MINATEC® NEWSLETTER

MINA-NEWS

No. 31
Oct. '14

Top news

Start-up EnerBee: awards help finance growth strategy

Grenoble-based EnerBee, founded in early 2014, has won three awards over the past few months: a national prize for innovative start-ups, a global innovation award, and a connected objects award.

The prize money supplements funds from investors and private-sector backers, giving EnerBee a total of €1 million to pursue plans to launch a pilot production run of 100 products for customer testing, hire five new employees (bringing the total to eleven at end-2014), and move from CIME Nanotech to new offices in the MINATEC Entreprises building.

Giving button batteries a run for their money

EnerBee's technology, developed at G2Elab and Leti, consists of a miniature generator that uses movement—even very slow—to produce electricity. When coupled with an energy storage module, the generator can be used to power connected objects, replacing traditional batteries. EnerBee is now working to slim down its product's form factor, which still needs to be reduced fivefold to compete with button batteries, a market that represents 30 billion units per year globally.

In addition to bringing in additional funds for EnerBee's growth strategy, the recent awards also raised the young company's profile, garnering interest from potential investors and manufacturing partners. The company has also been raking in the leads since unveiling its technology eighteen months ago in Germany. EnerBee has already sold its first prototypes and plans to introduce its products on the market within the next year.

Contact: pierre@enerbee.fr

Innovation

A universal test bench for visible CMOS imagers

Visible CMOS imagers can now be subjected to a complete battery of tests—for sensitivity, dynamics, dark current, noise, conversion factor, quantum yield, linearity, resolution, and remanence—on a new test bench developed by scientists at Leti. The new test bench, which also displays the generated images in real time, will round out the current electrical testing capabilities on unit structures.

The researchers combined a FPGA-based digital operating system with an analog signal conditioning card and a pulsed LED system—all orchestrated by a LabVIEW test sequencer. The test bench was validated on a 3.3 million pixel component and will be used to characterize new generations of imagers.

Contact: nicolas.billon.pierron@cea.fr

Quantum dot meets nanowire in a promising encounter

A team of researchers from INAC and Institut Néel has created a hybrid system that consists of a nano-sized quantum dot embedded in a gallium arsenide nanowire. When the wire vibrates, the quantum dot repeatedly stretches and compresses, changing its energy levels and, consequently, the color of the photons emitted.

The coupling was achieved by mechanical strain and has proven very effective. The scientists are now studying the opposite effect, i.e., exciting the quantum dot optically in order to make the wire vibrate. The system, which enables the dot's quantum properties to be transferred to a more conventional mechanical oscillator, could ultimately be used in research to provide valuable insight into the frontier between the quantum and non-quantum worlds. The research was published in *Nature Nanotechnology*.

Contact: julien.claudon@cea.fr
Learn more at: http://www.cnrs.fr/inp/spip.php?article2437

Speech recognition on your tablet now possible

Leti recently helped create a demonstrator for a local, on-the-fly speech processing system using a multicore platform similar to those used in today's tablets. The demonstrator has a 5,000-word vocabulary and can decode speech at speeds that set a new record for embedded applications. Currently, the majority of speech recognition systems use remote servers, which depend on fluctuating network performance.

Leti engineers are developing the technology in association with two manufacturers and a team of researchers at Inria. They are using middleware created by Leti to interface the application with sensors and actuators for home automation systems, voice-controlled roller shutters, HVAC systems, presence detectors, and more. The technology could ultimately help the disabled regain their independence at home. The research is part of the Rapsodie project, financed in part by the French Single Interministerial Fund.

Contact: diego.puschini@cea.fr

Innovation

Gallium nitride nanowires could have bright future in LEDs

Researchers from INAC and ESRF have teamed up with peers in Madrid to study the correlation between the chemical composition of a gallium nitride (GaN) nanowire and the temporal resolution of the wire's optical response. To do so, they used new synchrotron instrumentation for fluorescence, diffraction, and photoluminescence.

