

Top news

CEA forms joint lab with Singapore's NTU*

This summer, the CEA set up its first international joint lab with a university in Singapore. The SCARCE* lab has a total budget of €12.5 million euros over three years and will focus on the recycling and transformation of electronic waste. INAC, Leti, Liten, ICSM, and IRAMIS are just some of the partners involved in the project.

The SCARCE lab responds to a pressing need. Singapore, which is one of the most densely-populated places on earth with 5.7 million inhabitants in just 720 sq. km, has nowhere to put its electronic waste. The country has set an ambitious target of zero waste by 2030. To succeed, it will need to develop viable industrial-scale recycling and transformation processes.

Around fifteen CEA experts on the job

The CEA began working on the issue of what to do with nuclear waste very early on, and rapidly expanded its research to many other types of industrial waste. The organization has earned recognition as one of the world's leading centers for expertise in hydrometallurgy. The CEA's programs encompass sorting, lixiviation, separation, liquid-liquid and liquid-solid extraction, and other processes.

SCARCE will benefit directly from the CEA's know how. Around fifteen CEA experts (from the organization's DEN, DRT, and DRF divisions) will travel to Singapore to conduct research at the lab. For example, Leti imaging specialists will apply their knowledge to materials recognition for recycling.

The joint lab will be run by Jean-Christophe Gabriel for the CEA; Gabriel has already left to spend one year on site in Singapore. Until recently, Gabriel was the head of the ERC RECYCLE lab, which had been hosted at INAC and was transferred to IRAMIS in August.

The lab will focus on four areas: lithium-ion batteries, silicon-based solar panels, printed circuits from consumer electronics, and plastics containing toxic substances like brominated flame retardants.

*Nanyang Technological University

*Singapore-CEA Alliance for Research in Circular Economy

Contact: jean-christophe.gabriel@cea.fr

Innovation

Strain-free InGaN lights up in blue, green, and red

Imagine if a single material—indium gallium nitride—could be used to fabricate blue, green, or red micro LEDs. Leti, Soitec, and equipment manufacturer Corial recently joined forces under the French Single Interministerial Fund project Butterfly to make this a reality. The partners hope to develop a 10-micron micro LED technology for augmented reality, pico-projectors, and heads-up automotive displays. At first glance, InGaN does not appear to be compatible with producing the three colors. To do so would require increasing the amount of indium, which would create excessive mechanical strain in the material. However, putting the InGaN on an oxide-sapphire substrate using a proven Soitec process relaxes the strain. Now, the researchers must tackle the challenges inherent to epitaxiating a new 100% InGaN LED structure and miniaturizing the LEDs.

Contact: amelie.dussaigne@cea.fr

Choosing the best LiDAR for autonomous vehicles

Autonomous vehicle stakeholders are banking on LiDAR* to perceive objects in the environment in real time. However, there are currently no standards for LiDAR sensors and their performance can vary wildly, making them incompatible with the requirements of the target applications. Transdev, a major public transportation operator, turned to Leti and IRT Nanoelec to evaluate six commercially-available products in real-world conditions. The evaluation was completed this summer. The researchers took measurements in all weather conditions and in the presence of various roadway "objects" like other vehicles and road signs. Because autonomous vehicles are equipped with several LiDAR and other sensors, the researchers evaluated the products individually and together. Transdev now has comprehensive data to make the best LiDAR choices for its future autonomous buses and tramways.

*Light detection and ranging

Contact: marie-sophie.masselot@cea.fr



Innovation

Internet of Things: a technology to improve communications

Leti recently successfully completed field testing on a low-energy, long-range 5G communications technology (LWPA) for the Internet of Things. The technology has achieved better results than commercially-available solutions in terms of range, energy consumption, and data transmission speeds, which are compatible with the target applications. Data transmission speeds are between 4 kbit/s and 3 Mbits/s. The technology leverages two well-known multiple-access schemes, OFDM and SC-FDM, and a new one patented by Leti, Turbo-FSK. The technology provides flexibility by selecting the most appropriate frequency to deliver the information, depending on the transmission conditions and the needs of the application. It can also aggregate non-contiguous frequency bands to increase data transmission speeds. Talks are underway with several potential industrial partners.

