current security systems rely on mathematical complexity, which may make them more vulnerable as computing advances. QED applies the unusual behavior of the quantum realm to address this threat to communication security. Single light particles (photons) create cryptographic “keys” that “lock” control signals into secret codes to protect from third-party infiltration. Using QED, Los Alamos and Oak Ridge National Laboratories demonstrated scalable, plug-and-play, systems-level cybersecurity on industry partner epb’s commercial, metro-scale electricity distribution network. QED can be installed as a retrofit to grid communications and other critical infrastructure.

Los Alamos NATIONAL LABORATORY

OAK RIDGE National Laboratory

Photo credit: ©Brenda Fleming, David Woodfin, Ray Newell, and Allen Hopkins/LANL



MAY

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SUN	MON	TUE	WED	THU	FRI	SAT
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15	16	17	18	19	20	21
22	23	24	25	26	27	28 Armed Forces Day
29	30 Memorial Day	31				

Los Alamos National Laboratory

Los Alamos National Laboratory, a multidisciplinary research institution engaged in strategic science on behalf of national security, is managed by Triad, a public service oriented, national security science organization. Los Alamos enhances national security by ensuring the safety and reliability of the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction, and solving problems related to energy, environment, infrastructure, health, and global security concerns.

www.lanl.gov

NOTES

APRIL

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JUNE

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QUICK REFERENCE

Photo credit: ©Dr. Max Sirkin, U.S. Army surgeon and SHRAIL co-inventor

The Sirkin-Hiles Rail System (SHRAIL)

Austere, combat, or mobile surgery is a common problem worldwide. Compact enough to fit in a backpack, the Sirkin-Hiles Rail System (SHRAIL) is a portable operating table for austere surgeons. This universal rail system allows a NATO litter (stretcher) to easily turn into an effective operating table or intensive care unit bed, changing how response teams deal with war, humanitarian disasters, and impoverished settings. Currently in use by Samaritan's Purse and the U.S. Army, the SHRAIL is increasing surgical capabilities on the mobile surgery stage with less cost, less weight, easier setup, and the ability to attach all standard medical equipment.

U.S. Army Medical Materiel Development Activity
USAMMDA

JUNE

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SUN	MON	TUE	WED	THU	FRI	SAT
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	Juneteenth					
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U.S. Army Medical Materiel Development Activity

Established in 1984, USAMMDA serves the joint warfighter by ushering medical products from concept through advanced development. USAMMDA has a long history of developing medical products, many of which have been fielded by the Pharmaceutical and Applied Medical Products Divisions. The Medical Technology Transfer Office coordinates all intellectual property licensing on behalf of all U.S. Army Medical Research & Development Command's subordinate laboratories from the federal sector to nonfederal parties.

www.usammda.army.mil

NOTES

MAY

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JULY

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QUICK REFERENCE

Photo credit: ©Carlos Jones, ORNL/U.S. Department of Energy

Polyphase Magnetic Coil for Wireless Technology

ORNL's unique polyphase magnetic coil provides the highest surface energy density of any similar technology on the planet, enabling fast, efficient wireless electric vehicle charging and even charge-as-you-go systems. The polyphase magnetic coil, developed at ORNL and licensed to HEVO through the Department of Energy's Technology Commercialization Fund program, accelerates the goal of extreme-fast wireless charging of electric vehicles in the time it takes for today's gas station fill-up.

OAK RIDGE National Laboratory

JULY

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Oak Ridge National Laboratory

Oak Ridge National Laboratory is an American multiprogram science and technology national laboratory sponsored by the U.S. Department of Energy (DOE) and administered, managed, and operated by UT–Battelle as a federally funded research and development center under a contract with the DOE.

www.ornl.gov

SUN	MON	TUE	WED	THU	FRI	SAT
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3	4	5	6	7	8	9
10	11 Independence Day	12	13	14	15	16
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NOTES

JUNE

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AUGUST

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QUICK REFERENCE

Photo credit: ©IZone Crew at CAMI

Research Tool for Assessing Cabin Safety

The Cabin Safety Research Team of the Aerospace Medical Research Division monitors passengers' ability to exit a plane and survive in a variety of emergency situations. A life-size Flexible Aircraft Cabin Simulator (FlexSim) is used to assess impacts of tilt, smoke, and other factors in the event of a crash. The size of the FlexSim can be varied, including the number of passenger rows, to mimic different aircraft capacities. Recent efforts include assessing how spacing between seats affects evacuation speed. When not in use for research, the FlexSim serves as a simulator for cabin safety workshops and other events.

