



2020 HIGHLIGHTS



ment report is now digital transition. ...voir plus

[PRESS] D... secured commu... Platform to ensure

Voir la traduction

CEA-Leti to Build Quantum-Photonics Platform to Ensure Ultra-Secure Data for Finance, Energy, Defense and Other Industries

leti-cea.com • Lecture de 2 min

5 • 1 commentaire

CEA-Leti 12 535 abonnés 5 mois

[EVENT] Leti Devices Workshop (on Dec.10). Last chance to register, sign up today! Don't miss CEO Emmanuel Sabonadiere's keynote showcasing why CEA-Leti is your ideal partner to develop the technologies of the future. ...voir plus

leti cea tech

Leti Devices Workshop

Join us online on December 10

One-hour digital discussion of key technologies for data-deluge management

Welcome

leti-innovation-days.com • Lecture de 1 min

5 • 1 commentaire

CEA-Leti 12 535 abonnés 6 mois

[PRESS] CEA Achieves major breakthrough in detecting viruses

Voir la traduction

through that paves the way to

...voir plus

CEA-Leti 12 535 abonnés 5 mois

[Demonstrator] Today, electronic systems are becoming smaller, thinner and, above all, flexible. Curved surfaces, such as #dashboards, #smartphone shells, #textiles, can now be functionalized!

Voir la traduction

leti cea tech

DEMONSTRATOR

Discover Chip-In-Flex

First Fully Flexible Label Incorporating an RFID Chip and Sensors

...voir plus

leti cea tech

12 535 abonnés 4 mois

[PRESS] CEA-Leti presented 2 papers this week at #IEDM that confirm the advantages of combining 3D architecture and resistive-random-access-memories (RRAM) for in-memory computing (IMC), and their applications for Edge ...voir plus

Voir la traduction

CEA-Leti 12 602 abonnés 1 an(s)

[PRESS] L-UTSOI, a "compact model" dedicated to FD-SOI, has been selected as a standard Model Coalition (CMC).

Voir la traduction

INSTITUT CARNOT CEA LETI



Event

CEA-Leti to exhibit at CES2020, the world's largest showcase for high-tech innovations

CES2020—Come check out our innovative demos in Eureka Park: LensFree imaging technology for point-of-care analysis, LiFi the world's first smart orchestrator for interference-free LiFi networks—and startup WiselIntegration, Anteneo.

Telecom

Discover LiFi-Multicell, World's 1st smart orchestrator for interference-free lifi networks

CES2020—Discover how LiFi is a great alternative to WiFi with our multi-cell LiFi demo—a solution that can be hosted on any commercially available lightbulb.



Human Health

Discover Lensfree, a new imaging technology for point-of-care analysis and pathology screening

CES2020—CEA-Leti experts will showcase our new LensFree microscopy demo—next-gen technology that enables bedside diagnosis of disease at one-tenth the cost of bulky optical microscope.



Scientific Excellence

Disruptive photonics concepts for new applications & markets

PhotonicsWest2020—CEA-Leti will present five invited papers, 21 in total. In addition, its teams will introduce the institute's latest transfer-ready solutions for all-wavelength imaging, information display systems, light-emissive components, optical data communications, optical sensors, and other advances at the French Pavilion, during the event. CEA-Leti also will host a workshop.

> A new hope for children with motor impairments

EU Project—MOTION will develop a functional exoskeleton to improve the quality of life of children with neuromotor disorders.

> Fast-track adoption of CPS by SMEs

EU Project—DigiFed will demonstrate potential of cyber-physical systems (CPS) digital technologies.

> CEA-Leti is financially supported by public funding agencies

CEA-Leti contributes actively to partnership-based research in Europe and beyond through the diversity of research topics it works on and its commitment to ensuring transfer and valorization of new technologies within the industrial fabric.

2020

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

› **Kalray sets sights on Chinese market!**

The company, which completed its IPO last year, recently signed a distribution contract.

› **Avalun's new point-of-care blood tests are coming soon**

A cohort of around 10,000 patients on blood thinners will soon have access to an out-of-hospital care pathway for their regular monitoring needs. Avalun is helping create the new pathway with its connected miniaturized lab!

› **Morphosense sets sights on offshore oil & gas market**

Morphosense earns two new strategic certifications and its NEURON sensor system is now ready for use in explosive and dusty atmospheres! Based on three patents held by CEA-Leti.

