

# Defense Systems

## NEWS DIGEST

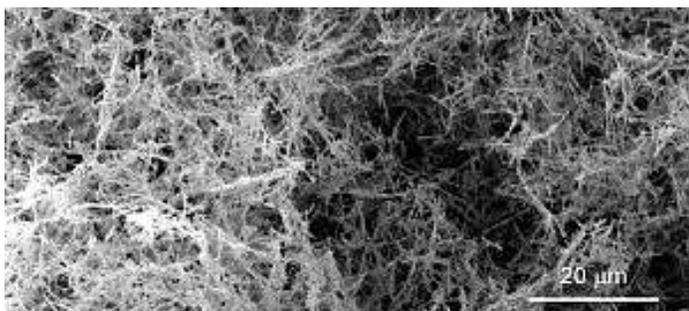
21 November 2017 - THE LATEST IN DEFENSE SYSTEM NEWS



### Navy, Marine Corps Unveil New Strategy to Turn Tables on A2/AD

The U.S. Navy and Marine Corps have released a new strategy to integrate their capabilities to address the challenges posed by archipelagic and coastal geography, and the proliferation of advanced sensors and mobile, long-range missile systems that can threaten naval forces from ashore. The Littoral Operations in Contested Environments (LOCE) concept puts forward a framework to...

### Advanced Materials



### New Technique Makes Light Metallic Nanofoam

A simple method for manufacturing extremely low-density palladium nanofoams could help advance hydrogen storage technologies. Traditional metallic foam manufacturing techniques may require high temperature, high pressure and controlled chemical environments. The UC Davis technique relies on a wet chemistry approach...



### Researchers Double 3D Printing Speeds Using Vibration-Mitigating Algorithm

Desktop hardware can theoretically operate at very high speeds, but factors like vibration make those speeds impossible to implement in practice. A recently developed software algorithm called "FBS Vibration Compensation" can effectively double 3D printing speeds. The technique could be used to upgrade a printer's firmware...

## Autonomous Systems



### Army Transforms Fleet of Bomb-Detecting Robots to Common Standards, Chassis

During the ground wars in Iraq and Afghanistan, the Army acquired and fast-tracked nearly 7,000 unique robotic systems to keep pace with the threat of enemy IEDs. Building upon these developments, including the deployment of multiple transportable cave- and road-clearing robots, the service seeks to architect a common fleet with a single robotic chassis configurable to a wide range of...

### Liquid Robotics Debuts Next-Generation Wave Glider

The next-generation Wave Glider — an unmanned surface vehicle that can traverse the surface of the ocean — will be able to collect intelligence, surveillance and reconnaissance data in rougher waters, for longer periods of time and while carrying more payloads. Deliveries of the updated system started in October. Liquid Robotics is building on the success of the existing platform to...

## Directed Energy



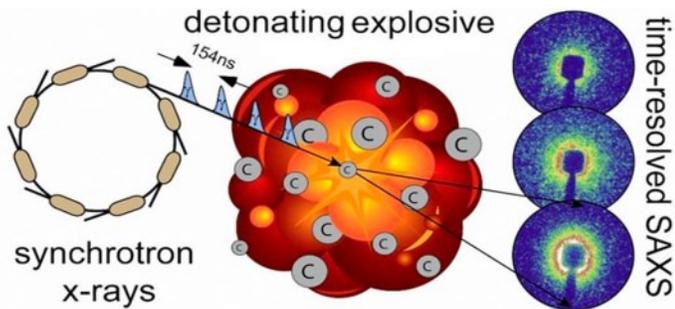
### General Atomics to Power UAV Lasers to Destroy Ballistic Missiles in Boost Phase

Power electronics experts at General Atomics are joining a project to develop lasers that could lead to a weapon for future unmanned aerial vehicles (UAVs) able to destroy enemy ballistic missiles in boost phase. The Low Power Laser Demonstrator (LPLD) project will develop enabling technologies for a future high-altitude UAV carried laser weapon system to destroy ballistic missiles...