Contact: vincent.berg@cea.fr

New insights into spin-orbit torque

How is it that spin-orbit torque can be either positive or negative in ferromagnetic bilayers? And how can the materials be combined to obtain optimal properties? Researchers at INAC worked with their peers from the US to gain new insights into these questions. They completed a theoretical study of a Rashba-type spin-orbit coupling system. The study established and quantified the relationship between SOT and the longitudinal component of the spin current in this type of system. The study also showed that the SOT sign change could be explained by the difference in electrostatic doping depending on the types of materials at the interfaces. The results are of great interest to technology experts. SOT could make magnetization switching in a ferromagnetic layer possible, without the need for an external polarizing element.

Contact: mair.chshiev@cea.fr

Cybersecurity: Leti automates testing

In research conducted under the Catène-Innovation-Award-winning Mobitrust project, which wrapped up in 2017, Leti automated connected device (smartphone, tablet, etc.) security testing. The automated process enables faster, broader testing and all tests can be carried out in identical conditions. For the Mobitrust project, the automated testing was used on the TEE* function, which determines the scope of a separate execution environment for the sensitive applications of a connected device. The tests verify that the TEE is compliant with specifications and was developed according to certain design rules. The automated tests can also be used on the secure boot function, which forbids the execution of unauthorized code. Around ten Leti researchers have been assigned to these projects, including under R&D contracts with industrial partners.

*Trusted Execution Environment

Contact: guillaume.herve@cea.fr

Magnetic heating boosts water electrolysis

What happens when you take a water electrolysis cell, add some nickel-encapsulated iron carbide nanoparticles, and apply an alternative high-frequency magnetic field to the whole thing? The catalytic activity inside the unit is several times what you usually get! Researchers at LEPMI and INSA Toulouse recently completed proof-of-concept testing of the phenomenon. They hope that their breakthrough process could ultimately be used to build high-yield electrolyzers. Nickel, an inexpensive and abundantly available catalyst, would replace the platinum-based metals currently used. The findings were published in *Nature Energy*. The research is ongoing under a French National Research Agency project, Hy-Whaly, which kicked off in early 2018. The advance will initially be developed for water electrolysis for the low-cost production of hydrogen for energy.

Contact: marian.chatenet@lepmi.grenoble-inp.fr

Learn more about Hy-Whaly: http://www.agence-nationale-recherche.fr/projet-anr/?tx_lwmsuivibilan_pi2%5BCODE%5D=ANR-17-CE05-0017

Spin waves detected in CMOS-compatible materials

Could spin waves have a future in tomorrow's ultra-miniaturized CMOS-alternative systems? Until now it was clear that manipulating spin waves required the use of materials not compatible with silicon technologies. In addition, controlling and detecting spin waves entailed using techniques that cannot be miniaturized. Researchers from INAC recently overcame several of these hurdles. The researchers successfully generated, propagated, and detected spin waves with wavelengths of up to 150 nm in waveguides fabricated from STT-RAM memory materials. The thicknesses of the very thin layers in the stacks were carefully chosen to enable propagation with very low attenuation. Detection leveraged the inverse spin Hall effect, which is compatible with ultra-miniaturization. The findings were published in *Nanoletters*.

Contact: gilles.gaudin@cea.fr

Quantum bits: SOL nanowires open up new possibility

A new step forward toward tomorrow's quantum computers has been made. Researchers from INAC and Leti demonstrated that the spin of an electron confined in a silicon-on-insulator (SOL) nanowire can be manipulated by an electric—rather than a magnetic—field. Controlling spin using electric fields generated by grids is a standard microelectronics-industry technology. Australian and American researchers had previously predicted a tenuous effect of the electric field on electron spin, in the vicinity of a crystal step at the silicon-silicon oxide interface. The Grenoble-based researchers confined the electrons in the edges of rectangular silicon nanowires, producing the asymmetry necessary to couple the spin and electric field. A patent application for the phenomenon, called EDSR*, is currently pending.