AUGUST

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SUN	MON	TUE	WED	THU	FRI	SAT
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FAA Civil Aerospace Medical Institute Protection and Survival Laboratory

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 (FAA) 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

NOTES

JULY

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SEPTEMBER

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QUICK REFERENCE

ARL MEMS Lidar Technology

The Army Research Laboratory (ARL) has licensed patents for its MEMS (microelectromechanical systems) Lidar Receiver technology to 4D Tech Solutions, which integrated the technology onto small unmanned aerial vehicles (UAVs) for use by commercial and government customers. 4D, also known as Redtail Lidar Systems (www.redtaillidar.com), has worked to incorporate the ARL MEMS Lidar technology onto a small UAV. The device's resolution at an altitude of 400 feet is comparable to higher end systems, but at half the cost. The company is also planning to incorporate a second ARL patent, for its Bugeye Lens technology, that will allow 4D to increase the device's field of view, making the device more desirable and competitive for both commercial and military sectors.

DEVCOM
ARMY RESEARCH LABORATORY

Photo credit: ©4D Tech Solutions

SEPTEMBER

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SUN	MON	TUE	WED	THU	FRI	SAT
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4	5	6	7	8	9	10
	Labor Day					
11	12	13	14	15	16	17
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DEVCOM Army Research Laboratory

The U.S. Army Combat Capabilities Development Command (DEVCOM) Army Research Laboratory (ARL) is the Army's national research laboratory strategically placed in the Army Futures Command. ARL is focused on cutting-edge disruptive foundational research, shaping and informing the future operating environment, and being the primary link to the world-wide scientific community. The mission of DEVCOM ARL is "to operationalize science for transformational overmatch."

www.arl.army.mil

AUGUST

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OCTOBER

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QUICK REFERENCE

NOTES

Small Reactor for Medical Isotopes

Shortages of molybdenum-99 (Mo-99), a radioactive isotope needed for diagnostic imaging in nuclear medicine, are causing increasing concern. Eden Radioisotopes secured funding recently to build a small reactor that will exclusively produce medical isotopes. The low-power, all-target Mo-99 concept was developed and licensed by Sandia National Laboratories to help establish a stable domestic supply of medical isotopes that are made with low-enriched uranium (LEU). This small, efficient reactor is the only one designed specifically to make Mo-99 and other medical isotopes. Its use of LEU and unique core design improve capacity and limit the operating cost.

Sandia National Laboratories

NNSA
National Nuclear Security Administration

Photo credit: ©Randy Montoya

OCTOBER

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for Technology Transfer

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SUN	MON	TUE	WED	THU	FRI	SAT
						1 Start of Federal Fiscal Year
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20 Anniversary of Federal Technology Transfer Act	21 Anniversary of Stevenson-Wydler Act	22
23	24	25	26	27	28	29
30	31 Halloween					

Sandia National Laboratories

Sandia National Laboratories is a multi-mission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC (NTESS), a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration. Sandia's major research and development responsibilities include nuclear deterrence, national security, defense nuclear nonproliferation, energy technologies, and advanced science and technology, with main facilities in Albuquerque, New Mexico, and Livermore, California.

www.sandia.gov

NOTES

SEPTEMBER

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NOVEMBER

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QUICK REFERENCE

Photo credit: ©Hoda Azari/FHWA

Air-coupled Acoustic Inspection of Highway Structures

Reliable and fast assessment tools can play a key role in addressing concerns about the condition of U.S. infrastructure. Among the emerging scanning techniques, this air-coupled acoustic inspection system for highway structures uses a noncontact transducer (speaker) to generate soundwaves. The system receives a response from the structure through arrays of microelectromechanical systems microphones. By eliminating the need for direct contact with the surface, the system generates reliable and repeatable results in a fraction of a second.