### High-Energy Lasers to Pierce Fog, Dust, Provide ISR Data and Destroy Threats

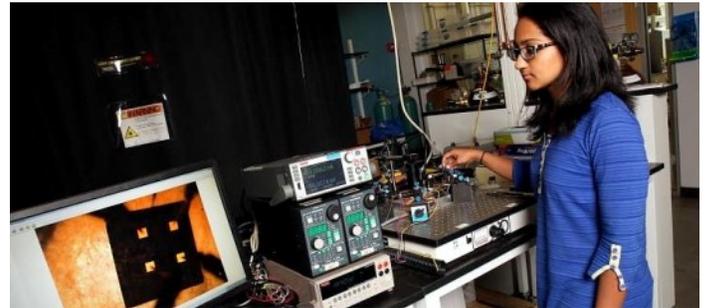
“Adaptive optics” are the key to making high-energy lasers (HELs) work in poor atmospheric conditions. The Army continues to make improvements to its adaptive optics systems to give a greater range of compensation for degraded conditions. HEL optics are so advanced that a battlefield commander can use them for multiple applications with regards to intelligence, surveillance...

## Energetics



### Experiments at New X-Ray Facility May Lead to Better Explosive Modeling

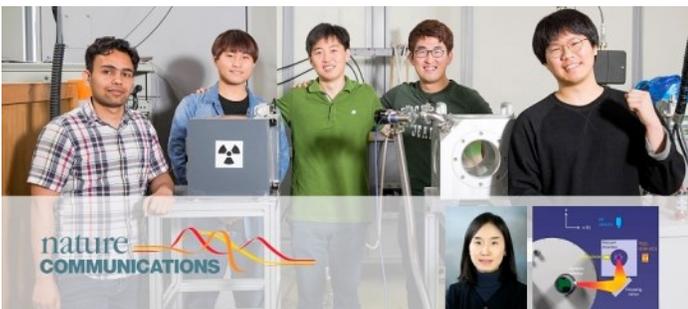
For the first time in the U.S., time-resolved small-angle x-ray scattering (TR SAXS) is used to observe ultra-fast carbon clustering and graphite and nanodiamond production in an insensitive explosive. Correlating products of detonation and particle size dynamics to the type of explosive helps improve computer models of explosive performance, leading to better predictive capability in...



### Novel Circuit Design Boosts Wearable Thermoelectric Generators

Using flexible conducting polymers and novel circuitry patterns printed on paper, researchers have demonstrated proof-of-concept wearable thermoelectric generators that can harvest energy from body heat to power simple biosensors. The symmetrical fractal wiring patterns lets devices be cut to the sizes needed to provide voltage and power requirements for specific applications...

## Military Sensing



### UNIST Improves Remote Detection of Hazardous Radioactive Substances

Researchers propose a new method that might be used to detect nuclear hazards from up to a few hundred meters. In the study, the team describes the process for real-time radioactive material detection using a high-power pulsed millimetre-wave source. They demonstrated detection of 0.5  $\mu\text{g}$  of cobalt-60 from 120 cm away, the maximum distance allowed by the laboratory setup...



### AFRL Developing Agilepod 'Family' to Augment Sensing Grid

Building on the recent success of AgilePod '1.0, Air Force Research Laboratory engineers have embarked on a new "mini" AgilePod effort to increase the intelligence, surveillance and reconnaissance capabilities of the platform by decreasing the footprint of the sensing 'lab in the sky. is a multi-intelligence, open architecture, flight-line reconfigurable pod designed for the ISR community...

## Non-Lethal Weapons



### Marines Adopt Ocular Interruption Laser Device to Stun Opponents

B.E. Meyers & Co. announced earlier this month that the Marines have adopted the company's Glare Recoil weapon-mounted hail and warning laser system as part of the OIS program. The LA-22/U 17-ounce Recoil is a 250mW maximum output green laser dazzler that doubles as a laser rangefinder. Although considered eye-safe, it can project a "veiling glare" out to several kilometers...



