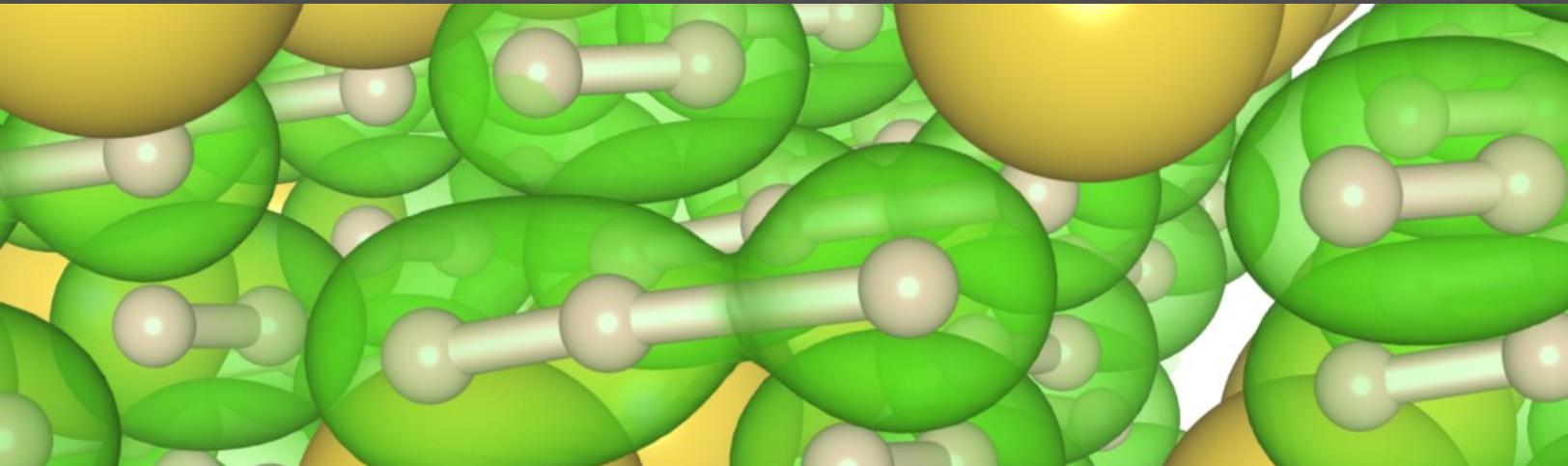


Defense Systems

NEWS DIGEST

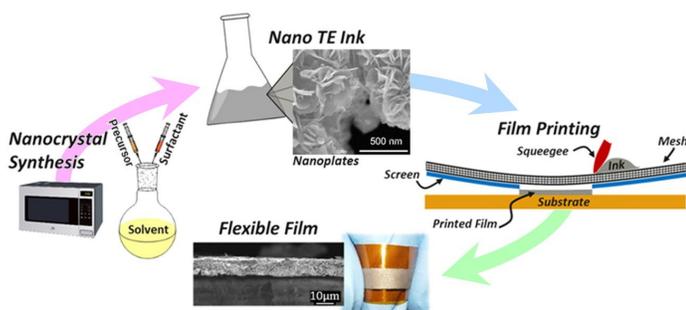
11 OCTOBER 2016 - THE LATEST IN DEFENSE SYSTEM NEWS



Putting the Squeeze on H and Na for Superconductivity

Superconductivity is a hot phenomenon that occurs only at very cold temperatures. Finding ways to change that and make superconductivity practical at higher temperatures is a major goal for physicists and engineers. One possibility involves the metallic phase of hydrogen, theorized to be...

Advanced Materials



High-Performance, Flexible Thermoelectric Film Screen Printing

Screen printing allows for direct conversion of thermoelectric nanocrystals into flexible energy harvesters and coolers. However, obtaining flexible thermoelectric materials with high figure of merit ZT through printing is an exacting challenge due to the difficulties to synthesize high-performance thermoelectric inks and the poor density and electrical conductivity of the printed films...



Metal-Organic Framework Offer New Ways to Sort Molecules

It's called the office candy dish problem. You grab a jelly-bean, but it's not the flavor you want. Pawing through for your favorites is irritating in terms of time, energy, and efficacy. It also annoys your office mates. In an odd way, it's the same problem for those in manufacturing, power generation, and elsewhere. They want a specific subset of molecules or other bits; however, getting that...

Autonomous Systems



DARPA Aerial Dragnet - Keeping a Watchful Eye on Low-Flying UAS

Airspace for the flying public today is perpetually congested yet remarkably safe, thanks in no small part to a well-established air traffic control system that tracks, guides and continuously monitors thousands of flights a day. When it comes to small unmanned aerial systems (UAS) such as commercial quadcopters, however, no such comprehensive tracking system exists. And as off-the-shelf UAS become less expensive, easier to fly...