*Electric-dipole spin resonance

Contact: marc.sanquer@cea.fr

Research brings much-needed order to nanoplate suspensions

Can nanoplates in suspension in a colloidal solution arrange themselves into a lamellar (equidistant layer) structure? Researchers from INAC and CNRS recently found the long-awaited answer to this question by using small-angle X-ray scattering (ESRF) to study the material. The observations showed that antimony phosphate acid polyions measuring around 100 x 100 nm² in suspension in water arrange themselves in the lamellar phase. The lamellar phase can even exist with two other phases (nematic and isotropic) in the same sample. The results obtained had not previously been predicted by any theoretical model in the literature. It is significant because the lamellar phase, which compartmentalizes spaces within a suspension, is present in all living organisms. The research was published in the prestigious journal *Proceedings of the National Academy of Sciences*.

Contact: jean-christophe.gabriel@cea.fr

Live from MINATEC

The artistic side of new printed materials

Have you ever wondered what choreographers, production designers, or street artists could do with some of the new printed materials out there? Imagine what these artists might be able to create with flexible solar panels, conducting ink, or haptic-feedback materials! A workshop offered by the Atelier Arts-Sciences on October 15–19 will give artists, designers, students, and research scientists a chance to use new printed materials in unique ways. The most promising concept hatched at the workshop will lead to an eighteen-month artistic residency during which a complete work will be created. The work will be presented at EXPERIMENTA 2020. The CEA, coordinator of the EU Prestige project on new printed materials, initiated the project. Prestige is somewhat broader in scope, addressing the integration of these materials into consumer products.

Contact: laurence.bardini@theatre-hexagone.eu

Working to make refugee camps better places to live

In July, around ten students from Pennsylvania in Grenoble for their research under the GLIP* took part in an innovation and fast-prototyping workshop. The students are developing innovative materials for emergency shelters as part of the French-American REACT (Research and Education in Active Coatings) partnership funded by the US National Science Foundation and French National Research Agency.

In four days, the students designed two objects using REACT materials and intended specifically for refugee camps. The first is a hand-disinfection device with chlorine produced locally at a very affordable cost. The second is a self-powering emergency call box that also integrates lights and an alarm. This novel invention would help keep female refugees—the primary targets of violent crime—safer.

*GIANT International Internship Programme

Contact: sebastien.berger@cea.fr

More than 1,500 schoolchildren expected at *Parvis des sciences* science fair

On October 11–13 Maison MINATEC will host the eleventh *Parvis des sciences* science fair. The capacity of the event was increased this year to accommodate growing numbers of requests from schools. More than 1,500 schoolchildren (300 more than in 2017) from 31 elementary school and 28 high school classes are expected on the Thursday and Friday of the event. Posters were also sent to 300 schools across the Isère district inviting children to come with their families on Saturday, October 13, which is open to the general public. This year's event will also feature new activities like an introduction to coding, a hands-on workshop on how to build a high-frequency radio transmitter, activities on the energy transition, and a "Science and Cinema" booth that will unlock some of the secrets of science fiction films.

Learn more: www.parvis-des-sciences.com

Contact: sebastien.berger@cea.fr

CEA Open Innovation Center: innovation in residence

The CEA Open Innovation Center will combine high-tech R&D, exploration of new uses for technology, and innovative business models. Ground broke on the new building on September 25, 2018 at a ceremony attended by representatives of the project's three financing partners*. The 3,300 sq. m facility's modular workspaces will host project teams (two days a week for four months, for example). Teams will be made up of CEA technology, marketing, and user-centered design experts and employees of the partner company. The projects hosted on-site will focus on new products and services, emerging technologies, and multi-technology topics. Several projects have already begun, like the 3D printing residency with HP.