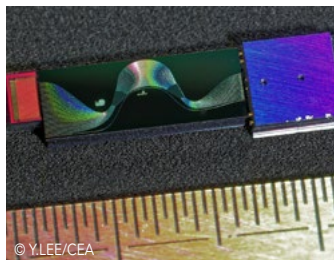


© VEGE/FOTOLIA.COM

Scientific Excellence

CEA-Leti engineer Perceval Coudrain received the Best Paper Award

ECTC 2020—His paper entitled "Active Interposer Technology for Chiplet-Based Advanced 3D System Architectures" reports the first successful technological integration of chiplets on a fully processed, packaged and tested, active silicon interposer.



© Y.LEE/CEA

Environment

CEA-Leti presents a tiny photoacoustic-spectroscopy system

Photonics West 2020—Jean Guillaume Coutard presented invited paper about a tiny photoacoustic-spectroscopy system for detecting chemicals & gases—detector could cost 10x less than existing systems and prompt widespread use of the techno photonics.

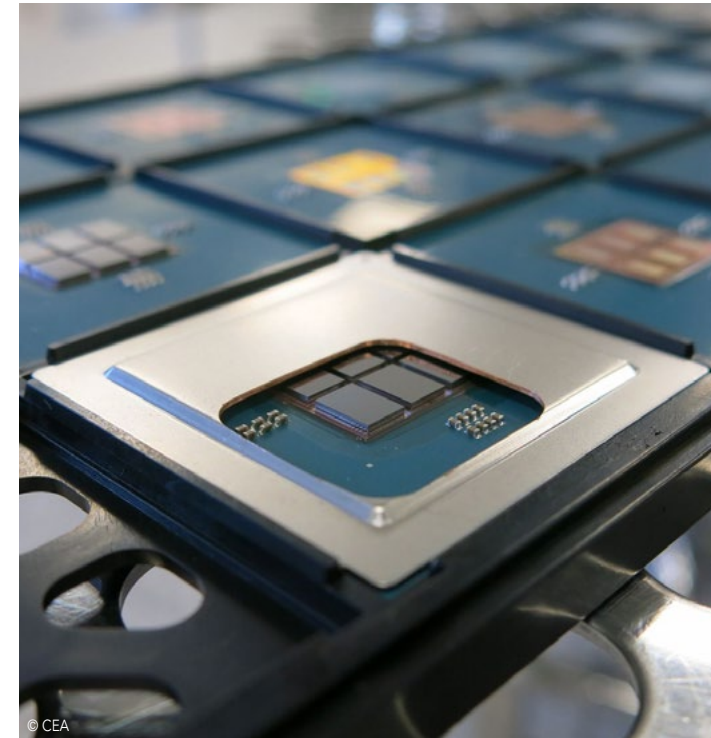


© CEA

Scientific Excellence

CEA-Leti announced a new Silicon Nitride 200mm platform

Photonics West 2020—CEA-Leti clears a path to developing ultralow loss, high-power photonics in UV through mid-infrared wavelengths.



© CEA

Computing

High-performance processor breakthrough with active interposer and 3D stacked chiplets

ISSCC2020—CEA-Leti and CEA-List, reported a high-performance processor breakthrough using an active interposer as a modular and energy-efficient integration platform solution that enables efficient integration of large-scale chiplet-based computing systems such as high-performance computing (HPC) and big-data applications.



© SDECORET/FOTOLIA.COM

Telecom

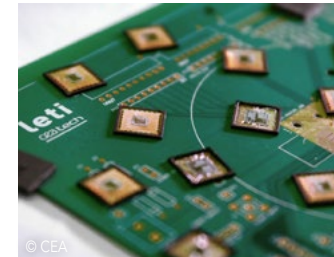
CEA-Leti is demonstrating mmWave communications for 5G Networks on Minatec

CEA-Leti is running field trials at 26.7 GHz band with 400 MHz bandwidth, which may be the first carrier frequency in the millimeter wave (mmWave) spectrum that will be released for 5G in France.

Eco-Innovation

Energy-harvesting ICs point the way to battery-free sensor systems

ISSCC2020—Two presentations describe results that could lead to significant commercialization of vibration-powered systems.

