

Defense Systems

NEWS DIGEST

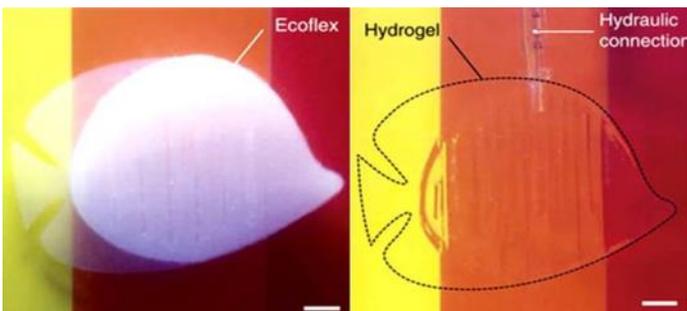
14 FEBRUARY 2017 - THE LATEST IN DEFENSE SYSTEM NEWS



ARL Launches Center for Adaptive Soldier Technologies

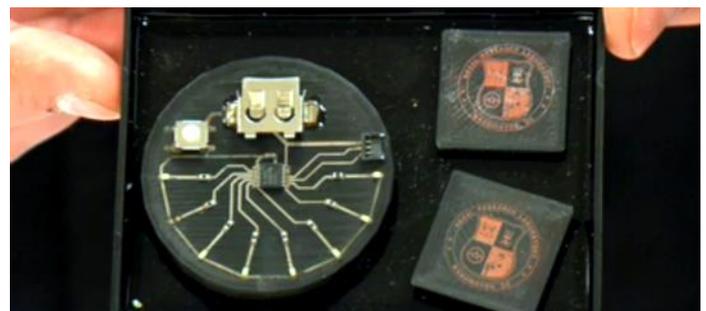
The U.S. Army Research Laboratory (ARL) established the Center for Adaptive Soldier Technologies, or CAST, as an open coalition virtual center under its Open Campus initiative. The technical focus of CAST is on human-centric approaches to adapting technologies to Soldiers. ARL's intent for CAST is to foster an open technical dialogue and to build an active community of interested...

Advanced Materials



MIT Researchers Use 3D Printing to Create Soft, Nearly Invisible Hydrogel Robots

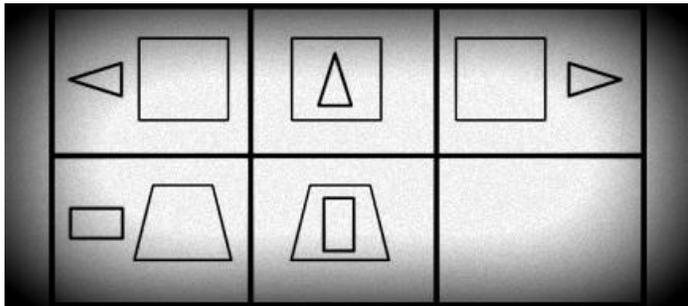
Soft robotics are becoming increasingly common as researchers and engineers develop new ways to fabricate robots from materials that range from flexible plastics to silicones. A team of engineers at MIT, however, has created a soft robot that, in a sense, is close to human in its composition, as it's made almost entirely of water...



NRL Laser-Direct Write Process Enables Printing of Next-Gen Electronics

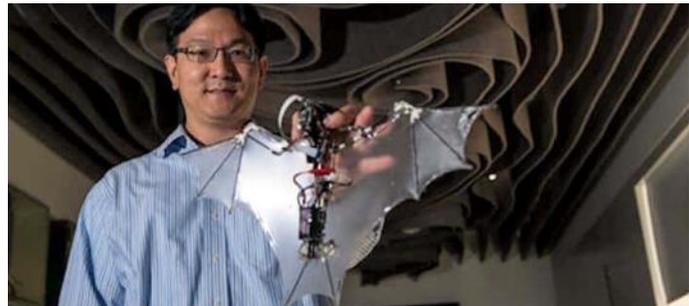
Printed examples with very high resolutions were on display when SPIE visited the lab late last year. The team has printed freestanding structures, as small as several micrometers wide, as well as stacked layers that are transferred concurrently to a substrate. Although the process is serial in nature, it can be combined with a...