*The Auvergne Rhône-Alpes Regional Council, the Isère General Council, and the CEA

Contact: celine.soubeyrat@cea.fr

Challenge First Step 2018 cohort selected

The Challenge First Step 2018 selection committee approved the seven projects presented last June. Six of the projects are from Leti and one is from Liten.

Four of the projects address healthcare-related topics: a low-cost magnetoencephalography machine for research and diagnostics; a microfluidic bacterial detection system for real-time analyses for the food and other industries; a lensless imaging system to identify allergens; and a portable real-time physiological monitoring system for patients in clinical trials. The three other projects address the development of mechanically stable silicon interposers; a process for hardening locally-sourced wood; and a platform for designing antennas optimized for IoT.

Contact: stephane.fontanell@cea.fr

Horizons

CIME Nanotech gets four-port, 145 GHz network analyzer

On September 6, Grenoble Institute of Technology's Phelma engineering school hosted a seminar to inaugurate an Anritsu network analyzer that is unique in France. The four-port analyzer covers a range of frequencies from continuous up to 145 GHz. It is used to characterize circuit components like amplifiers, couplers, dividers, and duplexers for 5G telecommunications, IoT, imaging, and automotive radar applications. A prototype of the analyzer was tested in 2016 at IMEP-LaHC. The final version, which is located at CIME Nanotech, was purchased with funds from the Grenoble-Alps University IDEX grant, the CEA, and contracts with the new RFIC-Lab. The projects have strengthened the ties between Anritsu and these stakeholders in Grenoble. The network analyzer will be available for use by researchers from academia as well as by industrial R&D professionals.

Contact: loic.vincent@cime.grenoble-inp.fr

ISKN raises capital, announces new hires, and launches three new products

Grenoble-based startup ISKN recently completed its second round of fundraising, bringing in €10.5 million in fresh capital. The funds helped kick off several major projects at the company. First, ISKN will hire twelve new employees before year's end. The new hires, mainly R&D engineers, will expand the company's current 40-strong workforce. Next, the company will launch three new products in 2019. The first two address illustrators and designers, much like the ISKN Slate launched in 2015. They will instantly bring drawings on paper to life digitally. The third product, developed in partnership with a global corporation, will be for fun cognitive development games. ISKN was founded to commercialize its own product. This latest project will open the company's augmented interaction technology up to new applications.

Contact: jean-luc.vallejo@iskn.co

Interview

Aurélien Kuhn,
Senior Professor,
Grenoble Institute of Technology-Phelma:

“We need to introduce more active instructional methods into college physics classrooms.”

In July, you and your colleagues at Grenoble-Alps University held a symposium on how to bring more active instructional methods into college physics classrooms. What drew you to the topic?

Mainly because more active instructional methods are common in other countries and have just started to make their way to France in the past few years. We brought around a hundred professors, mainly from the Rhône-Alpes region, together to discuss active instructional methods, whether they are already using them or are interested in getting started. We talked about flipped classrooms, hands-on exercises using real equipment and objects, project-based and problem-based learning, program-level approaches, and more.

Is the traditional classroom a thing of the past?

Not at all. However, what we are seeing is that technology is creating a host of new possibilities and that putting a professor in front of a lecture hall is expensive. Plus, flipped classrooms and project-based learning are already being used by junior high school teachers. The environment is changing. We are experimenting in higher education, but we do not have all of the answers, nor do we pretend we do. We are just trying to improve—and accept the possibility that we will make mistakes along the way.

How are these ideas being received by students and teachers?

Initially, students don't generally like flipped classrooms because they have to prepare beforehand—something they are not used to doing. But I argue that we shouldn't let this kind of reaction dictate how we teach. Among teachers, the topic is somewhat controversial, because the lecture has been the dominant teaching format for decades. Which is why I think it is a good idea for teachers that want to experiment with these new methods do so on a smaller scale.

