

Top news

# Revolutionary micropump performance just over the horizon

The micropump, a type of drug delivery system, is well-known to diabetics, many of whom use the devices for their daily insulin injections. Although micropumps are both practical and reliable, they do have their drawbacks: First, with a price tag in the thousands of euros, they are costly. Second, the drug volumes delivered are limited to one microliter per minute.

But R&D partners IMEP-LAHC, Leti, Eveon, and Cedrat Technologies have just unveiled a revolutionary new MEMS-based micropump capable of overcoming these hurdles.

The new pump can deliver up to several milliliters per minute, making it possible to administer biodrugs from one to three times per day—particularly useful in treating diseases like cancer, myopathy, and cystic fibrosis. And that's just the beginning. With an injection that lasts just 30 seconds, patient comfort is significantly enhanced. Plus, the dosage delivered is fine-tuned by an extremely sensitive MEMS flow sensor and dedicated electronics for increased patient safety—not to mention savings on drugs that can cost up to several hundred euros per microliter.

The partners developed the innovation under the three-year FluMIn3 collaborative R&D project, which was certified by Minalogic. IMEP-LAHC designed the silicon-based micropump, characterized it, and completed the early demonstrators. Leti then stepped in to fabricate the device on the institute's 200 mm line in order to determine industrial-scale production costs and technical feasibility. Cedrat Technologies designed the pump's electromagnetic actuator. And, ultimately, Eveon will market the pump.

Contact: laurent.montes@grenoble-inp.fr

Innovation

## International researchers shed new light on DNA repair

Researchers from INAC recently worked with scientists from France, Poland, and Russia to identify a previously-unknown mechanism to repair the uracil lesion, a major DNA alteration that can cause cancer.

INAC's biochemists helped prepare synthetic DNA fragments containing the uracil lesion, and then analyzed the enzyme repair process at work. Using MALDI-TOF mass spectrometry, they were able to clearly identify the damaged DNA fragments released during repair.

This crucial advance in basic science could have repercussions in radiotherapy, for instance, where it could help inhibit DNA repair in irradiated tumor cells.

Contact: didier.gasparutto@cea.fr

## Carbon-13 NMR at natural abundance now possible

INAC researchers have leveraged dynamic nuclear polarization, an emerging hyperpolarization technique, and an innovative sample preparation protocol to apply advanced solid NMR techniques to compounds in which carbon-13 is only present naturally, meaning at 1.1%.

This latest advance eliminates the need to use isotopic labelling to track an isotope with a variation—a technique that requires a high degree of sensitivity. And, because the use of isotopic labelling is generally limited to biological molecules, the innovation will open the door to new applications for any material for which X-rays are inadequate.

The research will continue under a project funded by the French National Research Agency (ANR) through 2016.

Contact: gael.depaepe@cea.fr

## Drones to get new miniature magnetometer

Leti recently completed a high-performance miniature magnetometer prototype suitable for drones. The device, whose probe measures just 8 cm<sup>3</sup>, is extremely compact. The development was inspired by the magnetometers developed for the space industry in recent years—for the Swarm satellite, for instance—but features some major innovations, like replacing the usual piezoelectric motor with a liquid crystal polarizer to allow the polarization to rotate from 0 to more than 300 degrees.

A similar magnetometer is being developed for magnetocardiography and magnetoencephalography. It will operate at ambient temperature, unlike the SQUID magnetometers currently in use, which must be cooled using liquid helium. The development of this new magnetometer will continue under a Ph.D. thesis in progress with Clinattec.

Contact: matthieu.leprado@cea.fr

## Innovation

## Micro-Raman spectroscopy used to characterize graphene-silicon transistor

**R**aman spectroscopy is already a technique of choice for the characterization of carbon-based structures. Now, it is also known to be effective on hybrid graphene-silicon MOS transistors made using graphene grown on silicon carbide. Researchers from Leti, INAC, and the University of Montpellier mapped the system's graphene areas, revealing the presence of graphene between the contacts. They also estimated the number of layers in each area and determined their structure.

