

# Matériaux

Bulletin de Veille - 27 avril 2018

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## GENERALITES

### **Versum Materials Opens New Research Facility**

23/04/2018 - [www.gasworld.com](http://www.gasworld.com)

Versum Materials, Inc., a Temp-Arizona based materials supplier to the semiconductor industry, has announced the grand opening of its new research and development (R&D) facility at its semiconductor materials manufacturing site in Hometown, Pennsylvania. Versum's Hometown manufacturing facility produces a variety of high purity specialty gases and chemicals for semiconductor manufacturers around the world, including Tungsten Hexafluoride, WF6 and Nitrogen Trifluoride, NF3.

### **What a mesh**

12/04/2018 - [www.spacedaily.com](http://www.spacedaily.com)

A team of scientists from across the U.S has found a new way to create molecular interconnections that can give a certain class of materials exciting new properties, including improving their ability to catalyze chemical reactions or harvest energy from light. The photocatalytic properties of these materials are extraordinary compared to titanium dioxide," said Argonne chemist Max Delferro. Chapman, Delferro and Spokoynny noted that the efforts of the research team to produce and analyze this new material were just as interconnected as the discovered hybrid material itself.

## AEROSPATIAL

### **Showa's Honeycomb Panels Qualified by Boeing**

13/04/2018 - [omnexus.specialchem.com](http://omnexus.specialchem.com)

Showa Aircraft Industry Co., Ltd, has announced that its CFRP faced aramid honeycomb sandwich panels have been qualified by Boeing to the BMS4-20 specification and added to the list of Boeing qualified products. Showa's Honeycomb Panels Added in Boeing's List Mr. Makoto Hasei, Director of the Transportation & Equipment Division commented: "Showa is very delighted to have successfully qualified these panels and we appreciate the joint cooperation with Boeing to accomplish this prestigious qualification.

### **LMI Aerospace Composites Operation Receives Boeing Contract**

13/04/2018 - [omnexus.specialchem.com](http://omnexus.specialchem.com)

LMI Aerospace's composite operation in Everett, Wash. Cost-efficient in Comparison to Thermoset Composites & Metals The contract follows Boeing's 2017 qualification of the LMI operation as a provider of thermoplastic composite parts. Expanding Boeing's Supply Base Don McEwen, general manager of LMI's composite and testing facility in Everett, said: "We are pleased to help expand Boeing's supply base for this lightweight and cost-effective technology.

## MATERIAUX POUR L'ENERGIE

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## [Neutron Scattering Could Help in Optimizing Hybrid Perovskite Solar Cells](#)

25/04/2018 - [www.azom.com](http://www.azom.com)

The fundamental mechanisms dictating the conversion of sunlight into energy in hybrid perovskite materials have been revealed in real time by neutron scattering. The researchers could track atomic structural changes and determine the significance of hydrogen bonding in the performance of the material by studying the material under varying degrees of temperature. Kai Xiao, Researcher - ORNL's Center for Nanophase Materials Sciences. Researchers at ORNL's Materials Science and Technology Division carried out theoretical calculations.

## [Deposition Systems for Thin Film Battery Research](#)

16/04/2018 - [www.azom.com](http://www.azom.com)

The last hundred years have seen an extensive variety of battery chemistries and configurations, spanning from the basic electrochemical cell of Volta with Cu and Zn electrodes, to the modern thin film battery with lithium-oxide cathodes, solid electrolytes, and graphite anodes. Angstrom Engineering Battery Deposition Systems Angstrom Engineering offers their Battery Deposition Systems , which allow deposition of a full range of battery materials, including the thermal evaporation of lithium and sputtering of ceramics and lithium-oxides.

## [COLLAGES –ADHESIFS](#)

### [Nanosilica Filled Epoxy with High Abrasion Resistance Meets NASA Low Outgassing Specifications](#)

24/04/2018 - [www.azom.com](http://www.azom.com)

It is optically clear especially in thin sections and can be used as an adhesive, sealant, coating and encapsulation compound. Most significantly, this epoxy system has been independently tested per ASTM D4060-14 for abrasion resistance for 1,000 cycles and exhibited a loss of weight of only 18.3 mg. Its long term electrical insulation characteristics are quite impressive. This formulation has a 4 to 1 mix ratio by weight. Working life after mixing a 100 gram batch is 20-30 minutes at 75°F. It has a mixed viscosity of 25,000-45,000 cps and flows readily.

