

Defense Systems

NEWS DIGEST

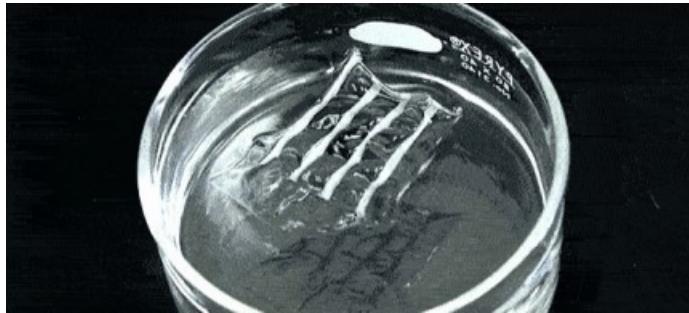
12 September 2017 - THE LATEST IN DEFENSE SYSTEM NEWS



Virtual Reality: a Friend and Foe in War on Terrorism

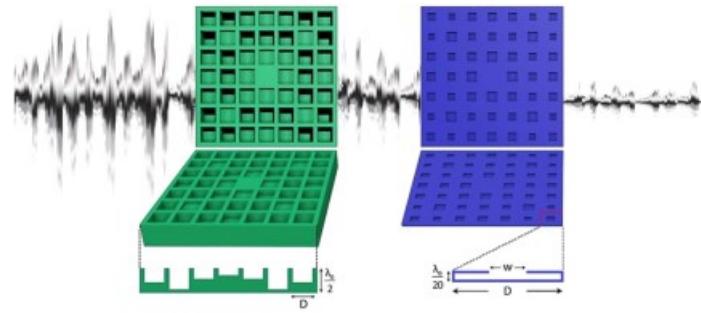
As virtual reality technology becomes less expensive and delivers a more realistic, immersive experience, some national security experts warn that it is only a matter of time before terrorists use it for recruiting, training and plotting attacks. The virtual reality (VR) marketplace is exploding. Oculus Rift, HTC Vive, Sony PlayStation VR, Google Cardboard, Microsoft HoloLens, One Plus and Jaunt are...

Advanced Materials



This Circuit Board Will Self-Destruct in 5, 4, 3...

Engineers at Vanderbilt University have constructed simple circuit boards, including conductive traces and capacitors, that work above room temperature but rapidly disintegrate when cooled below 32°C (89°F). The polymer and silver nanowire based circuitry is hydrophobic at warmer temperatures and hydrophilic at lower temp...



New Sound Diffuser Is 10 Times Thinner Than Existing Designs

The most widely used sound diffusers, Schroeder diffusers, can be very bulky as they must be a depth of about half the wavelength of the lowest sound they needs to diffuse. NC State University engineers have developed an acoustic metasurface that only needs a depth of about 5% of the wavelength (ten times thinner) saving weight...

Autonomous Systems



Teaching Robots “Manners”: Digitally Capturing and Conveying Human Norms

Advances in artificial intelligence (AI) are making virtual and robotic assistants increasingly capable of complex tasks. However, for “smart” machines to be considered safe and trustworthy collaborators with humans, they must be able to quickly assess situations and apply human social norms. DAPRA recently funded research and experimental studies aimed at providing theoretical and formal frameworks for norms and normative networks...

Directed Energy



Lasers in Combat: New Space and Missile Defense Commander on What's to Come

How the Army will employ laser weapons in combat and what the IAMD system will look like are at a crossroads, with decisions on paths forward expected in the upcoming years. The SMDC is leading the Army’s high-energy laser science and technology efforts that would provide the service with a low-cost, but effective complement to kinetic energy solutions to take out air threats. The Army has long said it needs to develop interceptors that don’t...

FT-200 FH Unmanned Aerial Vehicle

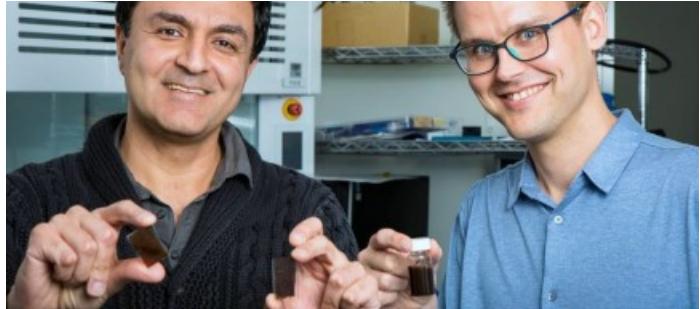
The FT-200 FH is a vertical take-off and landing (VTOL) unmanned aerial vehicle (UAV) developed by FT Sistemas. The UAV integrates a counter-rotating rotor configuration, which provides equipment installation flexibility, while also reducing stowage and transportation space requirements. The UAV can carry electro-optical / infrared (EO / IR) sensors, a laser scanner and a synthetic aperture radar (SAR). Maximum payload is 50kg (110lb). Endurance is approximately 12 hours at 12,000 feet...



