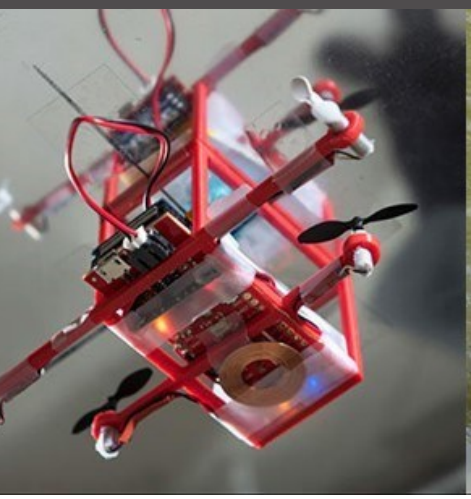
Defense Systems
NEWS DIGEST

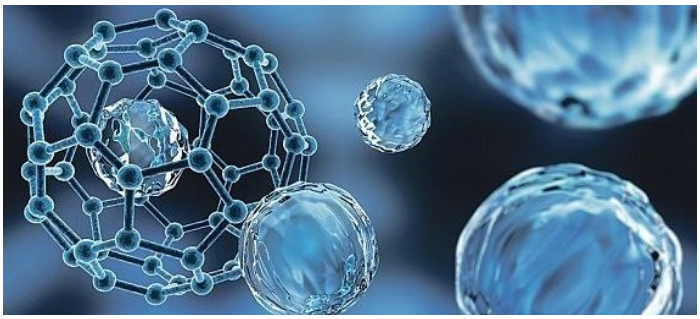
7 NOVEMBER 2016 - THE LATEST IN DEFENSE SYSTEM NEWS



Own Their Own

As a team of unmanned quadrotor aircraft hovers above, six small ground robots roll into an unfamiliar two-story structure. Soon, the rotorcraft are darting about mapping the upper floor, while the ground vehicles chart the lower floor, process both teams' data, and produce a full building plan for computers outside. Notably absent are human beings and radio control devices. This little…

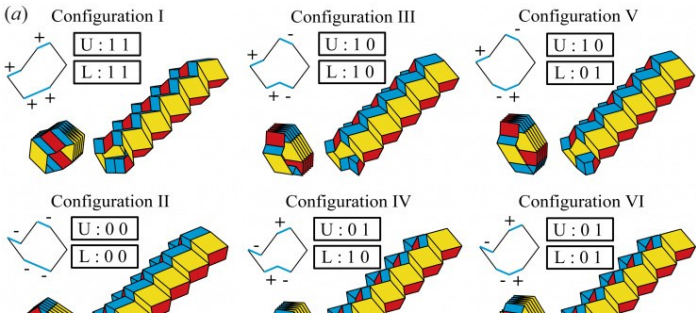
Advanced Materials



NEMO Program to Develop New Magnetic, Electronic and Electro-Optical Materials

Electronics materials experts at UES Inc. in Dayton, Ohio, are developing new magnetic, electronic, and electro-optical materials for advanced military radar, infrared sensors, and communications.

Officials of the U.S. Air Force Research Laboratory...



Reconfigurable Origami Tubes Could Hold Promise for Multi-Frequency Antennas

Origami, the ancient art of paper folding, may soon provide a foundation for antennas that can reconfigure themselves to operate at different frequencies, microfluidic devices whose properties can change in operation – and even heating and air-conditioning ductwork that adjusts to demand. The applications could result from...

Autonomous Systems

U.S. Army Unveils Robotics, Autonomous Systems Strategy

The Army wants to gradually bring more autonomy, artificial intelligence and common control of unmanned systems into soldier formations over the course of 25 years, moving from having to keep constant vigilance over robotic systems to relationships where the unmanned move alongside a warfighter on a mission, much like a hunter and his bird dog. The Army's Capability and...