U.S. Department of Transportation
Federal Highway Administration

NOVEMBER

FLC
Federal Laboratory Consortium for Technology Transfer

@federallabs

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6 Daylight Saving Time ends	7	8 Election Day	9	10	11 Veterans Day	12
13	14	15	16	17	18	19
20	21	22	23	24 Thanksgiving	25	26
27	28	29	30			

Federal Highway Administration, Turner-Fairbank Highway Research Center

The Federal Highway Administration's Turner-Fairbank Highway Research Center is a federally owned and operated national research facility located in McLean, Virginia. The research center houses 15 laboratories, as well as support facilities and data sets. It conducts applied and exploratory advanced research in safety, pavements, highway structures and bridges, human-centered systems, operations and intelligent transportation systems, and materials.

www.highways.dot.gov

NOTES

OCTOBER

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DECEMBER

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QUICK REFERENCE

Photo credit: ©Matt Gaydos/NETL

NATIONAL ENERGY TECHNOLOGY LABORATORY

NETL's Glowing Innovation for Health Care

The National Energy Technology Laboratory (NETL) has developed technologies that convert charred coal feedstocks (fine waste materials that can be used for energy) into graphene quantum dots that glow when exposed to light. The various colors are caused by the different types of coal feedstocks and processing methods used in production. NETL is working with industry partners to use these glowing materials to detect viruses, cells and biological tissue and monitor disease. This innovation is one of several undertaken by NETL to expand the use of carbon ore resources beyond combustion as an energy fuel.

DECEMBER

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SUN	MON	TUE	WED	THU	FRI	SAT
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11	12	13	14	15	16	17
18 Start of Hanukkah	19 Anniversary of Bayh-Dole Act	20	21	22	23	24
25 Christmas	26 Kwanzaa	27	28	29	30	31 New Year's Eve

National Energy Technology Laboratory

National Energy Technology Laboratory (NETL) is a U.S. Department of Energy national laboratory that drives innovation and delivers technological solutions for an environmentally sustainable and prosperous energy future. By leveraging its world-class talent and research facilities, NETL is ensuring affordable, abundant and reliable energy that drives a robust economy and national security, while developing technologies to manage carbon across the full life cycle, enabling environmental sustainability for all Americans.

www.netl.gov

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NOVEMBER 2022

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JANUARY 2023

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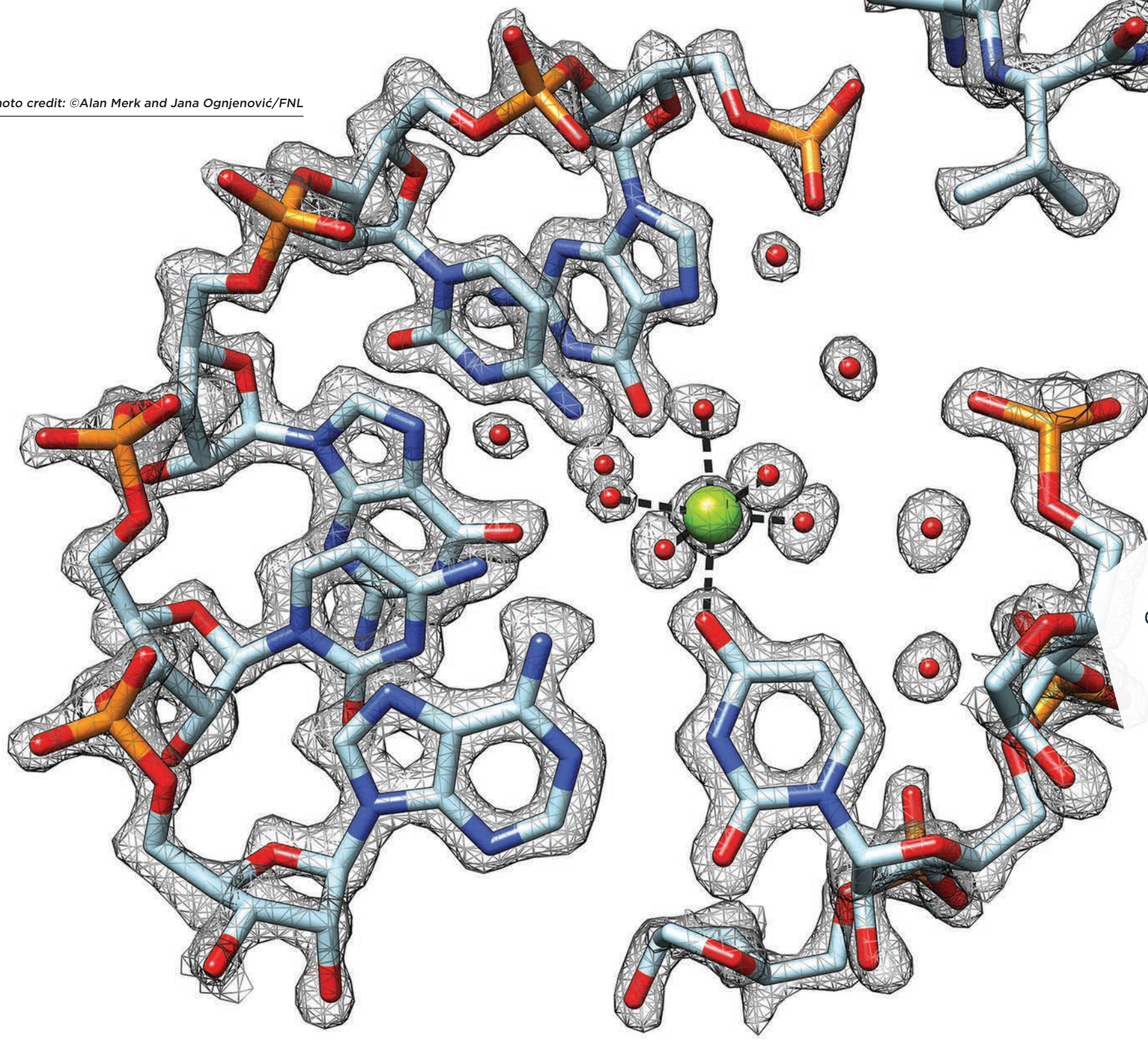