MDA High Altitude Long Endurance UAS Could Stop Ballistic Missiles in Boost Phase

The Missile Defense Agency (MDA) is seeking a new high altitude long endurance (HALE) unmanned aerial vehicle with the unique capacity to carry a high energy laser system that can stop enemy missiles when they are in the boost phase. MDA is looking for the next generation of laser technology to build upon the Low Power Laser Demonstrator (LPLD). “Our vision is to shift the calculus of our potential adversaries by introducing these...

Energetics



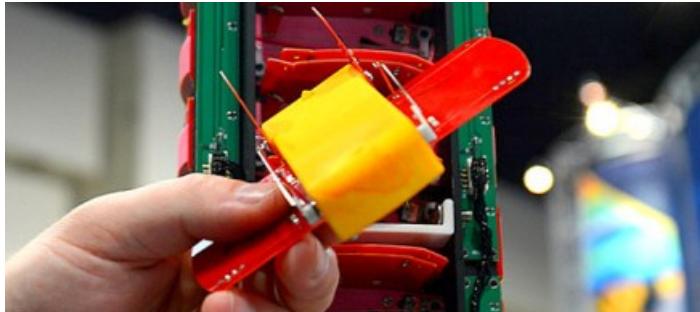
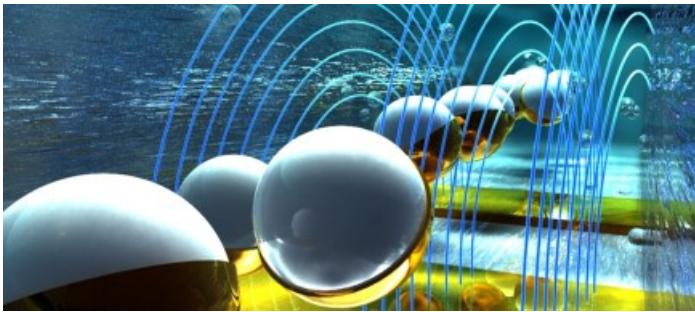
NASA Study Confirms Biofuels Reduce Jet Engine Pollution

Using biofuels to help power jet engines reduces contrails and particle emissions in their exhaust by 50 to 70 percent, in a new study conclusion that bodes well for airline economics and Earth's environment. That's important, as persistent contrails, and the cirrus clouds that evolve from them, have a larger impact on Earth's atmosphere than all of the aviation-related carbon dioxide emissions since the first powered flight by the Wright brothers...

Solar Paint Offers Endless Energy From Water Vapor

Researchers have developed a solar paint that absorbs water vapor from air and splits it to generate hydrogen – the cleanest source of energy. The paint contains a newly developed compound that acts like silica gel, which is used in sachets to absorb moisture and keep food, medicines and electronics fresh and dry. The new material, synthetic molybdenum-sulphide, also acts as a semiconductor and catalyses the splitting of water atoms...

Military Sensing



Lab on a Chip Could Monitor Health, Disease and Contaminants

Rutgers researchers invent technology that could lead to wearable biosensors. The technology, which involves electronically barcoding microparticles, giving them a bar code that identifies them, could be used to test for health and disease indicators, bacteria and viruses, along with air and other contaminants. Our technology enables true labs on chips. We're talking about platforms the size of a USB flash drive that can be integrated into a watch...

Naval Research Lab Tests Swarm of Stackable CICADA Microdrones

The Naval Research Lab has been developing CICADA (Close-In Covert Autonomous Disposable Aircraft) drones since at least 2011. The microdrones are designed to be carried aloft by other aircraft, dropped, and use GPS to glide to within 15 feet of their destination. They can carry a small sensor payload, and are designed to be cheap enough to be deployed in swarms for wide-area sensor coverage. The latest CICADA MK5...

Non-Lethal Weapons



Army Releases New Cyber, EW Field Manual

The Army is getting up-to-date on cyber and electromagnetic activity policies with the updated manual for cyber and EW functions, FM 3-12 "Cyberspace and Electronic Warfare Operations." The new document "provides tactics and procedures for the coordination and integration of Army cyberspace and electronic warfare operations to support unified land operations and joint operations." This publication gives overarching guidance to commanders and staffs on Army cyberspace and EW operations...

Integrating De-Escalation Techniques into Policing

When many police officers hear the term "de-escalation techniques" they often initially react with skepticism or even aversion. In recent years, policing has been inundated with public criticism, political posturing, and "expert" dissection of police tactics. While some commentary has been less than useful, there have been certain aspects of the systemic critiquing that has positively benefited policing. De-escalation is one such area...