NASA Proves Out Beyond Line-of-Sight sUAS Operations

Blazing a trail for safely integrating drones into the national airspace, a team from NASA's Ames Research Center on Oct. 19 flew four uncrewed aircraft--commonly called drones—at Reno-Stead Airport in Reno, Nevada.

The "out of sight" tests, led by NASA in coordination with the U.S. Federal Aviation Administration and several partners, were the latest waypoint in solving the...

Directed Energy

DoD Presses On in Pursuit of Laser Weapons

Developing directed energy to be used as laser weapons on a variety of platforms has been a huge priority for the Defense Department. It's fortunate therefore that technology has reached a point where lasers aren't just a cool, futuristic concept but will be vital in future military operations and war.

Military officials, both at the Space and Missile Defense...

Russia's Next Military Game Changer: Microwave Weapons?

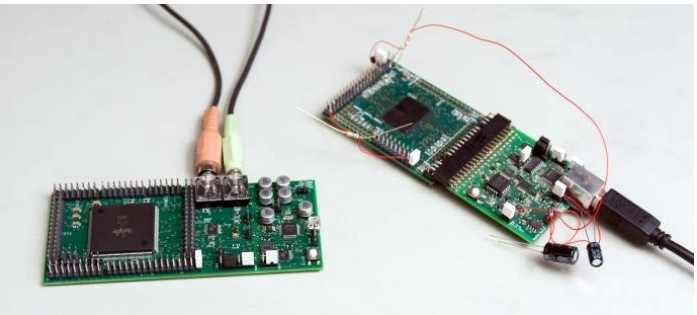
Russia will arm its sixth-generation combat drones with microwave weapons. These weapons, which disable an aircraft's electronic equipment, already exist today "and can hit targets within a radius of tens of kilometers," said Vladimir Mikheev, a director of state-owned Russian electronics firm KRET, in an interview with TASS.

However, Mikheev suggested that microwave weapons...

Energetics

Energy Harvesting Breakthrough for Automotive Shock Absorbers

Boosting the fuel efficiency of motor vehicles by "harvesting" the energy generated by their shock absorbers and feeding it back into batteries or electrical systems such as air conditioning has become a major goal in automotive engineering. Now, a University of Huddersfield researcher has made a breakthrough by designing a new system and constructing a prototype that is ready for...



Configurable Analog Chip Computes with 1,000 Times Less Power than Digital

Researchers have built and demonstrated a novel configurable computing device that uses a thousand times less electrical power – and can be built up to a hundred times smaller – than comparable digital floating-gate configurable devices currently in use.

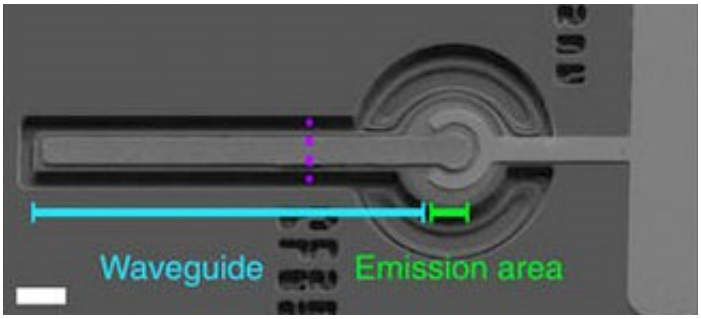
The new device, called the Field-Programmable Analog Array (FPAA) System-On-Chip (SoC), uses analog...

Military Sensing

Wave Energy Propelled Buoyancy Gliders Offer Long-Duration Autonomous Tracking

The U.S. Navy has approved the use of buoyancy gliders by all of its destroyers. These unmanned underwater vehicles use wave energy to propel themselves. The Navy will probably use them to locate enemy submarines.

Buoyancy gliders were originally developed by the scientific community to provide low-cost, autonomous drones capable of spending long periods of time at sea. The...