The research was conducted under the Grafonics project, funded by the French National Research Agency (ANR). The goal is to pave the way for a major technology shift towards graphene, either to replace silicon in CMOS applications or to be used alongside silicon in hybrid electro- and photostimulable systems.

Contact: [denis.rouchon@cea.fr](mailto:denis.rouchon@cea.fr)

## New insights into how graphite gets charged with lithium

**I**NAC simulation experts have discovered new insights into a 40-year-old mystery: how graphite, an attractive anode material for lithium-ion batteries, gets charged with lithium. Their experiments demonstrated that lithium is organized in a periodic manner, intercalated in the space between the graphite planes, occupying one out of three galleries for a 33% charge and one out of every two galleries for a 50% charge—but the mechanisms of the staging transition remain a mystery.

The researchers designed an atomic-scale model in which the lithium is organized in either full or empty bands instead of occupying all of each gallery in "islands." A simulation showed that the model, which explains the kinetics of the staging transition, is plausible in terms of thermodynamic stability. The research was published in *Applied Physics Letters*.

Contact: [damien.caliste@cea.fr](mailto:damien.caliste@cea.fr)

## Smart obstacle detection gets boost from multicore circuit

**I**nria's Montbonnot lab (near Grenoble) recently developed an obstacle detection application capable of operating in dynamic environments—even going so far as to predict the trajectories of temporarily-hidden objects! The CEA, with the support of Inria, helped get the application—initially developed on a powerful workstation—ready for integration into a smart vehicle by embedding it into a multicore circuit by STMicroelectronics. The power-to-performance ratio improved tenfold and additional progress is within reach.

This type of ultra-compact, ultra-powerful circuit could potentially be used for other systems in fields like mobile medical imaging equipment and smartphones. However, Inria and the CEA are currently maintaining their focus on automotive applications. The research is being conducted under the Nanoelec research institute's Bridging Technologies program.

Contact: [diego.puschini@cea.fr](mailto:diego.puschini@cea.fr)

## Piezoelectric stack integration time slashed by 70%

**A** team of researchers from Leti and Mitsubishi has developed a process that leverages a new piezoelectric material developed by Mitsubishi. According to the researchers' estimates, the process could cut by 70% the time needed to integrate a piezoelectric stack measuring around 2 microns thick into RF capacitors and actuators. The innovation hinges upon a unique sol-gel formulation—more viscous than the material generally used—that makes it possible to deposit layers four times thicker than normal. This reduces the number of layers from 36 to around 10, which explains the spectacular drop in integration time. Defect densities are also reduced.

The piezoelectric stack offers electrical and mechanical properties equivalent to the current market standard. The researchers are now working with a hardware manufacturer on a related modification, and other enhancements are in the works.

Contact: [jeannet.bernard@cea.fr](mailto:jeannet.bernard@cea.fr)

## Leti radio-frequency switches tested in space

**T**esting components developed for space applications on an actual satellite in orbit simply makes sense. And that is exactly what Leti has been doing since February, when a dozen of its RF switches were sent into orbit on board the Athena-Fidus satellite. The initial test results will be transmitted to the French National Space Agency (CNES) in just a few days.

The switches are based on a MEMS technology—a world-first—that makes them ten times smaller than their mechanical equivalents. The switches were tested on the ground for a full year, but because the technology is such a huge leap forward, CNES required additional validation testing in space.

The test switches currently in orbit will continue to be monitored throughout the satellite's fifteen-year mission. However, if the initial results are conclusive, they should be approved much, much sooner!

Contact: [bruno.reig@cea.fr](mailto:bruno.reig@cea.fr)

## Quantum transport: Kwant goes dynamic

**I**NAC researchers, already active in the Kwant open-source quantum transport software development community, are at it again, this time with the T-Kwant add-on. T-Kwant can be used to examine the dynamics of quantum systems, such as to experiment with a charge pulse in a multi-terminal system, or to configure a quantum Hall interferometer, for instance. T-Kwant covers frequencies from the GHz to the THz.

A first article on the research was accepted by a journal early this year; another was published in *Nature Communication* in April. The purely-mathematical work has been completed, and now all that remains is to fine-tune the software. T-Kwant should be as versatile and easy to use as Kwant, but you'll have to wait at least a year before it is ready to download!