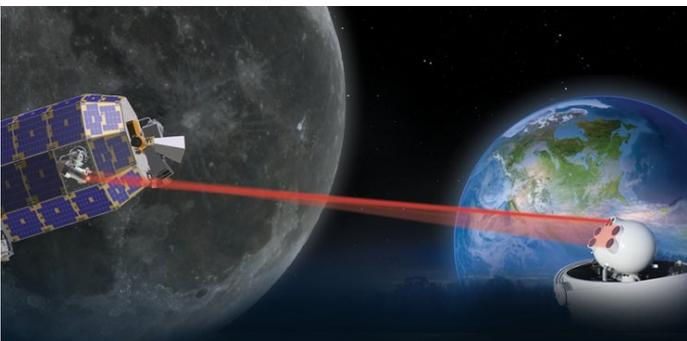


Bell Helicopter Unveils New Tilt-Rotor Drone Concept

Bell Helicopter — co-manufacturer of the V-22 Osprey — unveiled a concept for a new unmanned tilt-rotor aircraft that the company aims to sell to the Marine Corps, Bell executives said Sept. 22. The system — which could be ready for production by 2023 — is officially known as the Bell V-247 Vigilant, said Vince Tobin, Bell Helicopter vice president for advanced tilt-rotor systems..

“The Bell 247 Vigilant will provide a platform which....

Directed Energy



Space-Based Laser Communications Break Threshold

Recent and upcoming deployments of satellite laser communication systems are bringing Internet-like speeds for data transmission in space. The result could be a revolution in communication, both on Earth and across the solar system.

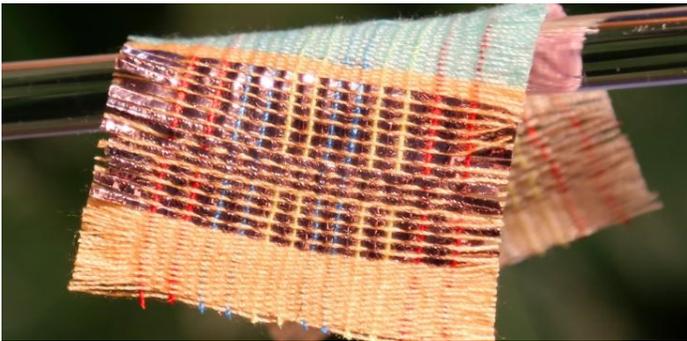
Laser communications through optical fibers move tens of terabits of data every second between cities and across oceans. But for the majority of Earth’s surface...



Resurgence of High Power Microwave Weapons

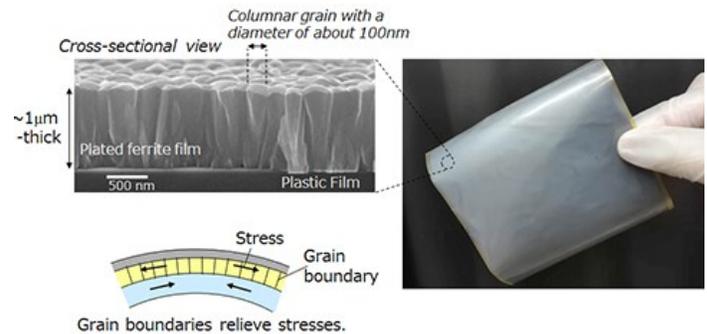
Directed energy weapons (DEWs) emit energy in the desired direction and cause damage to the target by transferring energy and generating uneven heat stresses. The DEWs comprise two distinct types of weapons namely, the high-energy lasers (HELs), and the high power microwaves (HPMs). The US Air Force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

Energetics



Fabric Uses Sun and Wind to Power Devices

Fabrics that can generate electricity from physical movement have been in the works for a few years. Now researchers at Georgia Institute of Technology have taken the next step, developing a fabric that can simultaneously harvest energy from both sunshine and motion. Combining two types of electricity generation into one textile paves the way for developing garments that could provide their own source of energy to power devices such as smart phones or global positioning systems. "This hybrid power textile presents a novel solution to...



New High-Efficiency Spin Seebeck Thermoelectric Device Converts Heat to Energy

A thermoelectric (TE) device*1 using cutting edge thermoelectric conversion technology has been created by a team comprising NEC Corporation, NEC TOKIN Corporation and Tohoku University.

The new technology, known as the spin Seebeck effect*2, has conversion efficiency 10 times higher than the conventional method*3.

Thermoelectric conversion technology that converts...

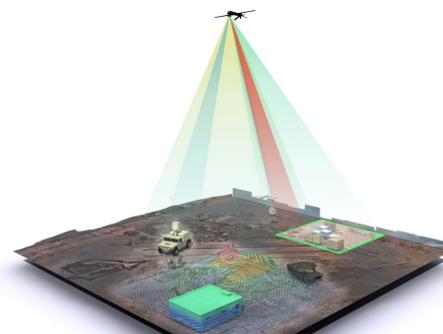
Military Sensing



MIT to Develop Biological Materials for Advanced Military Sensors

Materials experts at the Massachusetts Institute of Technology (MIT) in Cambridge, Mass., are moving forward with a U.S. military research project to engineer biological materials for advanced military sensors, chemicals, materials, and therapeutics.