Photo credit: ©Alan Merk and Jana Ognjenović/FNL

Frederick National Laboratory

Cryogenic Electron Microscopy

Cryogenic electron microscopy (cryo-EM) has rapidly emerged as a powerful tool to determine high resolution structures of biological molecules. However, the cost of the instrumentation is prohibitively expensive for many institutions, precluding more widespread adoption of the technique. At the Frederick National Laboratory, researchers develop methods for lower-voltage electron microscopes, which are significantly less expensive than the microscopes typically used for high-end data collection. The new data collection procedures have enabled these cheaper microscopes to produce high-resolution structures that show an unprecedented level of detail, including water molecules, metal ions, and bound drugs.

JANUARY 2023

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SUN	MON	TUE	WED	THU	FRI	SAT
1 New Year's Day	2	3	4	5	6	7
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15	16 Martin Luther King, Jr. Day	17	18	19	20	21
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Frederick National Laboratory for Cancer Research

The Frederick National Laboratory for Cancer Research works at the forefront of basic, translational, and clinical science with a focus on cancer, AIDS, and infectious disease. Its biomedical research supports the National Cancer Institute, the National Institute of Allergy and Infectious Diseases and other institutes and centers in the National Institutes of Health.

www.ncifrederick.cancer.gov

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DECEMBER 2022

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FEBRUARY 2023

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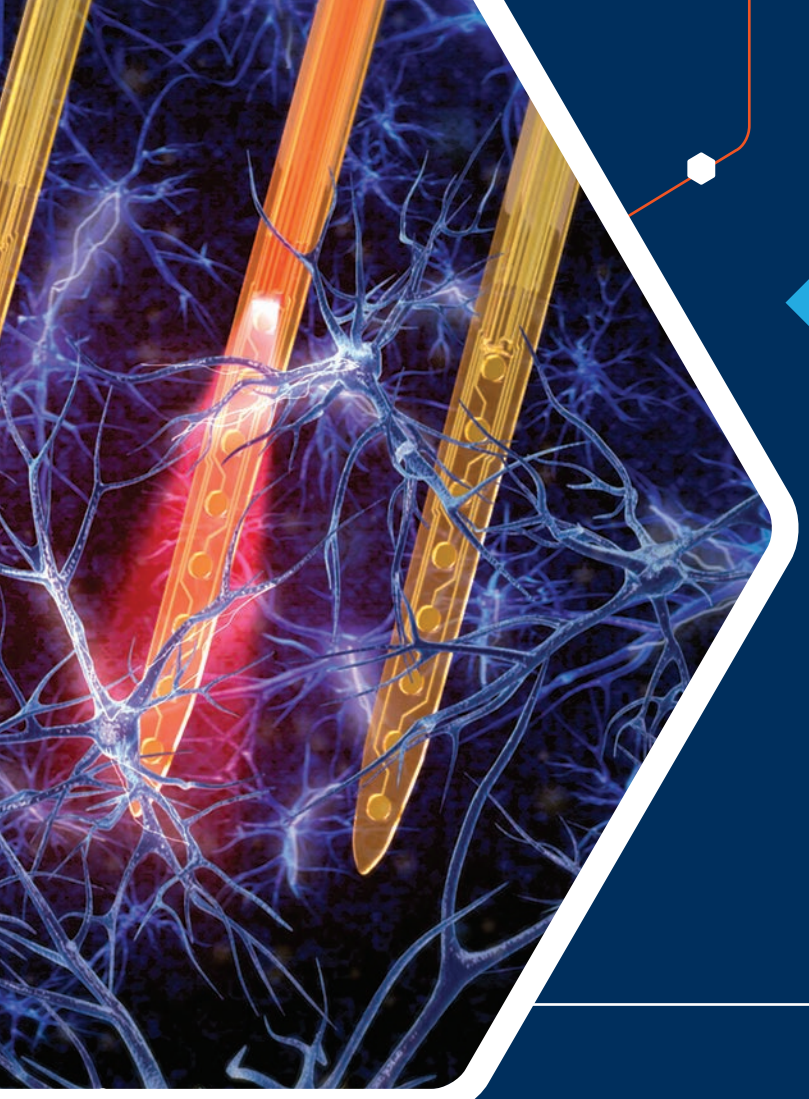