Kwant documentation and downloads: <http://kwant-project.org/>  
Contact: [xavier.waintal@cea.fr](mailto:xavier.waintal@cea.fr)

## The Internet of Things gets a new architecture model

**T**he Internet of Things has just made a giant leap forward with the EU-funded IoT-A project (completed late last year). As members of the project consortium, Leti and List helped to develop the Architecture Reference Model (ARM) methodology to develop architectures for virtually any set of internet-connected heterogeneous objects that interact with their environment.

ARM handles issues like interoperability, communications security, extension of the initial network, or changes in scale from the initial network. Thanks to ARM, developers will no longer have to reinvent the wheel for each new architecture. The European Commission deemed ARM so effective that it is now required for all EU-funded projects focusing on the Internet of Things. ARM is also being reviewed by ISO and French standards organization AFNOR.

Contact: [olivier.savry@cea.fr](mailto:olivier.savry@cea.fr)



## Innovation

## Spin-orbit interaction breathes new life into MRAMs

Over the past few months, Spintec has been completing the fabrication of the first generation of a new kind of MRAM likely to push back the limits of the previous generation of MRAM. The new SOT-MRAM (for spin-orbit torque) leverages spin-orbit interaction to multiply the number of current pathways used during the read and write phases. Because the magnetic tunnel junction is no longer subjected to high current densities, SOT-MRAM offers better resistance to breakdown and aging. In addition, the risk of disturbances (writing) during read phases is eliminated.

This first generation of SOT-MRAM is made using the same materials as MRAM. And the early test results are promising: tunnel magnetoresistance is high at 90%, and switching times are very low, at less than 200 ps. The researchers are now looking at additional enhancements, including ways to reduce the memory's energy consumption.

Contact: gilles.gaudin@cea.fr

## Nanometric deformation measurement just got even more accurate

The Nanocharacterization Platform has just achieved a world first: measuring SOI transistor deformation with spatial resolution under 2 nm. The breakthrough was made possible thanks to the addition of precession electron diffraction to the Titan transmission electron microscope. A set of lenses was used to rotate the beam, increasing the number of diffraction spots. The accuracy of deformation measurements improved from  $5 \times 10^{-3}$  to  $3 \times 10^{-4}$ .

The deformation of nanoelectric materials is used increasingly to improve charge-carrier mobility. The new measurement capabilities, when used with finished element simulation, will provide more detailed interpretations without the bias created by relaxing the sample (just 100 nm thick).

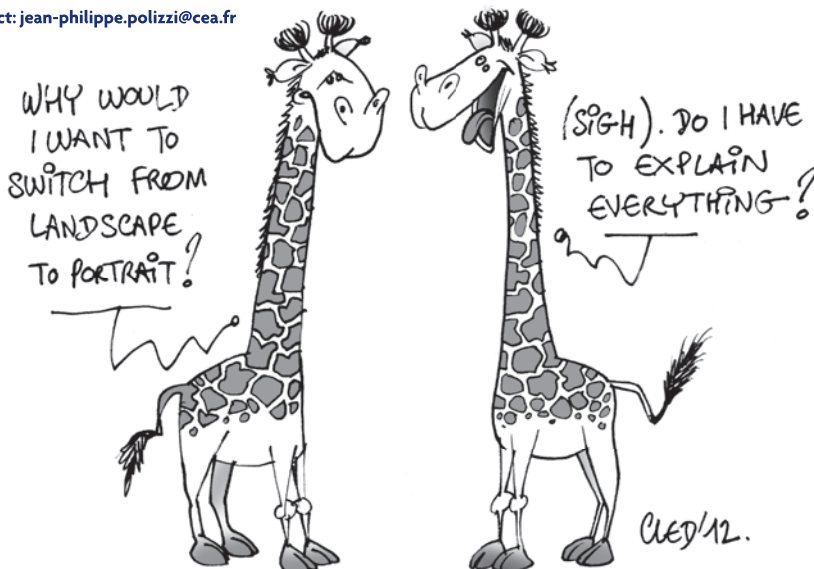
Contacts: nicolas.bernier@cea.fr  
jean-luc.rouviere@cea.fr

## Six motion sensors on just 4 mm<sup>2</sup> of silicon

Tronics recently presented a revolutionary MEMS concept invented by Leti. The new MEMS packs in an impressive three accelerometers and three gyrometers on just 4 mm<sup>2</sup> of silicon. The ultra-compact system will target the mobile phone market where it will enhance features like gaming and switching mobile phone cameras from portrait to landscape mode. There is currently nothing else like it anywhere in the world.