The new equipment offers spatial resolution of under 100 nm and temporal resolution of less than 50 ps. GaN nanowires "sheathed" in InGaN/GaN quantum wells emit blue light when exposed to a flash of X-ray radiation. The light can then be correlated to the wells' indium composition and the position of the probe on the wire. This advanced characterization technique could, for example, be used by start-ups that produce this type of nanowire for LEDs.

The research was published in Advanced Materials *under ID code: DOI: 10.1002/adma.201304345.*
Contact: joel.eymery@cea.fr

Ternary oxide synthesis used to study electrical properties

Ternary oxides (In-X-Zn-O) are visibly-transparent semiconductors, making them promising candidates for optoelectronic applications. Researchers at Liten synthesized fourteen such oxides using a sol-gel method in order to study their electrical properties. The researchers worked with IMEP-LAHC to look at carrier mobility, which turned out to degrade exponentially as the number of defects at the oxide-insulator interface increased. The defect density varied from 1 to 10 depending on the type of metal—gallium, antimony, tin, etc.—used as a dopant (X). The results were interpreted using the percolation theory of behavior in random environments.

Researchers in Japan and South Korea are also working on ternary oxides. However, this is the first time that a systematic study of this type has been completed.

Contact: mohammed.benwadih@cea.fr
gerard.ghibaudo@minatec.inpg.fr

A human-body model for electromagnetic wave propagation

Leti has developed an electromagnetic-wave propagation model to help improve the performance of BANs (Body Area Networks). The human body blocks electromagnetic waves and can have a considerable impact on wave behavior.

The research involved taking several series of measurements at around 2.45 GHz. The experimental data were used to create a model that takes into account the impact of the subject's movements, the system's position, the type of antenna, and the antenna's radiation pattern on wave propagation around a human body.

The development originated from doctoral research done by Ramona Rosini, a Ph.D. student splitting her time between Leti and the University of Bologna, Italy. The research has been presented at around ten international scientific conferences and will be included in the COST Action IC1004.

Contact: raffaele.derrico@cea.fr

BHI-PRO project reaches milestone in automated protein quantitation

Leti and bioMérieux recently teamed up to conduct quantitative protein measurements using MRM mass spectrometry with automated data processing and sensitivity levels of around 10^{-8}. The research was part of the BHI-PRO* project funded by the French National Research Agency (ANR). The partners' Bayesian inversion software performs just as well as—and, in some cases, better than— bioMérieux's existing system. Plus, it does not require an operator's supervision.

The detection of tiny variations in the proteins expressed in a patient's blood could ultimately be used to make early diagnoses of diseases like cancer, atheroma, and septicemia. However, the dilution is so low that even seemingly-insignificant fluctuations can render the measurements inaccurate—a constraint that the BHI-PRO software accounts for. The software should soon be transferred to bioMérieux for implementation.

**with CEA-List, IMS, LBS, and CLIPP*
Contact: pierre.grangeat@cea.fr
laurent.gerfault@cea.fr

Fluorescence imaging guides prostate biopsies

Prostate biopsies, which are performed if a cancerous tumor is suspected, could become more accurate and reliable thanks to a new fluorescence imaging technique. Leti researchers partnered with academic scientists and an SME to develop a new fluorescent marker coupled with a combined optical-ultrasound probe. The system renders any tumors visible for priority sampling during biopsies.

Currently, a prostate biopsy entails taking around a dozen samples from different areas of the prostate—an invasive procedure that brings with it the risk of complications. The new fluorescence-guided procedure would constitute a major step forward by reducing the number of samples needed to make a reliable diagnosis.

The results of initial preclinical tests have been positive and clinical trials could begin in late 2015.

Contact: jean-marc.dinten@cea.fr

Graphene gets superconducting capabilities

Researchers from INAC, Institut Néel, and SIMAP recently figured out a way to observe the proximity effect in graphene—a phenomenon that occurs when a normally non-superconducting material is placed in contact with a superconducting material—under optimal conditions.

To do so, they created a system in which the graphene remains totally free from atomic defects. Their technological advancement uses CVD to deposit graphene on thin rhenium (superconducting at 2 K) films measuring just 30 nm thick. The CVD process ensures that the two materials are solidly bonded together while protecting the graphene's purity and two-dimensional and ballistic properties.