LAB TECH EXTRAS

POEMS (Polymeric Opto-Electro-Mechanical Systems)

Lawrence Livermore National Laboratory

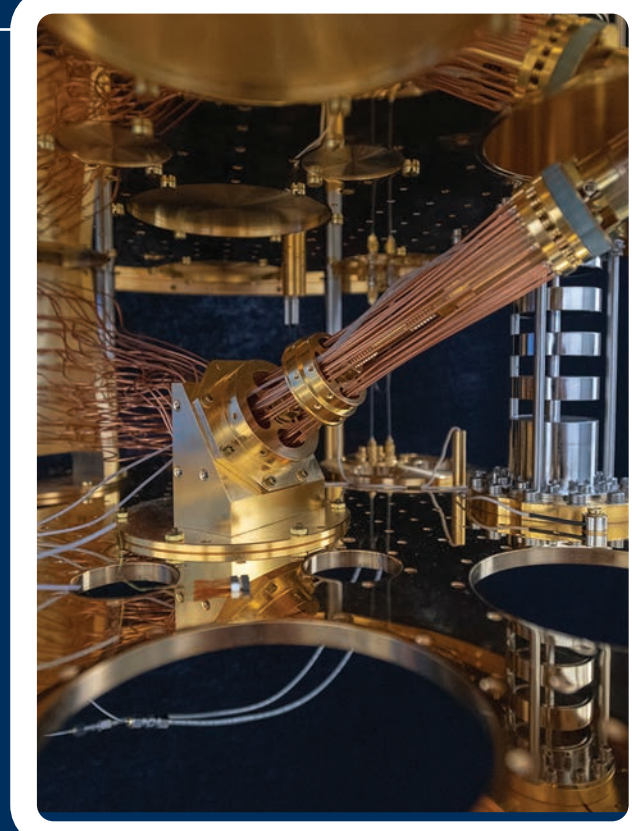
Combining hybrid polymer materials with microfabrication and 3D printing, Lawrence Livermore National Laboratory (LLNL) has developed an ultra-compact, lightweight and minimally invasive optoelectronic neural implant that could be used for long-term studies of brain activity. Building on a new platform known as POEMS (Polymeric Opto-Electro-Mechanical Systems), researchers have integrated optical capabilities into their patented flexible thin-film neural implants. The technology can deliver light for neural activation and could be used for high resolution and minimally invasive diagnoses of brain disorders, in human-machine interfaces or wearable technologies.

www.llnl.gov

Logically, the Future is More Efficient

High-performance computers can become more energy efficient thanks to the National Security Agency's (NSA's) circuit technology. Current semiconductors and superconducting logic use irreversible logic operations. With the Design of Reversible Computation for Energy Efficient Logic, logic operations can be inverted, ultimately reducing the electrical power required for computing. In turn, this technology generates less heat, relieving the temperature limitations that challenge computer chip manufacturers. NSA physicists use advanced refrigerators that operate at a temperature close to absolute zero (-460°F). Testing at ultra-low temperatures is helpful for superconducting devices; temperatures for testing are below that of the intended final product's temperature. This technology is a pioneering advancement for high-performance computing.