A suspended piezoresistive silicon nanowire—around 100 times smaller than the silicon beam currently used—detects movement. The signal is significantly amplified, and power consumption is very low. The new system could also be used for pressure sensors, magnetometers, microphones, and other devices that could be integrated onto the chip using a 100% silicon process. Some fifteen patents have been filed.

Contact: jean-philippe.polizzi@cea.fr



## Day by day

## Books: *Beyond CMOS Nanodevices 2*

Network of Excellence coordinator Francis Balestra (IMEP-LAHC) edited *Beyond CMOS Nanodevices 2*, which was recently published by Wiley. The multi-author book, a follow-up to the EU Nanofunction project on beyond-CMOS nanosystems, provides a comprehensive review of the state of the art and the flagship applications expected to emerge over the next decade.

The first volume of the book dealt with nanosensors and nanostructures for sensors, energy harvesting (mechanical, solar, and thermoelectric), RF communications, and nanocooling. This latest volume covers applications for nanocomponents in logic circuits and memory. Several chapters were written by researchers from Grenoble's FMNT and Leti.

Contact: balestra@minatec.grenoble-inp.fr

To order the book:

Volume 1: <http://www.iste.co.uk/index.php?f=a&ACTION=View&id=752>

Volume 2: <http://www.iste.co.uk/index.php?f=a&ACTION=View&id=751>

## Samsung chooses FD-SOI

Grenoble's microelectronics industry just brought home a big win. Global smartphone leader Samsung recently signed a strategic contract with STMicroelectronics with a view to integrating the semiconductor giant's 28 nm FD-SOI technology into future generations of Samsung products.

STMicroelectronics, Soitec, and Leti have been working together to improve FD-SOI over the past several years. The material is now capable of meeting the requirements of mobile communications devices, offering benefits like enhanced performance, extended battery life, and lower manufacturing costs—all without the need to overhaul current design and manufacturing processes.

In addition to the 28 nm technology covered by the contract with Samsung, Leti is already hard at work on the next generations of FD-SOI (14 nm and 10 nm).

Contact: pierre-damien.berger@cea.fr

## CEA holds onto position as one of France's top three patent filers

France's National Industrial Property Institute (INPI) published its 2013 patent ranking in April. The CEA ranked third with 625 patent applications (up from 566 in 2012), coming in behind PSA Peugeot Citroën (1,378 applications) and Safran (645 applications).

The 2013 ranking is fairly similar to the previous year's ranking. Changes worth noting: Safran pulled ahead of the CEA in 2013, and the total number of patent applications filed increased by 1.5% from 2012 to 2013.

On the international front the CEA is gaining traction, moving up in the WIPO (World Intellectual Property Organization) ranking (at 39<sup>th</sup> with filings made through the Patent Cooperation Treaty procedure) and in the EPO (European Patent Office) ranking (at 33<sup>rd</sup>).

Contact: isabelle.rivat@cea.fr

## Interview

Isabelle Guillaume,  
General Manager, Minalogic

**Our goal is to turn more projects into commercially-viable products**

**The French government is pushing the country's clusters to make the transition from "project factory" to "product factory." What does this mean for Minalogic?**

As a member of the national competitive cluster system, we are aligning with this objective. We started by assessing the 46 Minalogic-certified R&D projects that have been completed since the cluster's inception. A year after the projects were completed, we tallied a total of 600 jobs created, €100 million in revenue, 150 patents filed, and 400 articles published. And we estimate total annual revenue to reach €400 million six to ten years out—that would be a nine fold return on the initial investment.