The researchers' findings were published in *Physical Review Letters*. They next plan to look at oxygen-intercalated graphene, using tunneling spectroscopy to observe the material's superconductivity.

Contact: claude.chapelier@cea.fr

Harvesting energy in the depths of the ocean

In just a few years, oceanographic sensors located 2,000 meters under the ocean's surface could be powered by biobatteries feeding off of electroactive bacteria. Researchers at Leti are teaming up with a chemical engineering lab in Toulouse that is pioneering biobatteries that harvest their energy from deep ocean sediments. The next step will be to build an operational demonstrator (planned for summer 2015) that will be tested in association with Ifremer, France's national oceanographic institute.

Today's biobatteries produce energy that is not directly usable—either in terms of voltage or current intensity—by marine instruments. Leti scientists are working to develop biobattery-specific electronics to solve this problem. At the same time, they will work on adapting the concept to off-grid instrumentation for farming applications through a project carried out in partnership with the CEA Life Sciences Division.

Contact: gael.pillonnet@cea.fr

Innovation

Getting closer to Earth-to-moon laser communications

Leti has developed an infrared detector with avalanche photodiodes cooled to 180 K that successfully received data at 80 Mbps during NASA/ESA laser communications testing. This initial result is encouraging given that radio—which has been used for decades—can only handle to 100 Mbps. ESA, which has identified laser communication as a key technology, now plans to run additional tests and could even include the detector in its development roadmap.

This development aims to provide a solution to increasing demand for bandwidth and range, most notably to send data including photos and video gathered on exploratory missions to outer space. Leti, which was contacted just eighteen months before the tests, modified an existing prototype in record time—which means that there is considerable room for improvement.

Contact: johan.rothman@cea.fr

Day by day

Dr. Alim-Louis Benabid takes home Lasker Award

Dr. Alim-Louis Benabid, who founded Clinatec-the Edmond J. Safra Biomedical Research Center along with Jean Therme, has won the 2014 Lasker-DeBakey Clinical Medical Research Award. Dr. Benabid and Mahlon DeLong, MD, received the award at a ceremony held in New York City on September 19 in recognition of the deep brain stimulation (DBS) technique they invented.

DBS involves implanting electrodes in a patient's subthalamic nucleus to attenuate the tremors characteristic of Parkinson's and help restore the patient's motor function. The technique is now used to treat sufferers of the disease around the world, improving the lives of more than 100,000 people each year.

The Lasker Award, considered one of the most prestigious international scientific awards, brings Dr. Benabid further recognition of his groundbreaking work.

Contact: thierry.bosc@cea.fr

Leti magnetometers perform for Swarm

Leti's helium magnetometers—which are installed on the three Swarm mission satellites—made it through their in-flight commissioning with flying colors. The instruments provide an absolute point of reference for scalar field measurements and delivered the highest levels of performance ever achieved for observing the Earth. A vector mode provides a directional measurement of the field (via the same instrument) taken at the same point and at the same time as the scalar measurement. This is a world-first.

The magnetometers will be used alongside the Danish-manufactured vector instruments throughout the four-year space mission to map the Earth's magnetic field with unprecedented precision and resolution. The three Swarm satellites orbit the Earth at altitudes ranging from 475 km to 500 km. The measurements they take have been available to the scientific community since late June.

Contact: thomas.jager@cea.fr

Day by day

Marie-Noëlle Semeria appointed director of Leti

Marie-Noëlle Semeria has been appointed Director of Leti, effective October 1, 2014. She succeeds Laurent Malier. Ms. Semeria holds a Ph.D. in physics and has considerable industry experience, working first for Sagem and then for start-up Pixtech. She came to Leti in 1996, where she has held a number of positions including that of Deputy Director from 2010 to 2012. Most recently, she headed the CEA Tech Scientific Division, where her achievements included coordinating the Division's expansion of scientific pump-priming activities via the CEA Tech regional offices.

Ms. Semeria will lead Leti through upcoming challenges like acquiring and maintaining leadership positions in breakthrough technologies, developing new concept demonstrators to ramp up partnerships with manufacturers, and becoming a global leader in micro- and nanotechnology and connectivity-enabling devices.