www.NSA.gov/techtransfer



Underwater Acoustic Deterrent System

USGS science for a changing world

Researchers at the U.S. Geological Survey Upper Midwest Environmental Sciences Center (UMESC), the Army Engineer Research and Development Center, and partners worked at the Mississippi River Lock and Dam 19 using an experimental underwater Acoustic Deterrent System or uADS. Researchers are using this state-of-the-art technology to study how invasive carp respond to acoustic or sound signals. After preparing a speaker array on land, researchers transport the rig to the river and secure it to the bottom of the lock approach. Understanding how sound affects carp can help further develop methods to mitigate the environmental threat of this invasive species.

www.usgs.gov/centers/umesc

Molecular Adsorber Coating

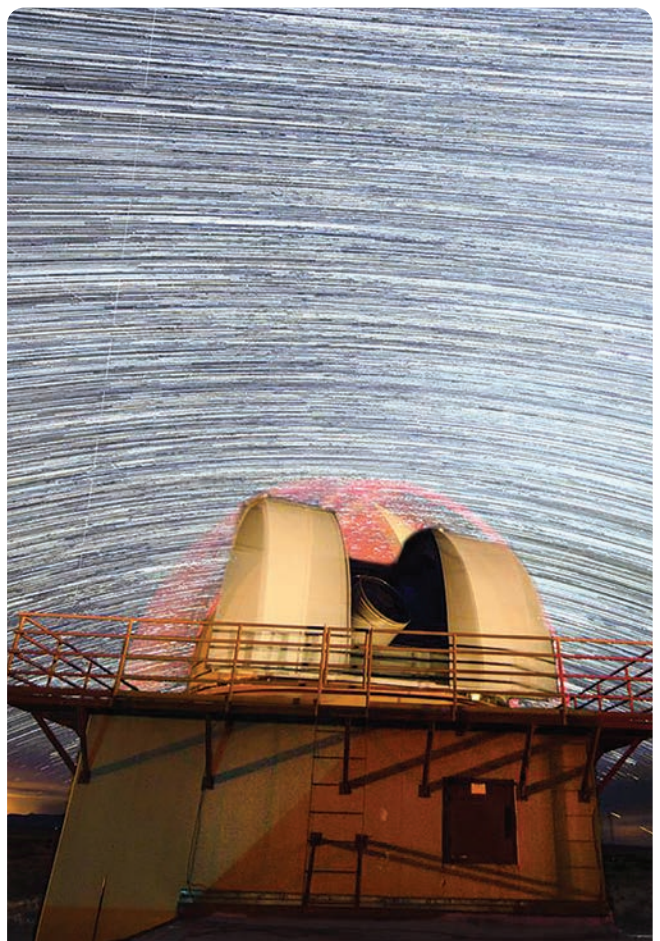
Contamination from organic molecules can harm delicate instruments. Engineers are taking special care at the National Aeronautics and Space Administration (NASA) to prevent gaseous molecular contaminants from affecting the James Webb Space Telescope (and all satellites and instruments). Recently, Nithin Abraham, a Thermal Coatings Engineer at NASA Goddard Space Flight Center, placed Molecular Adsorber Coating (MAC) panels in the giant chamber where the Webb telescope will be tested. MAC can be used to keep gasses from coming in or to capture gasses released directly from hardware, components, and within instrument cavities. MAC also was the 2021 runner up for NASA's Invention of the Year Award.

www.nasa.gov/goddard

Weaving Antiviral Substances into Masks

In partnership with Orbis® BiOAID™, Argonne National Laboratory is developing reusable N95 facemask filters that can be disinfected using common methods such as autoclaving and bleach spraying. Argonne's filter materials also have an antiviral function that is capable of deactivating the SARS-CoV-2 surrogate virus within 15 minutes. Using the roll-to-roll electrospinning platform and atomic layer deposition system at Argonne's Materials Engineering Research Facility, researchers can integrate antiviral compounds developed at Argonne into the mask filters. The reusable N95 respirator has the potential to improve U.S. security and prosperity by reducing bio-waste and N95 respirator costs in the public medical sector.

www.anl.gov



Space Surveillance Telescope

MIT Lincoln Laboratory developed the Space Surveillance Telescope (SST), under Defense Advanced Research Projects Agency (DARPA) sponsorship, to address the threat of microsatellites and debris to the safety of satellites in deep-space orbits. Finding these threats requires a sensor that performs high-rate, wide-area searches and has high sensitivity to detect objects 26,000+ miles from Earth.

