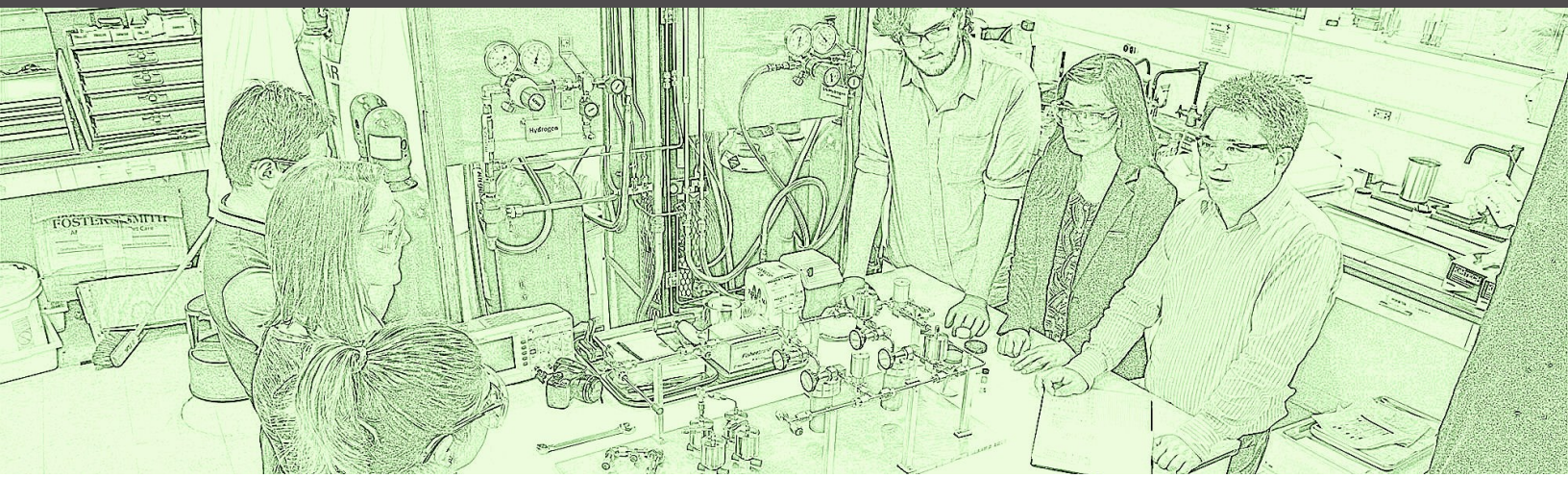
Defense Systems
NEWS DIGEST

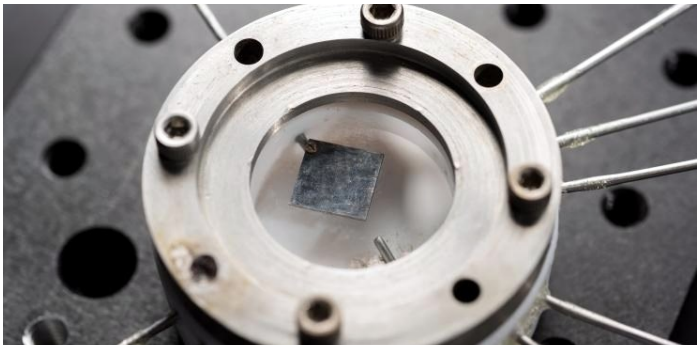
25 OCTOBER 2016 - THE LATEST IN DEFENSE SYSTEM NEWS



Argonne's Chain Reaction Innovations

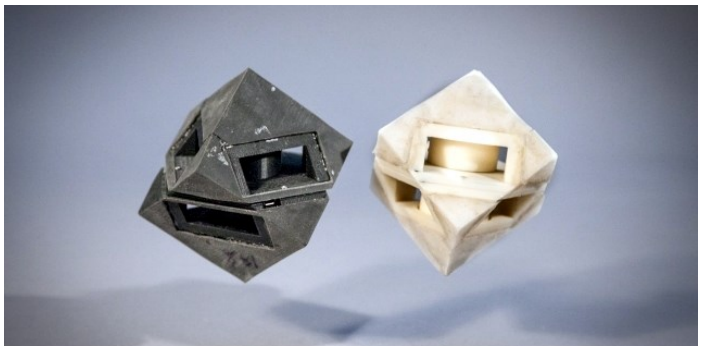
The Defining Challenge of Our Generation is Sustainable Energy and Manufacturing. Our mission is to identify innovators with ideas for energy- and science-based technologies that can have a significant impact on the lives of billions of people. We will provide these innovators with...