Contact: marie-noelle.semeria@cea.fr

Movea acquired by US-based InvenSense

Just seven years after it was founded, Movea was acquired by US-based InvenSense this summer. Movea's CEO Sam Guilaumé had been gearing up for the deal for a year and a half. He had informed the French company's shareholders of the planned acquisition, moved to California, and contracted a US investment bank to handle the transaction. In all, Movea was presented to 34 potential buyers.

Meanwhile, sensor-maker InvenSense was seeking to acquire companies that could round out its existing product lineup and bring added value to its products. Movea, which is at the leading edge of multisensor data fusion, fit the bill perfectly. It has around 50 employees in Grenoble and plans to continue its activities here, including its joint lab with Leti.

Contact: sguilaume@invensense.com

Isorg and Primo1D raise nearly €10 million

This summer was a record one for two Grenoble start-ups. Isorg, which specializes in printed electronics, raised €6.4 million, while Primo1D, which focuses on integrated electronics for textiles and plastics, brought in more than €10 million.

For Isorg, founded in 2010, the fresh capital will help the company achieve its target manufacturing launch date of late 2015-early 2016, most notably by providing some of the €18 million investment required to build a new plant in southwestern France. The company was given an opportunity to build its plant in Isère—with an earlier delivery date—but the southwestern-France location was more cost-competitive.

Primo1D, founded in 2013, plans to use the influx of funds to speed progress toward industrial rollout. The company plans to sharpen its market focus on textile traceability applications with its E-Thread®, which includes a miniature RFID tag that is invisible in finished fabric.

Contacts: emmanuel.arene@primo1d.com
laurent.jamet@isorg.fr

Interview

Florian Pebay-Peyroula, head of Leti's Communicating Objects and Systems Security Lab:

"We have to do more to fight against counterfeit circuits"

Leti was involved in the ENIAC TOISE (Trusted Computing for European Embedded Systems) project, which was completed in April 2014. What was the outcome?

The project involved seventeen partners from industry and academia. We performed several high-quality demonstrations on sensor networks, smart meters, hard-drive encryption, and responses to protect systems under attack. Projects like this one give manufacturers a valuable opportunity to boost the security of their products during the development phase.

What specifically did Leti focus on?

Physical unclonable functions, or "PUFs," which are one possible way to fight against counterfeit circuits. For example, the market is seeing an increase in two types of clones: those that offer more limited features than the original circuit, and "perfect" clones that are exact replicas of the original, manufactured by dishonest subcontractors. Our idea is to pair the circuit that needs protecting with a simpler circuit, which we would characterize to identify tiny variations in certain physical properties. Foundries that use PUFs give their circuits a unique identifier that is impossible to reproduce.

Who is winning the security R&D race, manufacturers or hackers?

The hackers are definitely leading the dance. Manufacturers are following with countermeasures that mainly slow hackers down or make the cost of hacking prohibitively high. However, knowledge of your adversary is the beast weapon in any fight. Leti—like other labs—has developed excellent hacking skills, which we use only for research, of course!

Contact: florian.pebay@cea.fr, bruno.robisson@cea.fr

Day by day

Jean-Marc Dedulle to head continuing and executive ed at Grenoble Institute of Technology

Jean-Marc Dedulle was appointed director of Grenoble Institute of Technology's Division of Continuing and Executive Education. Dedulle, who formerly served as Phelma's head of corporate relations, succeeds Didier Pellegrino. The appointment is the logical next step in a 20-year career that has continuously balanced roles in education, research, and industry. Furthermore, he will continue to teach at Phelma and pursue his research on computer simulation of coupled physical phenomena at LMGP.

In his new role, Dedulle will lead a team of thirteen permanent staff. His goals include offering more short courses as a way to better showcase the school's high-caliber faculty, developing programs to facilitate access to the school via continuing and executive education, and expanding post-Master's-level programs. Last year, 832 working professionals enrolled in short courses and 188 were enrolled in degree programs.