## [COMPOSITES](#)

### [Toray to acquire TenCate Advanced Composites](#)

12/04/2018 - [www.azom.com](http://www.azom.com)

For Toray, the acquisition is an important step in its strategy to accelerate growth and expand its high-performance thermoplastic and thermoset composites offering while benefitting from considerable revenue synergies.

## [METAUX](#)

### [Writing and deleting magnets with lasers](#)

23/04/2018 - [www.spacedaily.com](http://www.spacedaily.com)

Scientists at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) together with colleagues from the Helmholtz-Zentrum Berlin (HZB) and the University of Virginia in Charlottesville, USA have found a way to write and delete magnets in an alloy using a laser beam - a surprising effect. With a single laser pulse at reduced intensity, about half of the previous level of magnetization was retained, and with a series of laser pulses, the magnetization disappeared altogether.

## NANOMATERIAUX

### Atomic force microscope makes single-electron current meter

23/04/2018 - [nanotechweb.org](http://nanotechweb.org)

The technique, which measures the energy levels of single molecules on insulators for the first time, provides precious information on single-electron intermolecular transport. In molecular electronics, we would see a similar set-up with single molecules as the conducting tracks and single electrons being transferred from the molecules, explain the researchers led by Gerhard Meyer at IBM Research-Zurich. "This change in the atoms' position impacts their energy levels and is known as the 'Marcus reorganization energy'.

### Course set to overcome mismatch between lab-designed nanomaterials and nature's complexity

23/04/2018 - [www.nanodaily.com](http://www.nanodaily.com)

In a recent issue of Biointerphases, from AIP Publishing, the team homes in on biomembranes - the gatekeeping bilipid-layers and proteins surrounding cells. The team's consensus perspective on designing next-generation "smart" nanomaterials for biological applications originated in discussions at a recent workshop on biomaterials and membranes.

### Mechanism of oxidative unzipping of multiwall carbon nanotubes to graphene nanoribbons |

13/04/2018 - [electroiq.com](http://electroiq.com)

If this is correct, one should be able to stop the reaction after the first intercalation-unzipping step before the second oxidation step proceeds. The intercalation-driven reaction mechanism provides a rationale for the impossibility of unzipping single-wall and few-wall CNTs, and aids in a reevaluation of the data from the oxidative unzipping process.

### Press release: How do very small particles behave at very high temperatures?

12/04/2018 - [nanotechweb.org](http://nanotechweb.org)

A new paper published in the journal Nature Communications shows that Au nanoparticles of precisely selected size (561 atoms  $\pm 14$ ) are remarkably robust against diffusion and aggregation ("sintering") but their internal atomic arrangements do change. Professor Richard Palmer, head of the Nanomaterials Lab in Swansea University's College of Engineering, commented: "These advanced experiments have allowed us to make a new measurement for nanoparticles deposited on a surface – the difference in energy between two competing atomic arrangements.

### Graphene nanoribbons mend from the brink

11/04/2018 - [nanotechweb.org](http://nanotechweb.org)

However defects from the regular hexagonal honeycomb graphene lattice inevitably occur during fabrication and processing. Sorkin and Haibin focus their calculations on graphene nanoribbons. Previous studies have pointed towards the role of corannulenes and sumanenes in graphene fabrication, particularly under certain conditions for the commonly adopted chemical vapour deposition (CVD) approach.

## POLYMERES - ELASTOMERES

### Shape-shifting organic crystals use memory to improve plastic electronics

25/04/2018 - [electroiq.com](http://electroiq.com)

The findings are published in the journal Nature Communications and confirm the shape-memory phenomenon in two organic semiconductor materials. They are also exploring the molecular origin of the shape-memory mechanism by tweaking the molecular structure of their materials. 1 position SEMI reports 2017 global semiconductor materials sales of \$46.9B Demand for higher resolution oxide panels expected to grow 30% in 2018 Getting better by design 6 key takeaways from ISS Europe 2018 Semiconductor leaders' marketshares surge over the past 10 years.