Download the presentations from the symposium at: <https://eps2018.sciencesconf.org/>

Contact: aurelien.kuhn@phelma.grenoble-inp.fr

Horizons

Quantum bits: the future is down under!

The CEA has already come quite a way on its journey toward building qubits using CMOS technology. Now the CEA will have a formidable ally going forward in Australia-based SQC, which is developing a quantum computer leveraging the technologies developed at UNSW*, renowned internationally for its quantum computing research. The university has a large patent portfolio and one of its quantum computing breakthroughs—the first-ever theoretical demonstration of a qubit on silicon—was published in *Nature* in 2014. The partners signed a Memorandum of Understanding, which was announced by France's President Emmanuel Macron and Australian Prime Minister Malcolm Turnbull. The aim of the collaboration is to set up a joint venture in early 2019 to speed up the development of industrial-scale processes for fabricating qubits using CMOS technology. SQC has stated that it can contribute tens of millions of euros to the R&D. On the CEA side, Leti, INAC, and Institut Néel are pursuing their joint R&D.

*University of New South Wales Sydney

Contact: jean-eric.michallet@cea.fr

Kalray raises €47.7 million through IPO

Ten years after the company was founded, Kalray has raised €47.7 million through an IPO, giving the company the resources it will need to finance its projects for the coming years. The first priority will be technology development on Kalray's third-generation manycore processor. The Coolidge processor is expected to be released in 2019 and will target two markets. First, the new processor will address the needs of data centers, where the arrival of flash memory has sent demand for processing power through the roof. It will also address the automotive industry, both for today's feature-packed vehicles and the urgent need to combine many small processors into one, as well as for the cars of tomorrow. Three prototypes equipped with Kalray processors are already being tested worldwide. With the increase in R&D (in part with Leti and List), Kalray will be hiring for its Grenoble and Sophia-Antipolis sites.

Read about Kalray's founding in 2008:

<https://www.minatec.org/fr/debuts-prometteurs-pour-kalray/>

Contact: lhamon@kalray.eu

Microfluidics: Leti spearheading standardization

Since May, Leti has been coordinating the development of microfluidics standards at the EU (CEN) and international (ISO) levels. The lack of standards is a challenge to the continued development and growth of labs-on-chip for healthcare, environmental monitoring, and food manufacturing. The standards-development efforts will align what startups, manufacturers, and academic research labs working in the field are doing. Leti is not starting from scratch. From 2014 to 2017 the institute was part of the EU MFManufacturing project consortium, which was also working on the same topic. Leti is also a partner in Makefluidics, an international consortium of microfluidics stakeholders that picked up where MFManufacturing left off. The institute's work will now be organized around twice-yearly workshops for between 60 and 80 people. The first standards could be issued within a year or two.

Learn more: <http://www.makefluidics.com/en>

Contact: nicolas.verplanck@cea.fr

MEMS-AI and NanoAndes to be held at the same time in Mexico

At the end of November, the MEMS-AI and NanoAndes schools, whose supporters include Grenoble-Alps University (via the IDEX grant), CNRS, Fondation Nanosciences, la Puya Internationale, and the CEA, will be held at the same time in Monterrey, Mexico. Academic researchers from Grenoble will teach along side their Latin American peers; industrial R&D professionals will also participate. MEMS-AI focuses on micro and nanosystems, covering theory, technology, and applications (IoT and Big Data). NanoAndes addresses nanomaterials and thin-film synthesis, characterization, and applications in healthcare and energy. Each of the two schools will enrol 50 students from Latin America. A common day will give students a chance to discover the many ways in which nanoscience and nanotechnology and digital technology are interdependent.