Contact: jean-marc.dedulle@gren oble-inp.fr

Phelma 2014–2015 admissions right on target

The 2014–2015 academic year is underway, and Grenoble Institute of Technology-Phelma engineering school is right on target in terms of admissions. This year, the school admitted 365 first-year students, down from 381 last year. The school decided to limit this year's incoming cohort in order to lighten the administrative workload.

Nearly two-thirds of this year's incoming class passed the common polytech entrance exam. The remaining third is made up of students who applied after completing a university degree (42 students this year versus 33 in 2013) and students who completed the integrated preparatory program (34 students this year versus 30 in 2013).

The portion of female students in the incoming cohort rose 1% this year to 26%, and enrolments in alternating work-study program, launched last year, were up by 4 students to a total of 14.

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

Grenoble Institute of Technology ranks high for innovation

Grenoble Institute of Technology won first place for innovation and research for the fourth time in five years in a ranking published by *Industrie & Technologies* magazine. The school came in ahead of big names Polytechnique and INSA Lyon, most notably due to its high number of Ph.D. and post-doc students (911) and impressive annual revenue from research and development contracts (more than €23 million).

For years Grenoble Institute of Technology has been rolling out a strong innovation strategy supported by academic programs, research, and technology transfer activities. For example, the school's degree programs now include classes for second-year engineering students on starting a business. The classes are designed to raise students' awareness of innovation and entrepreneurship.

Contact: clotilde.waltz@grenoble-inp.fr

Horizons

Semicon Europa (finally) comes to Grenoble

Semicon Europa, the world's leading microelectronics-industry trade fair, has been held every year for the past 35 years. But not once has the event taken place in Grenoble—until now. Semicon Europa 2014 will come to Grenoble's Alpexpo expo center from October 7 to 9. And the local microelectronics community is pulling out all the stops to show the expected 6,000 visitors and 400 exhibitors how effective our local innovation ecosystem is.

This year's program will highlight several fields in which Grenoble excels, from energy efficiency and imaging to healthcare and design. An "Innovation Village" will showcase 50 micro- and nanotech start-ups. Leti, IRT Nanoelec, and Minalogic will be at the event, as will STMicroelectronics, Soitec, and other local manufacturers.

Grenoble will now host Semicon Europa every other year, alternating with Dresden, Germany.

Contact: didier.louis@cea.fr

Horizons

Second innovation marketing conference to be held on November 13

The second innovation marketing conference *(Rencontres du Marketing de l'Innovation)* will be held at MINATEC on Thursday, November 13. The first edition of the event, held in 2012, was a huge success, bringing in 350 attendees (50% from industry). This year, the CEA and Grenoble Ecole de Management will organize a new event on the GIANT campus specifically for innovative businesses seeking ways to create value in a tough economy.

The program will feature plenary talks by innovation experts including Marc Giget and Daniel Ray, as well as representatives of major corporations (Urgo, Poma, Renault, and Schneider Electric), start-ups (ISKN), and SMBs (M3 Systems) who will talk about their innovation marketing experiences. The day will also offer workshops on business cases like B2B marketing in the digital age, serious games, and lean marketing for start-ups.

To view the program and register (for a fee), visit: rencontresMTI2014.insight-outside.fr
Contact: rencontresMTI@cea.fr

The town of St. Martin d'Uriage jumps on Mobility Village bandwagon

The "Mobility Village" project, an initiative of the MINATEC IDEAs Laboratory, launched in April in the town of St. Martin d'Uriage, outside of Grenoble. The project aims to identify local residents' mobility-related needs to help better target emerging solutions. And, to get people interested, IDEAs Lab set up a tent in the town center for two months. A total of 250 local residents came to chat with staff from IDEAs Lab and CCSTI (a local science-education center), fill out questionnaires, test electric bicycles and cars, and participate in the variety of activities on offer.

Several topics were identified for further investigation—transforming abandoned trails into bike paths and setting up a hitchhiking system, for example. This fall, local residents and researchers will team up to make recommendations for potential products and services that could meet the needs expressed during Phase 1 of the project.