## REVETEMENTS

### All-Liquid Repellent Coating Could Grime-Proof Gadgets

12/04/2018 - [www.azom.com](http://www.azom.com)

Known as "omniphobic" in materials science jargon, the new coating repels literally every known liquid. Eventually, the team discovered that a blend of fluorinated polyurethane and a specialized fluid-repellent molecule known as F-POSS would fulfill the task. Tuteja is certain that the coating will be economical by the time it reaches the mass market—fluorinated polyurethane is a low-cost, common ingredient.

## SEMI-CONDUCTEURS

### Spooky quantum entanglement goes big in new experiments

25/04/2018 - [www.sciencenews.org](http://www.sciencenews.org)

In Sillanpää's experiment, two tiny aluminum sheets — consisting of about a trillion atoms and just barely visible with the naked eye — vibrate like drumheads and interact with microwaves bouncing back and forth in a cavity. Scientists could use such vibrating structures within a quantum network to convert quantum information from one type to another, transitioning from particles of light to vibrations, for example.

### Cheaper and easier way found to make plastic semiconductors

25/04/2018 - [electroiq.com](http://electroiq.com)

Professor Derek Schipper and his team at Waterloo have developed a way to make conjugated polymers, plastics that conduct electricity like metals, using a simple dehydration reaction the only byproduct of which is water. Plastics manufacturers use it to make everything from nylon to polyester, cheaply and in mind-boggling bulk.

### Optimizing Wide-Bandgap Semiconductors to Enhance Transistor Performance

25/04/2018 - [www.azom.com](http://www.azom.com)

The future generation of solid-state lighting, high-frequency communication systems, and energy-efficient power electronics is dependent on materials called wide-bandgap semiconductors. However, since the electrons are now also isolated from the dopants (hence the term modulation doping) by a few nanometers within the aluminum gallium oxide, they remain highly mobile and get scattered considerably less.

### Building crystals on a very hot surface

19/04/2018 - [electroiq.com](http://electroiq.com)

The production of semiconductors relies on epitaxy: a process that creates high-quality single-crystal materials by depositing atoms on to a wafer layer by layer, controlling thickness with atomic precision. student Kuang-Hui Li and a team led by Xiaohang Li at KAUST are developing an MOCVD reactor that can efficiently operate at extremely high temperatures to create high-quality boron nitride and aluminum nitride materials and devices particularly promising for flexible electronics, ultraviolet optoelectronics and power electronics.

### THERMOPLASTIQUES

#### New Production Line of BASF's Ultrason® in Yeosu, Korea

13/04/2018 - [omnexus.specialchem.com](http://omnexus.specialchem.com)

BASF has started up a new production line for its high-temperature resistant thermoplastic Ultrason® (polyarylsulfone) at its site in Yeosu, Korea. Ultrason® is the tradename for BASF's product range of polyethersulfone (Ultrason® E), polysulfone (Ultrason® S), and polyphenylsulfone (Ultrason® P). Both locations are designed to produce the entire product range of Ultrason® S, E and P, and provide BASF with the flexibility to optimize supply capabilities to customers around the world.

#### Stratasys lance un thermoplastique haute-performance, Antero 800NA

12/04/2018 - [www.a3dm-magazine.fr](http://www.a3dm-magazine.fr)

L'Antero 800NA devrait pouvoir être utilisé avec l'imprimante 3D Fortus 450mc Production de Stratasys au deuxième trimestre 2018 et disponible pour l'imprimante 3D Fortus 900mc Production au quatrième trimestre de la même année. Les utilisateurs de Fortus 450mc avec le pack de matériaux haute performance pourront utiliser l'Antero 800NA sans frais de licence supplémentaires.

### Service Information Numérique - Pôle IES

Pour toute information, merci de [nous contacter](#)