Advanced Materials



Nano-Mechanical Study Good News for Silicon Use in Next-Gen Batteries

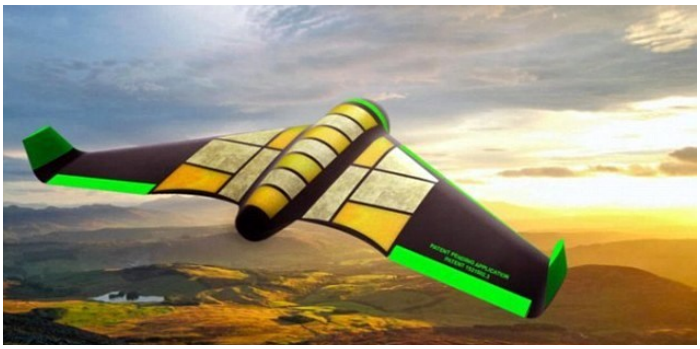
A detailed nano-mechanical study of mechanical degradation processes in silicon structures containing varying levels of lithium ions offers good news for researchers attempting to develop reliable next-generation rechargeable batteries using silicon-based electrodes. Anodes – the negative electrodes – based on silicon can theoretically store up to ten times more lithium ions than...



3D-Printed Robots with Shock Absorbing Skin

By "programming" customized soft materials, Computer Science and Artificial Intelligence Laboratory (CSAIL) team can 3-D print safer, nimbler, more durable robots. Anyone who's watched drone videos or an episode of "BattleBots" knows that robots can break — and often it's because they don't have the proper padding to protect themselves. This week researchers at MIT's CSAIL...

Autonomous Systems

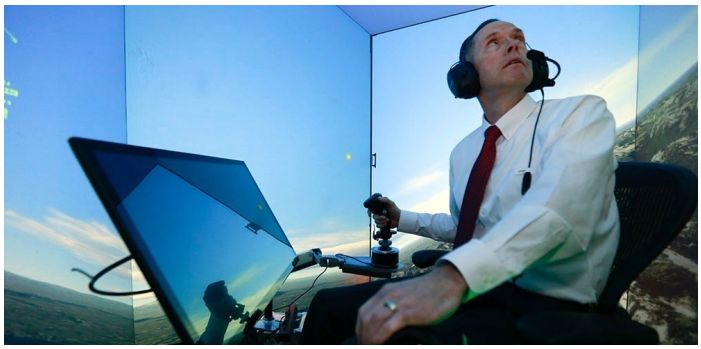


The Drone You Can Eat

Edible craft to have wings stuffed with food and medical supplies for humanitarian missions.

Using airdrops to deliver relief to disaster zones may sound like a simple solution, but these missions have proved to be inaccurate, wasteful and expensive.

With that in mind, ex-British Army veteran Nigel Gifford is developing a drone with edible wings that is capable of carrying 100-pounds of vacuum-packed food and medical supplies...



Genetic Fuzzy Tree AI Beats Tactical Experts in Combat Simulations

UC ALPHA artificially intelligent program wins out during simulated aerial combat against U.S. expert tacticians. It did so using no more than the processing power available in a tiny, affordable computer; the Raspberry Pi.

Artificial intelligence (AI) developed by a University of Cincinnati doctoral graduate was recently assessed by subject-matter expert and retired United States Air Force Colonel Gene Lee — who holds extensive aerial...

Directed Energy

Army to Begin Testing to Support 100KW Solid State Laser Deployment by 2021

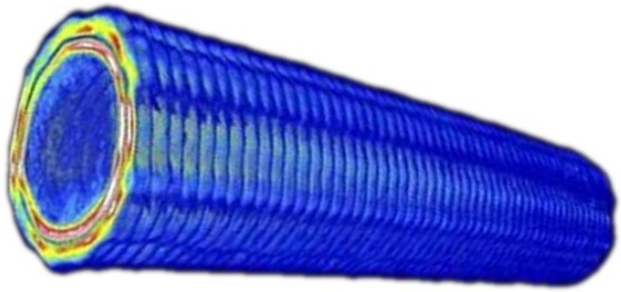
The US Army is spending from $17 million to $30 million per year from 2017 to 2021 on High Energy Laser (HEL) weapons technology.