Contact: philippe.caillol@cea.fr

eVaderis microcontrollers could use ten times less energy in standby mode

eVaderis, a Grenoble-based start-up created on September 5, is developing microcontrollers that could use ten times less energy in standby mode while offering features equivalent to the components currently on the market. The company, which will soon count around ten employees, leverages technology invented at Spintec (INAC) to develop self-powered communicating objects, which must be able to operate for years on a battery since they cannot be charged.

The company's microcontrollers use proven CMOS technology and non-volatile resistive memory, which has been around for a decade. The innovation lies in the microcontrollers' data processing architectures, which optimize energy use in a new way. The more complex—and energy-hungry—the application, the greater the savings.

Contact: virgile.javerliac@evaderis.com

IRT Nanoelec video teaches and entertains

The IRT Nanoelec education program will soon be putting an original educational video online. The short animated video aims to teach non-specialists about nanoelectronics and its applications.

The video's attractive visuals and irreverent tone are intended to resonate with the high-school and college set, highlighting the nanoelectronics research taking place in Grenoble and sparking interest in careers in nanoelectronics.

The video will be available on the IRT Nanoelec, Grenoble Ecole de Management, and Grenoble Institute of Technology websites, as well as on YouTube.

Contact: anne.farre@grenoble-inp.fr

Live from MINATEC

Challenge First Step 2014: five projects selected

On November 14, four of the five candidates selected to participate in the Challenge First Step will submit their funding requests (which are required if a start-up turns out to be the chosen track to technology transfer).

The four projects—a biomarker-based diagnostic test; a miniaturized, low-power geolocation system; software to ensure interoperability between connected objects; and a miniaturized, low-cost system to detect trace substances in liquids—originated at Leti.

The fifth project stems from research being carried out by a post-doc student at the CEA Physical Sciences Division. It involves developing an energy-storage application for a new silicon nanowire production method. The project, while not eligible for a grant, is receiving the full range of First Step support services.

Contact: stephane.fontanell@cea.fr

Science Fair now open to elementary schoolers

For the first time ever, the MINATEC Science Fair, held during France's national Science Week, will welcome elementary-school students. On Thursday, October 9, five elementary-school classes will come to the Science Fair, discovering booths with activities designed just for them. As always, the goal is to spark interest in science from the earliest possible age. A talk on the exploration of Mars, open to the general public, will be held on the same day.

The Science Week will continue on Friday, October 10 (with 500 high-school students expected) and Saturday, October 11 (open to the general public). A total of 150 people will man the fifteen Science Fair booths and workshops at Maison MINATEC and in the Phelma lobby. Some 5,600 visitors came to the three-day event last year.

Contact: marie-helene.duluc@cea.fr
Register to attend the talk on Mars (free of charge) at: http://goo.gl/gj9f4S

Nano@school offers high-schoolers two new workshops

This year, Nano@school, which gives high-school students an introduction to nanoscience research, is offering seven workshops—including two that are totally new.

The Sensors and Microsystems workshop will be held at the CIME Nanotech lab of the same name. Students will be exposed to the sensor and measurement chain concepts covered in the high-school science and technology curricula. The Nanosafety workshop will be held at the Nanosafety Platform, and will address the physical principles of air pollution by nano-sized aerosols and protective measures.

Around fifteen classes—comprising more than 350 students and nearly 40 teachers—are expected to attend the workshops, which will be run by 40 researchers and teaching faculty from Grenoble University Joseph Fourier School of Science, Grenoble Institute of Technology, CEA, and CNRS with the support of the IRT Nanoelec research institute and the Grenoble School District.

Contact: contact@nanoatschool.org

Live from MINATEC

MINA-NEWS contest winner test drives Toyota Coms for a week

Marjolaine Allain was the first *MINA-NEWS* reader to spot the two "April fool's" articles hidden in the newsletter's April issue. Her sharp eye won her a week's use of one of the CEA's 30 electric vehicles. And the prize was greatly appreciated since Marjolaine ferries boxes of wafers back and forth between the 40-17 and BHT buildings around ten times a day!