### Less-lethal Sponge Rounds a New Tactic for Madison Police

The Sage 40mm Deuce Launchers that fire 0.9-ounce 44mm eXact iMPact sponge rounds are one of the department's key less-lethal weapons used to control situations that have the potential to become deadly. They are more accurate and can be fired effectively from a much longer (125 feet) and shorter (5 feet) range than the less aerodynamic beanbags (75 feet and 20 feet)...

## RMQSI



### 3D-Printed 'Nibbler' Drone Creating Lessons Learned on Logistics, Counter-UAS

Marines who recently deployed to U.S. Central Command in support of Operation Inherent Resolve brought 3D printers to make their own small quadcopters, learning lessons on hybrid logistics models and counter-unmanned aerial vehicle (UAV) operations. Attempting additive manufacturing at a tactical level was part of an "advancing the force" mission assigned to SP-MAGTF...



### ARL Effort Improves Health, Environment, Bottom Line

A team of researchers at the Army Research Laboratory recently addressed a need for hexavalent chromium [Cr (VI)] free compounds to produce safer "wash primers" at Army depots, installations and repair facilities. The Army relied on Cr(VI)—a toxic and dangerous compound—to protect its ground vehicles, combat service support equipment and aviation/missile systems from corrosion...

## Survivability & Vulnerability



### UT Researchers Develop 'E-Tattoo' Health Devices

Researchers at UT-Austin are developing “e-tattoos” which can be applied to the skin to measure a variety of different things, from electrical to biochemical signals. The graphene e-tattoo’s are the first ultrathin, optically transparent and stretchable sensors made of 2-D material. The group demonstrated measurement of electrophysiological signals, skin temperature and skin hydration...



### Take a Look Inside 'The Rook' SWAT Armored Vehicle

The Rook, designed by Ring Power Corporation, is essentially an armored Caterpillar vehicle that has been modified for SWAT and other police units. It comes with four attachments and can be used for all kinds of scenarios, including hostage rescue, barricaded suspects, riots, and natural disasters. At least 25 different police departments across the US have purchased one...

## Weapon Systems



### Two Times the Punch - DeepStrike Missile Will Double Army's Combat Power

Raytheon is developing a long-range missile for the Army's Long-Range Precision Fires requirement that will allow the Army to field twice as many missiles on its existing launch vehicles. Thin and sleek, it will fire two missiles from a single weapons pod, slashing the cost. The new missile also flies farther, packs more punch and has a better guidance system than the current weapon...



### Navy Adds Millimeter Wave Radar to AGM-88B Anti-Radiation Missile

The Navy is working with Orbital ATK to convert AGM-88B High Speed Anti-Radiation Missiles into AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) All-Up-Rounds as part of an effort to destroy relocatable air defenses. Additional features will include weapon-impact-assessment transmit, millimeter wave radar terminal seeker, GPS/INS guidance, net-centric connectivity...

## Announcements & Events



### 54th AOC International Symposium & Convention

The 54th Annual AOC International Symposium and Convention will focus specifically on electronic warfare (EW) system adaptability and flexibility along with innovative technologies and tactics to provide Industry, Government, and Militaries a world-class forum to address how we should change and innovate as an EW community.

DATE: November 28-30, 2017



### Hacking the Human Element

SOFWERX, in collaboration with MD5, is hosting a technology hackathon related to wearable technologies and their applications. Practitioners, technologists, developers, academia, industry partners, and warfighters will build and demonstrate prototypes to measure, augment, and enhance the human as part of a system performing in austere environments...

DATE: December 1-3, 2017



### Defense Manufacturing Conference (DMC) 2017

Top government and industry leaders and manufacturing subject matter experts collaborate on policies, strategic direction, best practices, funding opportunities, and the latest innovations in support of defense manufacturing priorities. DMC is conducted simultaneously with the Diminishing Manufacturing Sources and Material Shortages (DMSMS) Conference...

DATE: December 4-7, 2017

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Defense Systems Information Analysis Center

4695 Millennium Drive, Belcamp, MD 21017

Phone: 443-360-4600

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