The major effort under this project is the phased approach for mobile high power solid state laser (SSL) technology demonstrations that are traceable to the form, fit, and function requirements for a HEL weapon. At entry level weapon power of around 10 kW, SSL technology...

ONR to Develop 150KW Solid State Laser Prototypes for Shipboard Testing

Directed energy weapons (DEWs) emit energy in the desired direction and cause damage to the target by transferring energy and generating uneven heat stresses. The DEWs comprise two distinct types of weapons namely, the high-energy lasers (HELs), and the high power microwaves (HPMs). The US Air Force has been funding research and technical programs into development of High Power Microwave Weapons since the 1980's. The...

Energetics



New 3D Design Improves Energy Density in Mobile Microbatteries

In the race towards miniaturization; a French-US team-mostly involving researchers from the CNRS, Université de Lille, Université de Nantes and Argonne National Laboratory (US) as part of the Research Network on Electrochemical Energy Storage (RS2E); has succeeded in improving the energy density of a rechargeable battery without increasing its size (limited to a few square millimeters in mobile sensors). This feat was achieved by...

Argonne Releases GREET 2016 Fuel- and Vehicle-Cycle Models

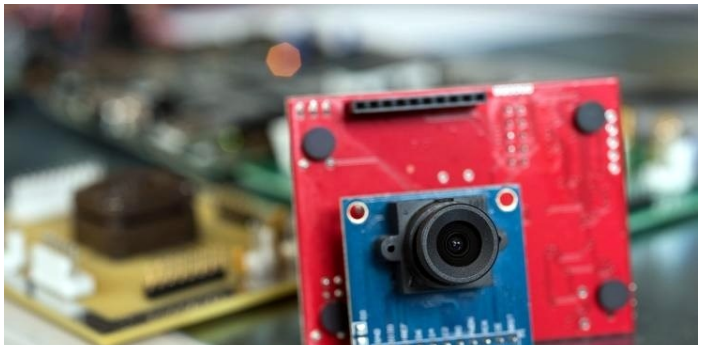
The Argonne National Laboratory's Systems Assessment Group announced 2016 release of the suite of GREET (Greenhouse gases, Regulated Emissions, and Energy use in Transportation Model) models and associated documentation. GREET is a full life-cycle model that allows researchers and analysts to evaluate various vehicle and fuel combinations on a full fuel-cycle/vehicle-cycle basis. GREET 2016 provides the user with easy...

Military Sensing

SOCOM Mobile App Gives Commanders Front Row Battlefield View

The concept sounds relatively simple: A team of special operations troops sees an area of interest, and aims their smartphones. Then software magically produces instant GPS coordinates of where the operators are looking, giving commanders the option to strike the target or watch a live-stream of events from their command center.

It's the type of technology that the U.S. Special Operations Command believes can help lift the fog of war…



Georgia Tech Develops Low-Power Always-On Camera with Gesture Recognition

Smart devices that wake up with voice commands have gained popularity in recent years, and now researchers at Georgia Institute of Technology have taken it one step farther: an always-on camera.

Designed with a combination of low-power hardware and energy efficient image processing software, the always-on camera is capable of watching for specific types of movement without draining batteries or running up...

Non-Lethal Weapons

NATO Non-Lethal Tech Exercise Assesses Technologies to Preserve Lives

New complex situations with fighters operating among civilians are challenging conventional warfare and require new responsive technologies. NATO sponsored a Non-Lethal Technology Exercise organized by Belgium from 19 to 30 September 2016 to practice the use and assess the military utility of non-lethal weapons in land operations.

Non-lethal weapons (NLW) are weapons, such as...

AI and Machine Learning Enable Tactical Cognitive EW for the Soldier

With this hand-held cognitive EW device, a soldier can see where enemy signals are coming from presented on a virtual plane.

This morning, BAE revealed a “lightweight, handheld tactical sensor” for cognitive electronic warfare. Developed for DARPA, the sensor is designed for soldiers and marines to carry into battle, where it will identify and classify new signals. In the previous, Cold War-era approach...