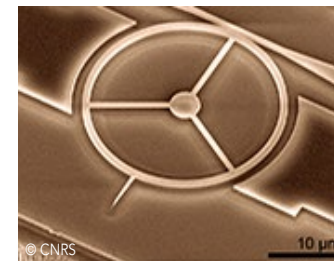


© CEA

Scientific Excellence

Optomechanical probe for very high speed sensing of atomic forces

In collaboration with Vmicro SAS, researchers from the CEA-Leti and the CNRS have developed a probe for an atomic force microscope, using optomechanical interactions for very high speed operation.

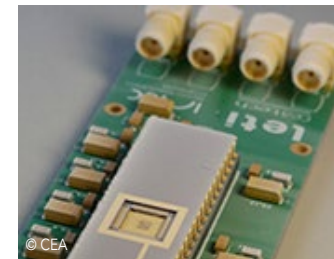


© CNRS

Quantum computing

1st quantum integrated circuit combining quantum dot with digital-analog circuits on CMOS chip

ISSCC2020—Presentation shows role FDSOI can play in embedding qubit arrays with classic electronics to build large-scale quantum silicon processors.



© CEA

› **Carnot label**

The French Government has announced the 39 research institutes labeled "Institut Carnot". Among them, 3 CEA institutes—CEA-List, CEA-Leti and CEA-Liten, through the "Carnot Energies du futur" institute—have obtained the renewal of their labeling.



› **Bring IR to autonomous vehicles**

EU Project—Tomorrow's autonomous vehicles could use infrared (IR) imagers to scan the road and surrounding environment. The EU Heliaus project is investigating the potential of this technology. The project's eleven partners, which include CEA-Leti, will receive EU funding of more than €8 million over three years.

> **Nano-electronics Access**

EU Program—ASCENT+ launches a new phase to become the powerhouse of researchers and innovators in nanoelectronics in Europe.

> **Scintil Photonics ready to prototype**

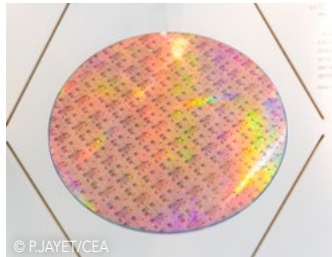
Scintil Photonics, a spinoff of CEA-Leti, recently raised €4 million, to produce prototypes of its circuit. Scintil Photonics is developing innovative photonic circuits that are fully integrated on silicon.

> **World's 1st 4in1 gamma camera**

NuVISION, commercialized by NUVIA in partnership with CEA-Leti, was recently approved by the 2024 Paris Olympics security committee.

> **CEA sells its stake in Exagan**

Acquisition by STMicroelectronics of a majority stake in Exagan, a Soitec and CEA-Leti spin-off.



© P.JAYET/CEA

Eco-innovation

A true second life for silicon

A new recycling solution for silicon wafers used for research purposes at CEA-Leti was recently implemented with an aluminum foundry in a win-win partnership.



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Telecom

Discover P-Link, Millimeter-wave radio signals

Check out our 60 GHz plastic waveguide solution! The initial demonstrator shows 6 Gbps through 2 m (6 feet) of plastic, consuming only 70 mW. Be ready for breakthroughs in the fields of healthcare, spatial and automotive, just to name a few.



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Human Health

Discover Stress Observer, real time stress monitoring for wearable-based stress aware systems

Stress Observer is a data fusion process, based on the user's motion and physiological signals. It analyzes the data to monitor stress levels.



© CEA

Special Covid-19

CEA to fast track new low-cost ventilators for Covid-19 patients in intensive care units

MakAir is suitable for the ventilation of patients in acute respiratory distress, in particular patients with Covid-19. In times of serious health crisis or pandemic, it offers an answer to the shortage of conventional ventilators at a much lower acquisition cost. Cost ten to twenty times lower than that of a conventional respirator...



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Scientific Excellence

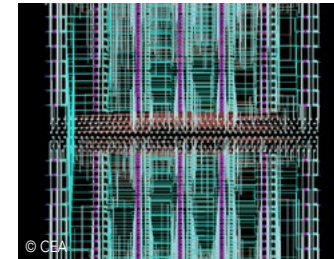
Compact model developed at CEA-Leti for FD-SOI technologies designated as a chip-industry standard

L-UTSOI, a “compact model” dedicated to FD-SOI technologies and developed by CEA-Leti, has been selected as a standard model by the Compact Model Coalition (CMC).

Partnership

CEA-Leti 310 nm platform gets PDK integrated into Mentor Graphics software

Mentor Graphics’ Tanner design flow now includes a Process Design Kit (PDK) for CEA-Leti’s 310 nm photonics platform.