Stargazers are drawn to Western Australia because the pristine night sky allows telescopes to see far into the universe. On March 2020, at the Naval Station in Australia, SST achieved "first light," meaning the telescope's optics were successfully aligned with its wide-field-of-view camera to allow the capture of images of objects in orbit.

www.ll.mit.edu

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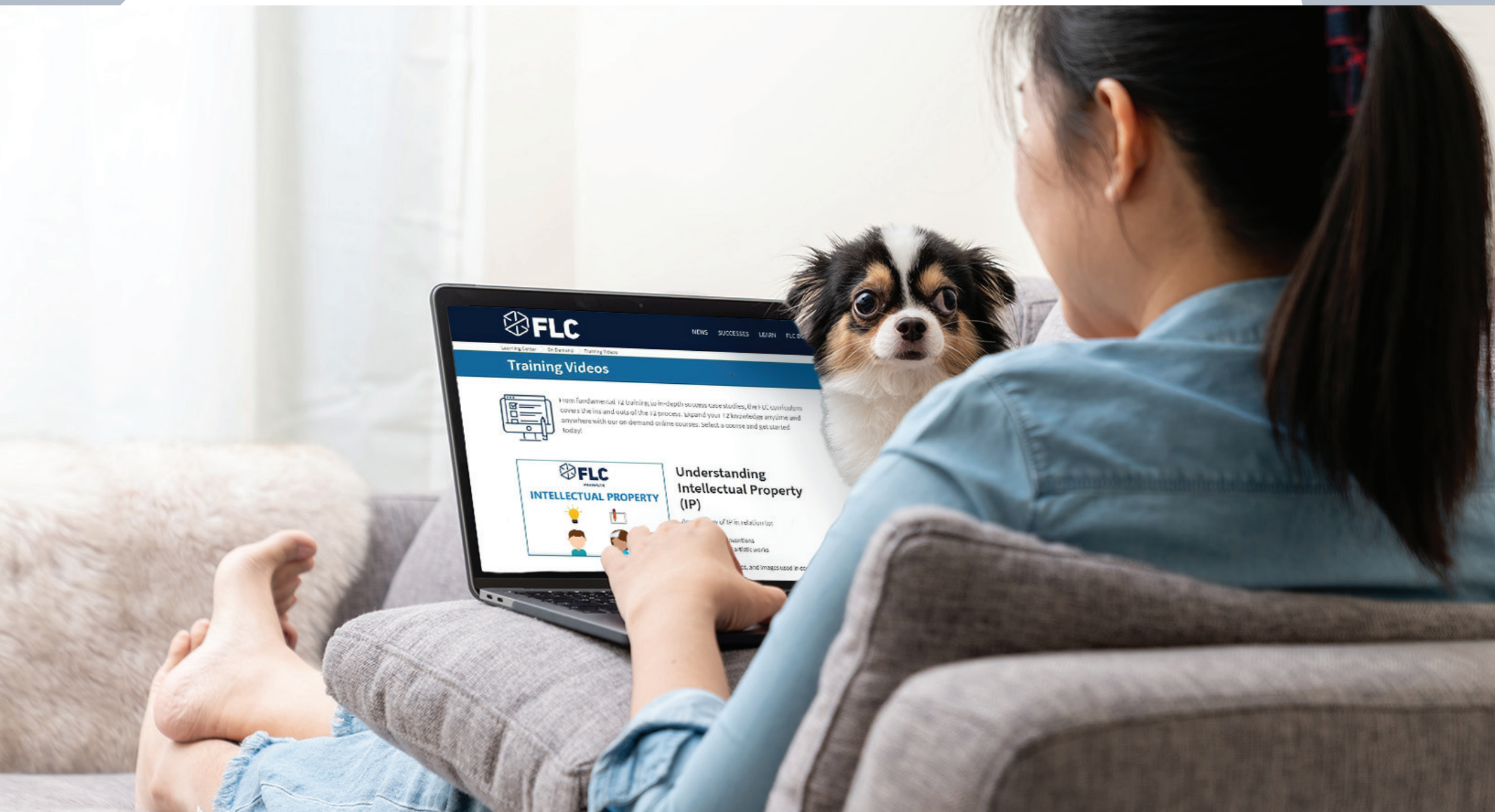

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