**And where can Minalogic do better?**

First, we are recruiting more business- and market-oriented experts to sit on our project selection committees—people who really know the markets and applications our technologies target. Second, we are setting up meetings between large corporations seeking innovations and the local businesses that can provide them. Air Liquide has been the first corporation to benefit from this initiative.

**Minalogic recently expanded its scope to software. How is that working so far?**

We are currently in the process of certifying several software-only projects, some of which are led by software-only companies. So, our expanded scope has enabled us to successfully reach out to new businesses. At the same time, we are working with more than 300 other members of the local software community to boost Grenoble's run for the French Tech label, which would further raise the local tech ecosystem's international profile and open the door to new sources of growth funding for start-ups.

Contact: [isabelle.guillaume@minalogic.com](mailto:isabelle.guillaume@minalogic.com)

## Day by day

### Grenoble Institute of Technology email addresses updated

**G**renoble Institute of Technology did away with its "@inpg.fr" email addresses in March of this year to combat excessive SPAM and a large number of obsolete/unused email accounts.

An autoresponder has been set up to alert anyone sending an email to a discontinued address to resend their message to a new address with the following format: "firstname.lastname@grenoble-inp.fr." The autoresponder can be sent a maximum of once a week to any one given sender and will remain active until March 2015. Addresses with the extensions "@school.inpg.fr" and "@lab.inpg.fr" will not be affected.

Contact: [dsi@grenoble-inp.fr](mailto:dsi@grenoble-inp.fr)

### Primo1D presents E-Thread at RFID Journal Live 2014 in Orlando

**G**renoble-based start-up Primo1D exhibited at RFID Journal Live 2014 held in Orlando, Florida on April 8–10, taking advantage of the opportunity to present the broad range of potential applications (which include anti-theft and anti-counterfeiting) for its E-Thread RFID technology.

E-Thread technology, developed at CEA-Leti, leverages a patented electronic chip whose grooved sides enable it to be mechanically—and, most importantly, invisibly—inserted into woven textiles. Primo1D is targeting the industrial laundering, linen rental, and retail textile markets with the innovation, which could also be used to insert LEDs into thread for high-end home decorating applications.

Learn more at: [goo.gl/16lch4](http://goo.gl/16lch4)

Contact: [dominique.vicard@primoid.com](mailto:dominique.vicard@primoid.com)

### Aryballe unveils plans to raise €4 million in fresh capital

**S**tart-up Aryballe Technologies, founded in 2014, is gearing up to raise €4 million in fresh capital to finance R&D on innovative olfactory and gustatory biosensors for the perfume and food industries. The company has also signed two R&D contracts, one with Leti and the other with INAC.

Aryballe used SPRI (Surface Plasmon Resonance imaging), a technique developed by INAC, to get its technology to work with gas instead of just liquid. The company's first commercial product, "Nanosmia," a portable odor-detection device, is expected to be released in 2016. The device is designed for patients suffering from anosmia (an inability to perceive odor).

Norwegian-born olfactory artist and scientist Sissel Tolaas, renowned for her groundbreaking work on scent, is one of Aryballe's four co-founders.

Contact: [tristan@nthera.com](mailto:tristan@nthera.com)

### Phelma lab classes to use large instruments starting in September

**S**tarting next September, Grenoble Institute of Technology-Phelma students in the Physics for Nanoscience, FAME International Master's, and Nuclear and Energy Engineering programs will have an opportunity to complete lab classes and research projects at Grenoble's large scientific instruments.

This totally new initiative is spearheaded by the large instruments (ILL, ESRF, and Leti's Nanocharacterization Platform) via the Nanoelec research institute education and training program. Groups of around ten students will use the instruments regularly throughout the academic year. Ultimately, the initiative should be broadened to the Materials Science and Engineering and Biomedical Engineering programs.

Contact: [stephane.pignard@phelma.grenoble-inp.fr](mailto:stephane.pignard@phelma.grenoble-inp.fr)

## Day by day

## Ten start-up projects in the running for the Challenge First Step 2014

The third edition of the Challenge First Step is hitting cruising speed, with ten start-up projects submitted (seven from Leti, two from Liten, and one from List; nine project leaders are permanent employees of the CEA Technology Research Division, the tenth is on a post-doc contract).