RMQSI



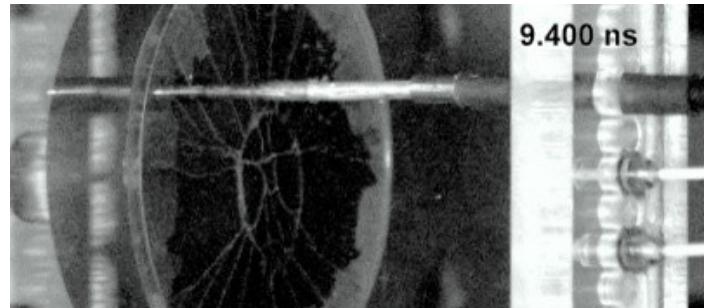
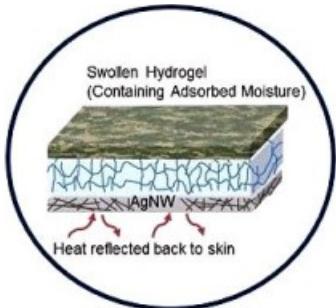
BLADESENSE Project Aims to Revolutionize Health Monitoring for Rotorcraft

The Cranfield University Center for Aeronautics, with partners Airbus Helicopters UK, BHR Group and Heilitune, aims to revolutionize health monitoring for rotorcraft by investigating the aeroelastic behavior of rotor blades and developing state-of-the-art fiber optic sensors. The fiber optic sensors would be mounted along the length of each blade to determine their 'health' and identify early on whether there are any changes to behavior...

NRL Develops Advanced Ship Topcoat

After positive feedback from sailors during testing, a Naval Research Laboratory developed one-component (1K) polysiloxane coating has been applied to the entire freeboard of the USS Essex Landing Helicopter Dock (LHD) 2. The 1K, all-in-one can system provides greater than five times the retention of visual camouflage and better resistance to shipboard contaminants. If the new material performs as expected, it will provide a robust, easy to use coating that yields significant cost savings...

Survivability & Vulnerability



Energized Fabrics Could Keep Soldiers Warm and Battle-Ready in Frigid Climates

D'Angelo, Elizabeth Hirst, Ph.D., and colleagues at the Army Natick Soldier Research, Development & Engineering Center, are working on embedding silver nanowire into fabrics such as polyester and cotton/nylon blends that are suitable for military uniforms. The team found that applying just 3 volts — the output of a typical watch battery — to 1x1 inch fabric test swatches raises the temperature by 100 degrees Fahrenheit in just one minute...

University of Florida, U.S. Army Develop Model for Lighter Armor

The U.S. Army Research Laboratory is working on developing new light-weight ceramic materials that resist fracture, and has teamed with University of Florida researchers to better understand the materials fracture and cavity expansion processes as well as development of improved ceramics failure and penetration models. During failure, the materials eventually disintegrate into a granular-like state through a process called comminution...

Weapon Systems



IAI Introduces a Loitering Weapon Optimized for Maritime Attack

Israel Aerospace Industries (IAI) has developed a Maritime version of its Harop Loitering Munitions (LM) family. Harop is a long endurance LM which can be launched from a variety of platforms. It combines the capabilities of a tactical UAV and guided missile as it is equipped to search, detect and attack high-value relocatable targets that are exposed for a very short time, thus becoming 'time critical targets'. The weapon's EO/IR seeker...



Military Technology and the Multi-Domain Battle Plan

Over the last decade, the US has been successful in developing new weapon systems and defenses which encompass Hypersonic weapons, Directed Energy Weapons, Electro-Mechanical Pulses and satellite weapons in space, which give the US. a tactical and strategic advantage. This growth in non-conventional defense systems has emerged as a response to investments by America's enemies in Anti-Access/Area Denial (A2/AD)...

Announcements & Events

2017 Mechanical Design Reliability Course



Presents a practical application of fundamental mechanical engineering to system and component reliability. Designed for the practitioner, the course covers the theories of mechanical reliability and demonstrates the supporting mathematical theory. For the beginner, the essential tools of reliability analysis are presented and demonstrated.

DATE: October 3-5, 2017

IARPA MORGOTH'S CROWN Challenge



The IARPA Challenge, Modeling of Reflectance Given Only Transmission of High-concentration Spectra for Chemical Recognition Over Widely-varying Environments (MORGOTH'S CROWN), invites participants to develop algorithms to predict changes in a chemical's infrared (IR) spectrum caused by changes in its molecular environment.

DATE: July-September 2017

Aircraft Survivability Symposium 2017



The symposium's goal is to foster technical dialogue and information exchange on aircraft survivability topics such as design, operational experience, threats current and future, reliability and maintenance, and aircraft survivability technologies testing. The event offers a forum for learning through presentation of relevant tutorials on survivability related subjects.

DATE: November 7-9, 2017

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