Marjolaine was won over by the Toyota Coms—compact, easy to charge, and fun to drive. "It doesn't have as much get-up-and-go as I am used to, but the fact that it is super-easy to park in town more than makes up for it." The only real drawback Marjolaine found was the car's tendency to fog up when it rains.

Contact: marjolaine.allain@cea.fr

MINATEC projects win big in 2014 start-up contest

What do fabless semiconductors, gallium-nitride-on-silicon power transistors, electrostimulation patches to treat pain, and a motion-powered energy generator have in common? All four are MINATEC R&D projects that won awards in July (along with three other non-MINATEC projects) in France's 16th national tech start-up contest, now called "I-Lab."

A total of five Grenoble-grown projects (eVaderis, Exagan, Genel, ISKN, and EnerBee) won business creation and development awards; another two (Stimflex and Sylfen) won emerging business awards. This impressive sweep is not only an improvement over last year (five local projects won awards in 2013), it also highlights MINATEC's capacity for innovation, given that the campus boasts as many winners—more, in some cases—as most of France's regions.

Contact: alain.briand@cea.fr

Construction to start on new photonics lab

Construction of a new photonics lab will start this month, with delivery scheduled in Q4 2016. The new facility will be home to 230 employees of Leti's Optics and Photonics Department, currently spread out across five different locations.

The five-story building will contain a total of 12,800 m^2 of lab and office space and will house metallurgy and characterization labs, a 900 m^2 cleanroom, offices, and, on the top floor, a 100 m^2 VIP reception room offering 270° views of the campus and surrounding mountains.

The building will also offer exceptional environmental performance, recovering 50% of the energy consumed by the air extraction equipment, for example.

Contact: pierre.caplier@cea.fr

MINATEC celebrates LNT's tenth anniversary in Ho Chi Minh City

MINATEC Director Jean-Charles Guibert was part of a delegation that travelled from Grenoble to Ho Chi Minh City to celebrate the tenth anniversary of the Laboratory for NanoTechnology on September 19.

The lab, located on the Vietnam National University campus, is emblematic of MINATEC's long-term commitment to the LNT—since 2004 MINATEC has donated equipment, run classes for Vietnamese students and researchers, and supported the LNT's tech-transfer activities.

The Grenoble scientific community's close ties with its peers in Vietnam can be traced back to the exchange programs initiated by Grenoble Institute of Technology. The MINATEC Nanolab, founded in 2007, is a more recent example. The lab aims to help emerging economies leverage France's know-how in micro- and nanotechnology. One of the projects run by the lab involves manufacturing chemical sensors to test water quality at shrimp farms.

Contact: jean-charles.guibert@cea.fr

Agenda

Until October 19
Science Week
http://www.fetedelascience-rhonealpes.com/

October 7– 9, Alpexpo
Semicon Europa 2014
http://www.semiconeuropa.org/

October 9–11, MINATEC
Science Fair and Expérimenta 2014
http://goo.gl/723nE3

October 9, Maison MINATEC
Conference on the exploration of Mars, open to the general public
http://goo.gl/gj9f4S

October 19, Grenoble Presqu'île
Grenoble Ekiden relay marathon
www.grenoble-ekiden.fr

November 13, Maison MINATEC
The second innovation marketing conference (MTI 2014)
http://rencontresmti2014.insight-outside.fr/

November 18–20, Maison MINATEC
Nanosafe 2014
http://goo.gl/uTQSxB

November 29, Grenoble Institute of Technology-Phelma Commencement

December 1–5, CNRS Auditorium
(Rue des Martyrs)
2014 Dautreppe Seminar on Matter and Symmetry
http://symetries2014.grenoble.cnrs.fr/

contacts

MINA-NEWS >

No. 31 Oct.' 14

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 - Colette Lartigue, Phelma, FMNT, colette.lartigue@grenoble-inp.fr - Jérôme Planes, INAC, jerome.planes@cea.fr - Julie Spinelli, MINATEC, julie.spinelli@cea.fr - Alexis Sableaux, Phelma, alexis.sableaux@phelma.grenoble-inp.fr
Editing: Benoît Playoust and Bénédicte Magne; layout: Philippe Tur; printing: Format Éditions
English translation: SFM Traduction