Shortlisted candidates, to be announced on June 19, will go on to participate in a week-long immersion program in early July devoted to teambuilding and business design. In the fall, they will receive one-to-one coaching.

Projects shortlisted for the Challenge First Step receive support services and financing designed to give out-of-the-box ideas an opportunity to develop into viable businesses by helping project leaders better prepare their start-up plans.

Contact: [stephane.fontanell@cea.fr](mailto:stephane.fontanell@cea.fr)

## Phelma student body elects new representatives

Following a week of intensive campaigning across Grenoble Institute of Technology-Phelma's three campuses, the student body elected its new representatives. And, like in 2011, the student body's new president is a woman: Carole Le Goc. The elections are one of the highlights of Phelma's academic year, with numerous events—both on and off campus—throughout the campaign. The candidates pulled out all the stops this year, with campaign websites, parties, daily breakfast meetings, home delivery of student-cooked meals, sporting events, and other fun activities.

The newly-elected student representatives plan to broaden the range of recreational activities available at the school, with a particular focus on sports and outdoor activities.

Contact: [legoccarole@gmail.com](mailto:legoccarole@gmail.com)

## Shaping tomorrow's cities at MINATEC IDEAs® Laboratory

MINATEC IDEAs® Laboratory is currently running the Cité 2030 project in partnership with GDF Suez. The goal is to design the products and services that will shape tomorrow's cities. The project partners are working from four development scenarios (which you can see here <http://www.gdfsuez.com/en/commitments/reasearch-innovation/city-building-tomorrow/what-will-cities-look-like-in-2030/>) to look at how people will use cities for business, work, and entertainment—and determine what they will want and need in the year 2030.

The project results will be posted on a dedicated website this fall; selected solutions will be rolled out on a test basis to assess the general public's acceptance of the new uses these innovations are likely to create. The technologies needed for the most relevant solutions will be developed by MINATEC IDEAs® Laboratory partner labs.

Cité 2030 video (in French): [goo.gl/ulnrQA](http://goo.gl/ulnrQA)  
Contact: [philippe.caillol@cea.fr](mailto:philippe.caillol@cea.fr)

## Tram service disruptions to continue through August

Work to extend tram line B has caused disruptions in service to MINATEC since April 28, and the *Cité internationale* stop serving MINATEC is scheduled to remain closed until August 31. So, to get to MINATEC this summer, simply take the tram as far as the *Palais de Justice* stop and walk five minutes to campus. Or, walk from the train station (which takes just a few minutes more from the *Europole* exit reached via the underground walkway). Alternatively, you can take bus line 31 to the *Europole* stop.

Tram line B is being extended 1.8 kilometers, and two new stops—*CEA Cambridge* and *Presqu'île*—will open on September 1, serving more than 15,000 people who live and work in the neighborhood.

Get the latest news on the construction work at: [www.pdiegrenoblepresquile.fr](http://www.pdiegrenoblepresquile.fr)  
Contact: [pdie.grenoble.presquile@gmail.com](mailto:pdie.grenoble.presquile@gmail.com)

## Horizons

## New Grenoble Institute of Technology websites go live

Grenoble Institute of Technology and its six schools now have brand-new websites. The sites, which have gradually been going live since April, leverage the same navigation menus and graphics guidelines for consistency across the entire institution. The screen width has been increased from 400 pixels to 700 pixels and the font size has been amped up. And, thanks to responsive web design, visitors are guaranteed an optimal experience whether they are on a PC, tablet, or smartphone.

The recently-overhauled sites are chock-full of new features, from a rotating news banner on the home page to better integration of social networks. Users will also appreciate a targeted navigation menu to take them directly to the most relevant sections of the site (for students, future students, or companies, for example), geolocation features, and easy-to-find online courses.

Contact: [alexis.sableaux@phelma.grenoble-inp.fr](mailto:alexis.sableaux@phelma.grenoble-inp.fr)

## Twizy electric vehicle demonstrator highlights smart battery management

Renault Twizy electric vehicle demonstrator has been on display at the CEA Tech showroom since April. It shows how the car's smart energy management system—developed jointly by Leti, Liten, and List—works. It also showcases the car's unique GPS, which combines geographical data (including topographic data) with data on the car's remaining energy supply.