Learn more: <https://mems-ai.sciencesconf.org/> <http://nanoandes.org/>

Contact: robert.baptist@cea.fr

Day by Day

Nanosafe 2018 to zoom in on nanosafety and responsible use of nanomaterials

The Nanosafe conference, to be held at MINATEC on November 5–9, 2018, is expected to bring in nearly 400 attendees. This is the sixth edition of Nanosafe, which is held every two years. This international event, unique in Europe, gives nanosafety stakeholders a valuable opportunity to catch up on the latest R&D on nanomaterials-related health, safety, and security issues—and more! In addition to risk assessment, Nanosafe 2018 will also provide a forum for discussing the responsible handling of nanomaterials by the companies that use the materials, as well as regulatory issues. The 2018 conference will also address urban pollution and ultrafine particles, two topics that were raised at the 2016 conference. Industrial users of nanomaterials and nanomaterials professionals will also speak at this year's event, covering topics like nanomedicine.

See the program and register at <http://www.nanosafe.org>

Contact: nanosafe2018@cea.fr

Phelma: key figures from the start of the 2018–2019 academic year

Grenoble Institute of Technology's Phelma engineering school reported slightly higher recruitment figures than for the 2017–2018 academic year. This year's incoming cohort of first-year students tallied in at 370 (25% female).

While there are no major changes to report from last year, there are two key figures worth noting. The Microelectronics and Telecommunications work-study program admitted 25 students this year, up from 21 in 2017 and 14 in 2016. Concerning the common Institutes of Technology preparatory programs, a total of 45 of this year's incoming first-year students came from programs in Bordeaux, Nancy, Toulouse, and Grenoble, up from 38 last year.

The rest of the incoming class came from the "Grandes Ecoles" consortium preparatory program (73%) or were admitted after earning a previous undergraduate degree or certificate from a technical or liberal arts college.

Contact: alexis.sableaux@phelma.grenoble-inp.fr

Connected skis: Rossignol gives a sneak peek

Rossignol, which has kept its partnership with CEA Tech pretty quiet since its inception in 2015, gave attendees at Leti Days 2018 in July a sneak peek at what the partners have been working on. Rossignol CEO Bruno Cercley unveiled the company's roadmap to develop ski equipment with sensors. The equipment, which will communicate with a smartphone app, will give skiers a variety of information designed to help them improve their technique. Unlike the Piq Robot™, which Rossignol is already selling for around €200, the new sensor will be integrated directly into the ski equipment. Plus, the recommended retail price will be far lower. And, because the data will be shared with a community of users, Rossignol will gain a valuable means of interacting directly with its customers. Cercley did not provide a launch date.

Contact: stephanie.riche@cea.fr

IRT Nanoelec education and training program gets new strategy

In the runup to an evaluation by the French National Research Agency and Higher Education Certification Board, IRT Nanoelec is overhauling its strategy for the 2020–2025 period. The education and training program, headed by GEM's Sylvie Blanco and Grenoble Institute of Technology's Youla Morfouli, will narrow its focus to fewer, but more ambitious programs developed with partner companies. A program on Lean R&D* in collaborative environments developed by IRT Nanoelec and STMicroelectronics will kick off in early 2019. Many of STMicroelectronics' management-level employees will take the course. Among the other changes planned for the IRT Nanoelec education and training program are new technology platforms dedicated to education, training, and research at Grenoble Institute of Technology schools and an incubator-school on smart and sustainable technologies.

*an approach to limit waste while increasing efficiency

Contacts: morfouli@grenoble-inp.fr | sylvie.blanco@grenoble-em.com

FMNT wins two PhD dissertation awards

PhD candidates at FMNT took home two of the eight PhD dissertation awards granted by the Grenoble-Alps University Community this year. A total of 700 dissertations were defended in 2017. Thomas Sannicolo, a graduate of Grenoble Institute of Technology's Phelma engineering school, won an award for his research on transparent electrodes using silver nanowire networks. Daniel Bellet (LMGP) and Jean-Pierre Simonato (Liten) supervised the dissertation. Marco Garbati, who completed his PhD research at LCIS under the supervision of Etienne Perret and Romain Siragusa, won the "Innovation Dissertation" award. His research focused on a chipless* RFID tag reader for product tracking and identification. Sannicolo is now a post-doc student at Massachusetts Institute of Technology. Garbati is now employed at Idyllic Technology, an innovative startup in Valence.