Integrated Plasmonic Sources and Detectors Needed for Bio- and Chemical Sensing

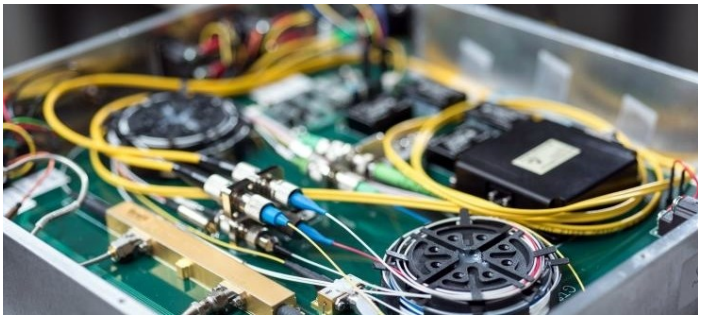
Integrated plasmonic sources and detectors are imperative in the practical development of plasmonic circuitry for bio- and chemical sensing, nanoscale optical information processing, and transducers for high-density optical data storage. Here we show that vertical-cavity surface-emitting lasers (VCSELs) can be employed as an on-chip, electrically pumped source or detector of...

Non-Lethal Weapons

Cognitive EW -This Is the Most Important Technology On the F-35

Cognitive EW, today in its infancy, may one day help justify the Joint Strike Fighter's enormous cost.

The F-35 Joint Strike Fighter, the most expensive weapons program ever, won't justify its price tag by outmaneuvering other jets (it can't), flying particularly fast, or even by carrying munitions in a stealthy bomb bay. Instead, the U.S. military is banking on an emerging technology...



Applying Photonics to Electronic Warfare Challenges

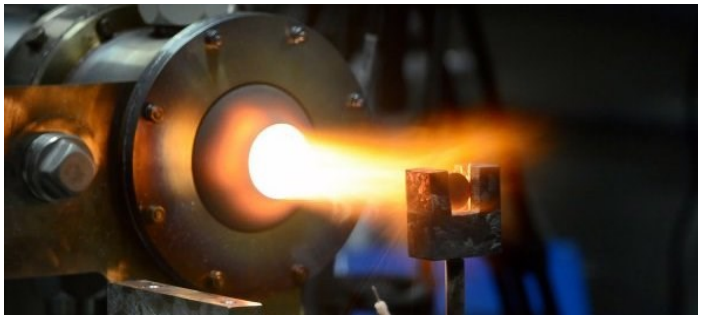
Photonics, the technology that helps drive today's telecommunications systems, offers major advances in the area of signal transmission. Researchers at the Georgia Tech Research Institute (GTRI) are adapting optical techniques from the photonics telecom arena to enhance U.S. electronic warfare (EW) capabilities. Optical approaches provide greatly increased frequency...

RMQSI

Joint Battle Command Platform to Network Abrams Tanks with Force-Tracking Tech

The Army is now expanding a new, high-speed, vehicle-mounted force tracking technology to include a wider range of combat platforms such as Stryker vehicles, Bradley and Abrams tanks, service officials said.

The system, now on Army jeeps or HMMWVs, allows soldiers in combat to instantly know their location in relation to fellow soldiers, enemy locations and surrounding...

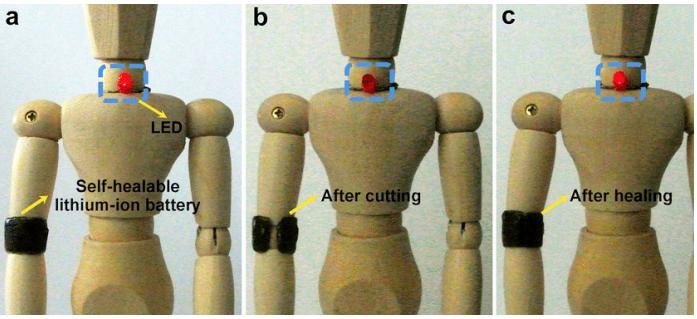


Army Researchers Tackle Tiny Enemy: Sand

Armor offers reliable protection against external forces, but what if the enemy is so small that it can take aircraft down from the inside?