The demonstrator simulates a drive in the nearby Chartreuse mountains, showing how the system behaves according to how fast it is going and how steep the grade is. Digital video mapping gives a realistic view of the electrical current being used when the car is running or harvesting energy to recharge its batteries. It also shows how the car manages battery-pack incidents to ensure that the car maintains enough range to get the driver back home.

Contact: [jean-bernard.poire@cea.fr](mailto:jean-bernard.poire@cea.fr)

## France-Japan working group encourages transnational cooperation

The France-Japan working group was set up in October 2013 to facilitate cooperation between Grenoble and Japan (and, especially, the Japanese city of Tsukuba). The group, which meets monthly, is comprised of around ten representatives of GIANT innovation campus partners and is open to stakeholders that maintain active relations with Japan.

The group's first action item was to identify current and potential projects involving cooperation between France and Japan. The overall objective of the group is to promote scientific cooperation agreements like the one that will be signed in Grenoble in September. The group would also like to provide on-site coordination services for Japanese delegations visiting Grenoble.

Contact: [thibaut.david@cea.fr](mailto:thibaut.david@cea.fr)



## Horizons

# CEA Tech strengthens ties with France's Institutes of Technology

Implementation of the CEA Tech partnership agreement with France's four Institutes of Technology (Grenoble, Bordeaux, Nancy, and Toulouse) recently got underway, starting with an April tour of the MINATEC showroom for members of the Grenoble Institute of Technology Corporate Relations team and 25 students in their first year at Ense<sup>3</sup>.

The partnership also includes plans to increase students' awareness of CEA Tech internship opportunities, with more effective dissemination of internship offers—especially for gap-year programs, which give students an opportunity to work on an R&D project with a CEA Tech industrial partner. The goal is to give tomorrow's engineers the information they need to pursue careers in tech research.

Contact: [isabelle.touet@cea.fr](mailto:isabelle.touet@cea.fr)

# The Internet of Things in the spotlight at LetiDays 2014

The LetiDays 2014 conference on "The Internet of Things, from Sensors to Zero Power" will be held at Maison MINATEC on June 25–26. The Internet of Things (IoT) is a crucial research topic for Leti, which is developing technologies for IoT applications—in particular for sensors, low-power systems, and network security. The LetiDays 2014 program will cover Leti's approach to IoT R&D, the markets Leti expects to be able to address thanks to its IoT technologies, and, finally, the institute's technology roadmap. Several of Leti's industrial partners will either be giving talks or exhibiting at the event.

And, in the run-up to LetiDays 2014, two workshops will be held on June 23–24. The first will present the highlights of Leti's Catrene project and the second will focus on non-volatile memory.

View the full program and register at: [www.letidays.com/2014](http://www.letidays.com/2014)  
Contact: [mathilde.costes-majorel@cea.fr](mailto:mathilde.costes-majorel@cea.fr)

# CEA Grenoble publications to be signed "Grenoble Alps University"

Grenoble's higher education and research community has adopted a common signature, "Grenoble Alps University" for all publications. CEA Grenoble is aligning with its partners by adopting the signature; however, the CEA will remain consistent with its unique status, mission, and business model. In short, any publication authored by a CEA Grenoble researcher must list Grenoble Alps University first, and, on the second line, the organization with which the researcher is affiliated. This decision became effective in March.

The aims of the new shared signature are to boost the collective image and raise the international profile of Grenoble's higher education and research community.

Contact: [isabelle.touet@cea.fr](mailto:isabelle.touet@cea.fr)

## Live from MINATEC

# SiC community to meet in Grenoble on September 21–25

The European Conference on Silicon Carbide and Related Materials (ECSCRM), to be held in Grenoble on September 21–25, will bring together some 500 researchers and professionals from the world of industry. The conference will address both basic and applied research on SiC and related materials like graphene, which are gradually emerging as superior to silicon for very-high-power electronics for applications like railway electric traction systems and electrical distribution equipment.

The participants will get a closer look at SiC growth methods like top-seeded solution growth (TSSG), which has long been considered too complicated, but is today making a comeback thanks to new research showing that the method can significantly improve the material's crystalline quality.