RMSQI

Air Force Tasked with Developing New Battle Management Networks

The Air Force must help develop new battle management networks and operating concepts as the Pentagon seeks to stay ahead of advanced adversaries, Deputy Secretary of Defense Bob Work said Sept. 21.

The ability to coordinate the operations of autonomous systems and other cutting-edge platforms and capabilities will be critical for warfighting and executing the new “third offset” strategy in the coming years, he said...

Developing Suitable Wearable Electronics for the Warfighter

Reliable power, information overload, size and weight, and interpreting old-fashioned infantry hand signals top research priorities for digitizing the warfighter.

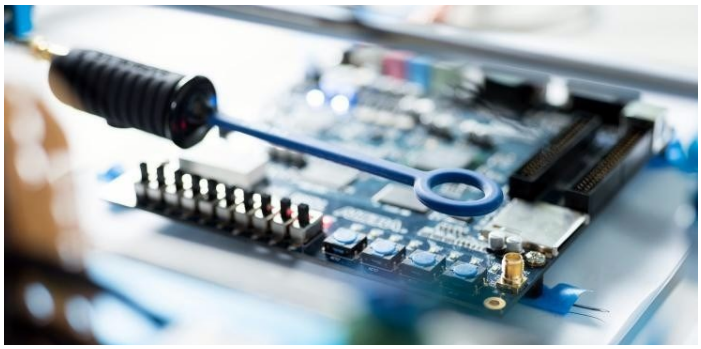
The first recorded war took place between Sumer and Elam in Mesopotamia in 2700 BC, but archaeological evidence shows a history of violent mass conflict for more than 12,000 years, about the time humans began changing from hunter-gatherers to farmers and builders...

Survivability & Vulnerability

New Armor and Technology for Marine's Amphibious Assault Vehicles

The Marines are moving along with building an upgraded, stronger, more high-tech Amphibious Assault Vehicles.

The Marine Corps is revving up its fleet of 1970s-era Amphibious Assault Vehicles to integrate the latest technology and make them better able to stop roadside-bombs and other kinds of enemy attacks, service officials said...



Side-Channel Signal Monitoring Could Detect Malicious Software on IoT Devices

A $9.4 million grant from the Defense Advanced Research Projects Agency (DARPA) could lead to development of a new technique for wirelessly monitoring Internet of Things (IoT) devices for malicious software – without affecting the operation of the ubiquitous but low-power equipment.

The technique will rely on receiving and analyzing side-channel signals, electromagnetic emissions that are...

Weapons Systems

Increasing Infantry Overmatch with Advanced Shoulder Fired Weapons

SAAB Company announced yesterday at the AUSA convention it is studying adding enhanced, precision-engagement capability for its shoulder-fired weapons. The Massive Overmatch Assault Round (MOAR) study is part the US Defense Advanced Research Projects Agency (DARPA's) Broad Agency initiative seeking 'Innovative Systems for Military Missions.

DARPA's MOAR project explores new ways to...

Army Accelerates Active Protection Systems Technology

The Army is fast-tracking an emerging technology for Abrams tanks designed to give combat vehicles an opportunity to identify, track and destroy approaching enemy rocket-propelled grenades in a matter of milliseconds, service officials said.

Called Active Protection Systems, or APS, the technology uses sensors and radar, computer processing, fire control technology and interceptors to find, target and...

Announcements & Events

Argonne CNM Call for High-impact Nanoscience & Nanotechnology User Proposals

The Center for Nanoscale Materials (CNM) is soliciting proposals for user-initiated nanoscience and nanotechnology research. The CNM provides external users with access to a broad range of capabilities for design, synthesis, characterization, and theory and modeling in order to significantly...

SOCOM SOF AT&L PEO-C4 Non-RF Communication Capability Collaboration Event

PEO-C4 is sponsoring a collaboration event with selected experts from industry to facilitate technical discussions on active and passive non-RF communications.
DATE: Wednesday, December 7, 2016 – 8:00am to Thursday, December 8, 2016 - 5:00pm

42nd Air Armament Symposium

DSIAC will be attending NDIA's 42nd Air Armament Symposium on 1 - 2 November 2016. DSIAC staff members will be exhibiting at booth #14 of the Emerald Coast Convention Center in Fort Walton Beach, FL. They will be available to answer questions about DSIAC, and the products and services that are available to the defense systems technical community.

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