© CEA

Scientific Excellence

CEA-Leti named institute of the year by 3DInCites

IntAct for the device of the year, ChipInFlex for the process of the year and finally Leti for the institute of the year, all three were selected to compete for the award in their category. CEA-Leti is honoured to win the 3DInCites award!



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Human Health

Medytec to showcase the Grenoble-Alpes medtech industry

The Grenoble-Alpes medtech industry will soon have a 150 sq. m promotional and event space all its own at Biopolis, near Grenoble University Medical Center. The new space, called Medytec, will be home to a showroom and conference and meeting facilities.

> CEA-Leti’s Emmanuel Sabonnadière to head nonprofit Jessica France

Emmanuel Sabonnadière, CEO of CEA-Leti, was recently appointed Chairman of nonprofit organization Jessica France. Jessica France has been managing the Cap’Tronic program to support the digital transformation of small and mid-sized businesses since 1991.

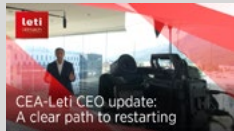
> Tutorial on Artificial Intelligence

Don’t miss out the 1st season of our AI tutorial with CEA-Leti expert Frédéric Heitzmann. Check out the 8 short episodes to learn more about this emerging technology.



> **A clear path to restarting**

CEO Emmanuel Sabonnadiere provides an update for all our trusted partners around the world on the current situation and clear path towards a full ramp up. Our teams have never been more mobilized to support partners through the institute's dedicated R&D programs; moving forward together!



© DAVEY-BICKFORD

Telecom

A wireless detonation system designed to increase productivity and safety at open pit mines

Developed in the frame of IRT Nanoelec, by CEA-Leti and Davey Bickford Enaex, the system features electronic detonators with bi-directional radio modules.

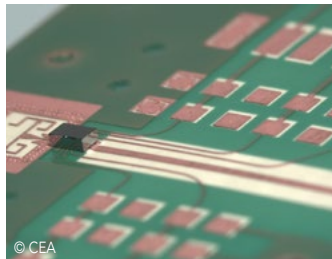


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Computing

A major advance in high-performance computing

ISSCC2020—CEA-Leti, unveiled a state-of-the-art demonstrator chip for high-performance computing applications at ISSCC. The low-cost, energy-efficient processor is built on an innovative multi-core system that is both modular and expandable.



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Telecom

6G Wireless Networks in mmWave Bands

As countries around the world begin rolling out 5G wireless networks, CEA-Leti is looking ahead to sixth-generation technologies that will surpass the data-transfer capability of 5G.



© CEA

Human Health

Self-cleaning transparent surfaces with ultrasonic waves

Ultrasonic waves generated by an array of piezoelectric transducers could potentially remove water droplets, grease, and grime from transparent surfaces. CEA-Leti and Silicon Valley startup InnovaSonic, Inc are exploring the technology's potential!



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Computing

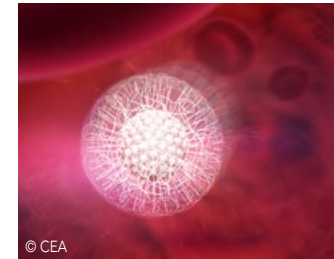
Breakthrough architecture for HPC devices

VLSI 2020—CEA-Leti has demonstrated fabrication of a new gate-all-around (GAA) nanosheet device as an alternative to FinFET technology targeting high-performance (HPC) applications such as smartphones, laptops, and mobile systems with data collection and processing involving low-power and high-speed operation.

Special Covid-19

Vaccine Development based on CEA-Leti Lipidots® Technology

The CEA/Inserm NanoCov2-Vac project retained by France's CARE Committee and backed by its Ministry for Research targets design and validation of an immunizing formula, based on synthetic lipid nanoparticles, for a Covid-19 vaccine.

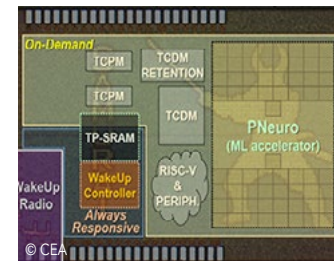


© CEA

Edge AI

Artificial Intelligence of Things proof-of-concept chip

VLSI2020—Researchers from CEA-Leti and CEA List have developed the world's 1st low-power IoT node combining an integrated artificial intelligence accelerator with an ultra-fast wake-up time.