Autonomous Systems



Making AI Systems that See the World as Humans Do

A Northwestern University team developed a new computational model that performs at human levels on a standard intelligence test. This work is an important step toward making artificial intelligence systems that see and understand the world as humans do. "The model performs in the 75th percentile for American adults, making it better than average," said Northwestern Engineering's...

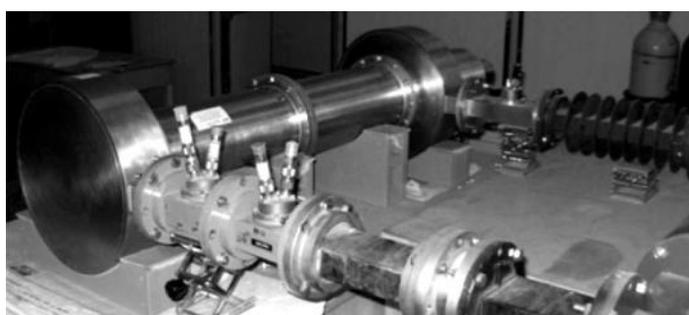


A Biomimetic Robotic Platform to Study Flight Specializations of Bats

Bats have long captured the imaginations of scientists and engineers with their unrivaled agility and maneuvering characteristics, achieved by functionally versatile dynamic wing conformations as well as more than 40 active and passive joints on the wings. Wing flexibility and complex wing kinematics not only bring a unique perspective to research in biology and aerial robotics but also pose...

Directed Energy

Location	Speed	Located?	Approach	Predet OK?	Smoking Hole?
OnRoute	SlowEOD	Located	Standoff	Predet	BangOK
OnRoute	SlowEOD	Located	Standoff	Predet	BangNotOK
OnRoute	SlowEOD	Located	Standoff	NoPredet	BangOK
OnRoute	SlowEOD	Located	Standoff	NoPredet	BangNotOK
OnRoute	SlowEOD	NotLocated	Robot	Predet	BangOK
OnRoute	SlowEOD	NotLocated	Robot	Predet	BangNotOK
OnRoute	SlowEOD	NotLocated	Robot	NoPredet	BangOK
OnRoute	SlowEOD	NotLocated	Robot	NoPredet	BangNotOK
OnRoute	SlowEOD	NotLocated	PersApproach	Predet	BangOK
OnRoute	SlowEOD	NotLocated	PersApproach	Predet	BangNotOK
OnRoute	SlowEOD	NotLocated	PersApproach	NoPredet	BangOK
OnRoute	SlowEOD	NotLocated	PersApproach	NoPredet	BangNotOK
OnRoute	HastyBreach	Located	Standoff	Predet	BangOK



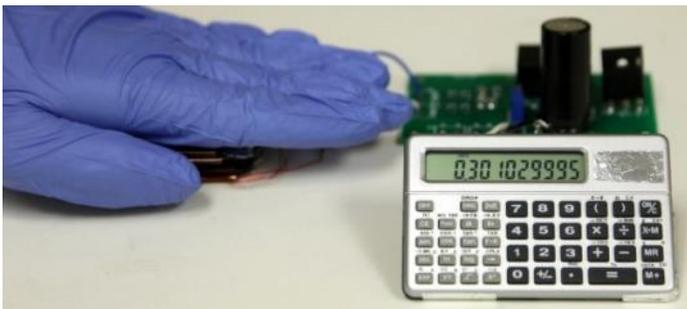
RF Directed Energy Weapons for Explosive Hazard Neutralization

The "Improved Neutralization" activity under Manoeuvre through Adaptive Dispersed Operations (ManADO) Explosive Hazard Avoidance Neutralization (EHA(N)) work focuses on the DtD (Defeat the Device) CIED (Counter Improvised Explosive Device) line of operation. The proposed Courses of Action which fall out of this exercise are those that: enhance the Canadian Armed Forces...