Sand and dust can significantly damage helicopter engines, which is why scientists and engineers at the Army Research Laboratory are experimenting with coatings in high-temperature environments with the goal of creating something -- anything -- that will cause sand to slide off...

Survivability & Vulnerability



Self-Healing Lithium Ion Battery for Electronic Textiles

Electronics that can be embedded in clothing are a growing trend. However, power sources remain a problem. In the journal Angewandte Chemie, scientists have now introduced thin, flexible, lithium ion batteries with self-healing properties that can be safely worn on the body. Even after completely breaking apart, the battery can grow back together without significant impact on its...

B-2 Bomber to Receive New Ejection Seats, Other Upgrades

The B-2 Spirit, America's sole heavy stealth bomber, is getting upgraded ejection seats, the latest in a series of upgrades for the multi-role bomber to keep the aircraft flying into the 2050s.

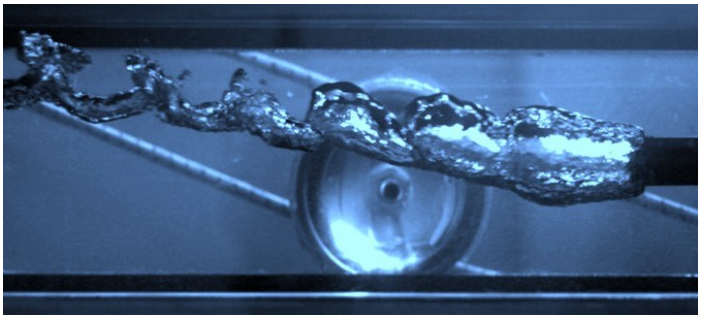
The Air Force on Tuesday awarded AMI Industries Inc., a United Technology Corp. subsidiary, a $14.4 million contract to develop upgraded Advanced Conception...

Weapon Systems

The Zumwalt Destroyer Is Here, Now What About the Railgun?

The USS Zumwalt, lead ship of a new class of advanced stealth destroyers, was commissioned on Saturday, October 15th with great fanfare. The knifelike ship, armed with two 155-millimeter guns and 80 vertical launch silos, has no shortage of firepower.

The Navy hopes to install a railgun in place of the one of the main guns of the third Zumwalt, USS Lyndon...



Innovative Super Cavitation Approach Makes for a Smoother Ride

Moving through water can be a drag, but the use of supercavitation bubbles can reduce that drag and increase the speed of underwater vehicles. Sometimes these bubbles produce a bumpy ride, but now a team of engineers from Penn State Applied Research Laboratory have an approach that could smooth out the ride.

In supercavitation, a bubble of gas encompasses an...

Announcements & Events

High Temp Polymeric Laminate Workshop

The purpose of the High Temperature Polymeric Laminate (HIGH TEMPLE) Workshop is to review and discuss the latest technological developments in high-temperature polymer matrix composites with the aim of providing Government and Industry with the necessary technical data to effectively utilize these materials in aerospace applications.
DATE: January 23-26, 2017

2017 Pacific Operational S&T Conference

Past conferences have experienced participation from fourteen partner nations, and a wide variety of representatives from Industry, Academia and DOD/DOE/Interagency labs and activities to review and demonstrate their efforts to advance technology in the Pacific Area of Responsibility (AoR).
DATE: March 6-10, 2017

Directed Energy to DC Exhibition

The Directed Energy to DC Exhibition (DE2DC) is part of the Directed Energy Outreach Campaign, which educates decision makers and warfighters on RF and laser DE weapons technologies and capabilities. DE2DC provides opportunities for Government, industry and academia to educate and exhibit mature DE hardware at the Pentagon and Capitol Hill.
Date: March 27-30, 2017

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