*Learn more:

<https://www.minatec.org/fr/deux-millions-deuros-de-bourse-erc-letiquette-rfid-puce/>

Contact: mouis@minatec.grenoble-inp.fr

Exagan's first products leverage GaN technology

Startup Exagan unveiled its first two products, the G-FET™ power transistor and the G-DRIVE™ smart switch, at the PCIM trade fair in Germany. The products are easy to integrate into USB-C fast chargers for smartphones, tablets, laptop computers, and other electronic devices. The number of fast chargers is expected to be in the billions by 2021. Exagan is banking on its gallium nitride on silicon (GaN) technology, which it developed in partnership with Leti, to carve out a choice position on this growing market. The material ensures optimal conversion efficiency and keeps heat to a minimum. It also lets product designers position smart functions like diagnostics, management, and self-security very close to the transistor. Exagan plans to develop seven generic versions of its G-FET™ and G-DRIVE™ for volume markets.

Contact: frederic.dupont@exagan.com

International conference on nanomaterials-based biodetection in November

Some 70 experts on semiconductor nanomaterials-based biosensors will come together in Grenoble on November 6 and 7, 2018. They are all counting on using nanoparticles, nanowire networks, and thin films to provide the electrical detection capabilities needed to develop miniaturized biosensors. Currently, there is only one product leveraging this kind of technology on the market: a diabetes monitoring patch. However, the number of projects underway at R&D labs is growing. The event is being organized by researchers at LMGP, LTM, and IMEP-LaHC. Nanomaterials like silicon, germanium, metal oxides, and graphene will be addressed, as will systems and their applications in healthcare, environmental monitoring, and safety. The challenge going forward will be to manufacture sensitive, robust, easy-to-use biosensors that can communicate with smartphones.

Learn more: <https://nano2sense.sciencesconf.org/>

Contact: valerie.stambouli-sene@grenoble-inp.fr

Agenda

October 15–19, Grenoble

Atelier Arts-Sciences workshop on new printed materials

laurence.bardini@theatre-hexagone.eu

October 16, Science Campus

EPN CARAC 2018

<https://workshops.ill.fr/event/109/overview>

October 18, Grenoble

Phelma Partners' Day

alexis.sableaux@grenoble-inp.fr

November 5–9, Maison MINATEC

NanoSAFE 2018 conference

<http://www.nanosafe.org>

November 6–7, Giant Campus

International conference on nanomaterials-based biodetection

<https://nano2sense.sciencesconf.org/>

November 11–14, Giant Campus

High Level Forum 2018

Leading Innovation Ecosystems

<http://hlf-giant-grenoble.org/>

December 6, Grenoble

Annual Minalogic Day

<https://www.minalogic.com/fr/actualite/journee-annuelle-du-pole-exposez-vos-produits-innovants>

Thank you, Jérôme!

As communication coordinator at INAC, Jérôme Planes helped create Mina-News. He then represented INAC on the Mina-News editorial board for ten years, consistently wowing us with his expansive knowledge of science, cheerful disposition, curiosity, willingness to teach others, and tact. He passed away on August 21. This issue is dedicated to Jérôme.



The Mina-News editorial board as seen by Mina-News cartoonist Cled'12 in December 2016. Jérôme is seated in the middle.

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: Camille Giroud, Leti, camille.giroud@cea.fr

Nathalie Mathieu, Phelma, FMNT, Nathalie.Mathieu@phelma.grenoble-inp.fr

Jérôme Planes, INAC, Julie Spinelli, MINATEC, julie.spinelli@cea.fr

Alexis Sableaux, Phelma, alexis.sableaux@phelma.grenoble-inp.fr

Editing: Benoît Playoust and Bénédicte Magne

English translation: SFM Traduction