New Chinese Microwave Weapon Claimed to be Small Yet Powerful

For over 6 years, Huang Wenhua and his team at the Northwest Institute of Nuclear Technology in Xi'an have been working on a potent microwave weapon. This one, which recently won China's National Science and Technology Progress Award, is small enough to fit on a lab work bench, making it theoretically portable enough for land vehicles and aircraft. Said another way: it's small...

Energetics



Two-Stage Power Management System Boosts Energy-Harvesting Efficiency

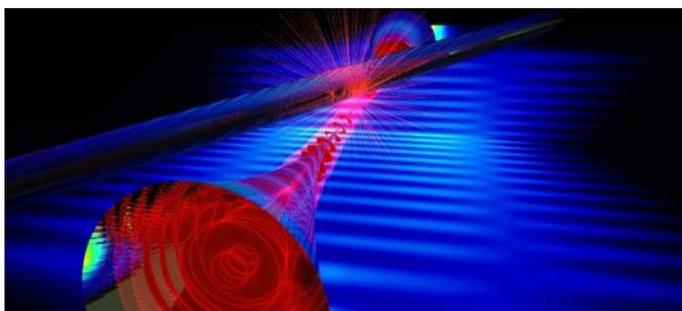
A two-stage power management and storage system could dramatically improve the efficiency of triboelectric generators that harvest energy from irregular human motion such as walking, running or finger tapping. The system uses a small capacitor to capture alternating current generated by the biomechanical activity. When the first capacitor fills, a power management circuit then feeds...



Revived Cold War Tech for Long Duration Flights Could Solve Earth's Energy Crisis

Fossil fuels could slake the world's thirst for energy, but burning more would exacerbate climate change and threaten millions. And it'd be temporary, since known reserves are expected to run out within a century or two. Meanwhile, renewable energy like wind and solar, though key parts of a solution, are no silver bullets — especially if the world is to meet a 2050 deadline set by the Paris...

Military Sensing



Evanescent Light Nanofiber Probe with Atom Scale Sensitivity

Optical fibers are the backbone of modern communications, shuttling information from A to B through thin glass filaments as pulses of light. They are used extensively in telecommunications, allowing information to travel at near the speed of light virtually without loss. These days, biologists, physicists and other scientists regularly use optical fibers to pipe light around inside their labs. In one...



DVE Mitigation Program Helping to Build All Weather Fight Capability

A science and technology program designed to increase the capability and safety of the aviation fleet achieved a major milestone Sept. 15 during testing here. The Degraded Visual Environment Mitigation (DVE-M) Program held a VIP Day for the NATO Yuma Flight Trials. The dust and brownout testing is the first time the program has tested an integrated cueing, sensor and flight...

Non-Lethal Weapons



Picatinny Develops Safer, Less Expensive Variation of Infrared Illuminant Cartridge

The 40mm M992 Infrared (IR) Illuminant Cartridge is a type of a pyrotechnic flare, but unlike the standard flare, the IR cartridge produces a type of light that is invisible to the naked eye yet can be seen through night-vision goggles. "The cartridge brought the infantry squad the ability to enhance infrared night vision without providing visible light and exposing friendly positions," said mechanical...



A Cyber Vulnerability Assessment of the U.S. Navy in the 21st Century

The U.S. Navy is a vast, worldwide organization with unique missions and challenges, with information security (and information warfare at large) a key priority within the Chief of Naval Operations' strategic design. With over 320,000 active duty personnel, 274 ships with over 20 percent of them deployed across the world at any one time, the Navy's ability to securely communicate across...