Conference website: [www.ecscrm2014.org](http://www.ecscrm2014.org)  
Contact: [didier.chaussende@grenoble-inp.fr](mailto:didier.chaussende@grenoble-inp.fr)

## Agenda

**Until July 4**  
**Grenoble Institute of Technology 2014 summer school**  
<http://goo.gl/5un7c5>

**Until July 25, Grenoble**  
**GIANT international internship program**  
<http://goo.gl/lySQ70>

**June 12–13, Maison MINATEC**  
**Pumamind workshop on multiscale modeling for PEMFCs**  
<http://goo.gl/ZPmzfm>

**June 16–18, Grenoble Institute of Technology-Phelma**  
**MAT4ENERGY** international workshop on materials and technologies for renewable energy applications  
Contacts: [david.munoz-rojas@grenoble-inp.fr](mailto:david.munoz-rojas@grenoble-inp.fr) & [daniel.bellet@grenoble-inp.fr](mailto:daniel.bellet@grenoble-inp.fr)  
<http://www.lmgp.grenoble-inp.fr/mat4energy-2014/>

**June 17, Maison MINATEC**  
**GIANT administrative assistants day**, 11 a.m.–1:30 p.m.  
For more information: [anthony.ibanez@cea.fr](mailto:anthony.ibanez@cea.fr)

**June 17, World Trade Center Grenoble**  
**Minalogic annual "Imagine the Future" day**  
<http://goo.gl/lcPtLZ>

**June 17–18, Grenoble**  
**IMEP-LAHC science days**  
<http://goo.gl/LUR4AA>

**June 19–20, Maison MINATEC**  
**Third Franco-American workshop**

**June 25–26, Maison MINATEC**  
**LetiDays 2014**  
<http://www.letidays.com/2014/>

**June 25–27, Grenoble**  
**Transmission Electron Microscopy (TEM)** training session held by LMGP and Grenoble Institute of Technology Division of Continuing and Executive Education  
<http://goo.gl/wBAaKH>

**June 30–July 3, Maison MINATEC**  
**Prime 2014** conference on Ph.D. research in microelectronics and electronics  
<http://prime2014.sciencesconf.org/>

**July 1–2, Paris**  
**NEMS 2014** international seminar on nanomechanical systems organized by OMNT  
<http://www.omnt.fr/nems2014/index.html>

**July 2–4, MINATEC**  
**inMRAM summer school**  
View full program and register at: [www.inmram.com](http://www.inmram.com)

**July 7–9, Phelma auditorium**  
**Workshop on low-temperature electronics**  
<http://www.wolte2014.org/>

**July 7–11, Saint Martin d'Hères**  
**SCES 2014** international conference on strongly-correlated electron systems  
<http://www.sces2014.org/>

**September 21–25, Grenoble**  
**The European Conference on Silicon Carbide & Related Materials (ECSCRM)**  
[www.ecscrm2014.org](http://www.ecscrm2014.org)

## Contacts

# MINA-NEWS >

MINA-NEWS is published by MINATEC, 3 parvis Louis-Néel, 38054 Grenoble Cedex 9 France  
Head of Publication: Jean-Charles Guibert; Editor-in-Chief: Julie Spinelli  
Contributors: Philippe Laporte, Leti, [philippe.laporte@cea.fr](mailto:philippe.laporte@cea.fr) - Colette Lartigue, Phelma, FMNT, [colette.lartigue@grenoble-inp.fr](mailto:colette.lartigue@grenoble-inp.fr) - Jérôme Planes, INAC, [jerome.planes@cea.fr](mailto:jerome.planes@cea.fr) - Julie Spinelli, MINATEC, [julie.spinelli@cea.fr](mailto:julie.spinelli@cea.fr) - Alexis Sableaux, Phelma, [alexis.sableaux@phelma.grenoble-inp.fr](mailto:alexis.sableaux@phelma.grenoble-inp.fr)  
Editing: Benoît Playoust and Bénédicte Magne; layout: Philippe Tur; printing: Format Éditions  
English translation: SFM Traduction