Officials of the U.S. Defense Advanced Research Projects Agency (DARPA) in Arlington, Va., announced an \$8.2 million contract modification to MIT last week for...



Pentagon Wants an Imaging Sensor That Can Think

Digital imagery has come a long way in the last 20 years or so. From early images where you could see the square edges on the pixels to cameras with top-quality lenses and 160 or more million pixels and phone cameras good enough to shoot professional sporting events. The Energy department also is developing a 3.2-gigapixel camera to serve as the eye of the Large Synoptic Survey Telescope. What could be next? How about an imaging...

Non-Lethal Weapons



Maps & Jammers: Army Intensifies Training Vs. Russian-Style Jamming

After two decades of largely ignoring the danger, the Army is seriously training for a scary scenario: What if GPS, our satellite communications and our wireless networks go down?

It's hardly a hypothetical threat. Russian electronic warfare units locate Ukrainian troops by their transmissions and jam their radios so they can't call for help, setting them up for slaughter. American soldiers are much....

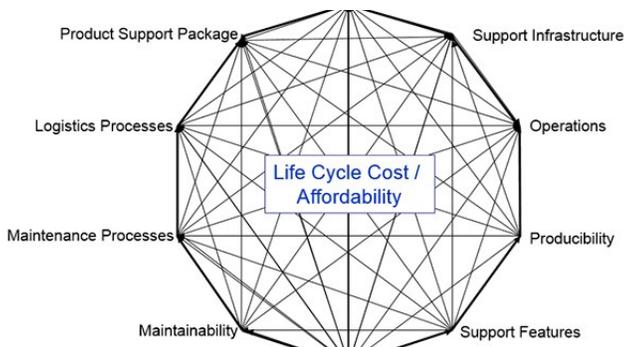


Pentagon's Robotic Exosuit Program Making Strides

Scientists and engineers are pushing forward a cutting-edge U.S. military robotics project that could reduce war fighter fatigue and ward off injuries.

The Warrior Web program, spearheaded by the Defense Advanced Research Projects Agency, aims to significantly lower the "metabolic cost" — or energy expenditure — of troops operating in the field, and reduce the physiological burden of the gear that they carry, which can...

RMSQI



Affordable System Operational Effectiveness (ASOE) Model

Achieving Affordable System Operational Effectiveness. The Program Manager (PM) can address the return on investment (ROI) of 'up-front' expenditures by designing for the optimal balance between performance (technical and supportability), life-cycle costs, schedule, and process efficiency. A development program that targets only some categories of technical performance capability; or fails to optimize system Reliability, Availability, and...



Support Battalion Ready To Fight

On today's battlefield, approximately four to five support soldiers back up each combat-arms soldier, especially in an armored brigade task force. The reason for this becomes clear when considering the fuel, food and ammunition required on a daily basis by these units. As it has been throughout history, support units are vital lifelines to a successful campaign.

As the U.S. Army moves beyond counter-insurgency training to preparing to fight a near peer competitor in unified land operations, the need for fully modernized...

Survivability & Vulnerability



Industry Tackling Body Armor Burden with New Materials

Body armor weight has been an issue for soldiers for decades, but as lawmakers and the military push to decrease the load, scientists, academics and the defense industry are developing technologies that create lighter vests, buoyant plates and more comfortable fabrics. The Army has been working to develop the next-generation “soldier protection system,” which would equip troops with lighter body armor, along with...



DoD Expects Better Security with Weapons Vulnerabilities Assessment

The notice to Congress repurposing of \$100 million to go towards testing and evaluating cyber vulnerabilities in weapon systems, sent from the Defense Department comptroller’s office is described by many as a good first step toward better security. One top DoD official described this as potentially the first step toward building harder and more secure systems in the future. “The reason why I was calling attention to this and why I think...

Weapons Systems



Picatinny Develops Next Generation of Hand Grenade

Engineers at Picatinny Arsenal are working on the first new lethal hand grenade in more than 40 years, which is designed to give greater flexibility to the warfighter. The multi-purpose hand grenade design will provide both fragmentation and blast overpressure more effectively and safely than its legacy counterparts. Once fielded, Soldiers will be able to select and use a hand grenade with different effects simply by flipping a switch...



Army Recon Targets Apache Helicopter Cannon for Humvee Replacement

As the U.S. Army readies to bring its current crop of Humvees into the 21st century with a new vehicle, reconnaissance officials are also looking to replace the Humvee's pre-World War II .50-caliber machine gun with a version of the Apache helicopter’s cannon in 2019. The Army has embarked on a major project to replace the Humvee, officially known as the High Mobility Multi-purpose Wheeled Vehicle Last year the Army signed a...

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



8th Annual Ground Vehicle Systems Engineering & Technology Symposium

The Michigan Chapter of the National Defense Industrial Association in coordination with The Engineering Society of Detroit , is sponsoring the 8th annual Ground Vehicle Systems Engineering and Technology Symposium & Advanced Planning Briefing for Industry, a three-day event dedicated to the engineering and technology of Military Ground Vehicles. For more information about the presentations given, please click [here](#).

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