RMQSI



Discovery Could Lead to Jet Engines that Run Hotter and Cleaner

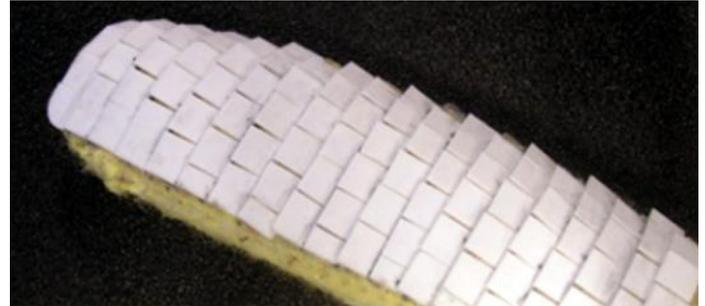
Researchers here have made a discovery in materials science that sounds like something from the old Saturday morning cartoon Super Friends: They've found a way to deactivate "nano twins" to improve the high-temperature properties of superalloys that are used in jet engines. The advance could speed the development of powerful and environmentally friendly turbine engines of all sorts...



New Tobyhanna Army Depot Mission: Software Sustainment

Tobyhanna Army Depot, the Department of Defense's leading provider in C4ISR systems, is undertaking a new mission: software sustainment. One of the problems befalling the Army's software sustainment community is maintaining information assurance vulnerability alert (IAVA) compliance. This involves disseminating a message through the force to identify a vulnerability in a...

Survivability & Vulnerability



BLAST: Greater Speed, Accuracy in Recognizing Brain Injury

Fault tree analysis is a useful probability theory-based tool for evaluating a system's risk and reliability. Typically, fault trees are populated with basic event failure probabilities from a variety of quantitative and qualitative sources. This article presents a new methodology that combines simulation with game theory to populate a fault tree with strictly quantitative probability estimates for...

Flexible Ceramic Armor Inspired from Fish Scales

Protective systems that are simultaneously hard to puncture and compliant in flexion are desirable, but difficult to achieve because hard materials are usually stiff. However, we can overcome this conflicting design requirement by combining plates of a hard material with a softer substrate, and a strategy which is widely found in natural armors such as fish scales or osteoderms. Man-made segmented armors have a long history, but their...

Weapon Systems



US Navy Uses Spike Miniature Missiles to Shoot Down UAVs

Weapons specialists at the US Naval Air Warfare Center Weapons Division (NAWCWD) at China Lake, CA. have recently tested the capability of guided missile to defeat an unmanned aerial vehicle in flight. The Spike miniature, lightweight precision guided missile was used for the test performed in December 2016 at China Lake. Two of the small missiles demonstrated the capability of the Navy...

Modular Missile Test Program Successfully Fires Open System Architecture Missiles

The U.S. Army Aviation and Missile Research, Development and Engineering Center successfully launched three modular open systems architecture test missiles September 2016 at the Redstone Test Center. AMRDEC designed and developed the test missiles under the Modular Missile Technologies Project. The test missiles were launched from a fixed stand and followed the...

Announcements & Events

BUILDING MORE SURVIVABLE DEFENSE SYSTEMS AND MORE EFFECTIVE WEAPONS: Short Course in Live Fire Test & Evaluation



LFT&E Short Course: Building More Survivable Systems and More Effective Weapons

Intensive course covering the legislation, directives, requirements, preparation, and execution of Live Fire Testing as well as modeling and simulation, pretest predictions and reporting. DATE: February 28-March 2, 2017



OpenWERX : FogBreaker : Boat Pilot AR

Use open source hardware and software building blocks in a collaborative teaming environment to develop an Android application for augmented reality navigation and visualization of associated data (ship locations, buoys, waypoints, etc.). DATE: April 6, 2017



2017 Aircraft Survivability Short Course

An overview of the aircraft combat survivability discipline for those working in fields such as survivability modeling and simulation, ballistic and vulnerability testing, susceptibility and vulnerability reduction, and systems engineering. Date: April 4-6, 2017



TARDEC Industry Days

Hear the latest information about TARDEC's 30-Year Strategy and the research and development initiatives taking place at the Detroit Arsenal. TARDEC business group leaders highlight their key projects to present actionable information. Date: April 25-26, 2017

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