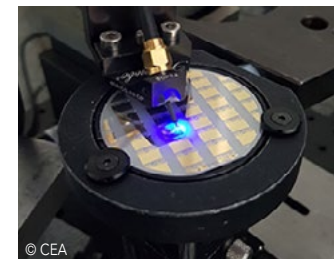


© CEA

Telecom

CEA-Leti researchers breakthrough put record for LiFi communications

Data-transmission rate of 7.7 Gbps positions LiFi as possible replacement for WiFi with further R&D and industrial standardization to ensure interoperability of systems capability of 5G.



© CEA

> Single electron transistors for ultra-low power electronics EU Project—IONS4SET

aims at CMOS compatible production of extremely low-energy dissipation Single Electron Transistor (SET) quantum devices, for ultra-low power electronics applications and is performed in a consortium of 6 European partners.

Special Covid-19

> Air monitoring risk area

EU Project—ARISE will produce an air analyser equipped with detection capabilities for the ubiquitous monitoring of SARS-CoV-2 pathogens in airborne droplets or aerosols in confined environments.

> **Photonics could help improve traffic in data centers**

EU Project—Integrated high-speed, low-power, and low-cost data transmission solutions were developed under the EU H2020 COSMICC project. The purpose of the project was to respond to exponential growth in data center traffic.

> **Discover 100+ R&D European projects that will help build a stronger and better Europe**

Download CEA-Leti EU report.

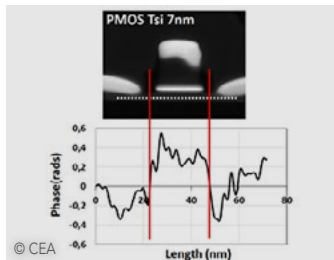


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Mobility

Power Electronics: A Super Module for Super Components

Finally, super packaging for super GAN components! Discover the new double face cooling-based module offering unmatched performance.



© CEA

More than Moore

Paving the way to high-performance 3D monolithic CMOS integration

VLSI2020— CEA-Leti paper details first proof of integration of FDSOI CMOS devices processed at 500°C, for further 3D monolithic integration.



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Telecom

COREnect consortium

New consortium to develop a 5G and beyond strategic roadmap for future European connectivity systems and components.



© SAKKMESTERKE/FOTOLIA.COM

Scientific Excellence

Electronics mystery solved

Eureka! Scientists unlock the mystery around key propriety for resistive memories known as ovonic threshold switching! This new research, published in Science Advances, could lead to the development of atomic-scale design rules to enable new materials with even more powerful properties.



© MIMI POTTER/FOTOLIA

Telecom

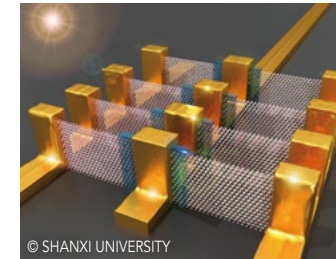
Towards miniaturized, frequency reconfigurable antennas

Highly miniaturized antenna for IoT devices without compromising efficiency, now a reality! Discover the work of a young PhD student CEA-Leti with 1/15th scale wavelength miniaturization. CEA-Leti's IWAT2020 award-winning research has already attracted several manufacturers.

Sensing

Integration of 2D materials in VLSI electronic devices

Demonstration of a FinFET with world's thinnest fin, which approaches the limit of one single atomic MoS₂ layer!

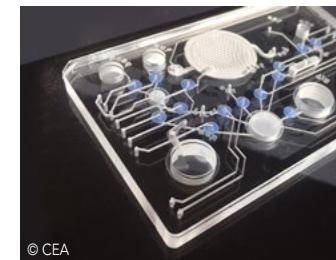


© SHANXI UNIVERSITY

Human Health

Discover PEPs, A miniaturized and transportable microfluidic laboratory

Biological assessment in 2 hours with microfluidic device and proteomics. Peps enables large scale clinical testing using MS-based proteomics, and the discovery of new biomarkers.



© CEA

Digital

Haptic interfaces: Wafer-level manufacturing just around the corner

A haptic interface is a new type of man-machine interface, which allows the user to interact with the environment using his/her sense of touch.



© VASILY MERKUSHEV/FOTOLIA

> Point of care diagnosis

HORIBA Medical and CEA-Leti strengthen their partnership to develop tomorrow's diagnostics at the point of care.

> The Ferroelectric tunnel junction, a future synapse for the neuromorphic processor?

EU Project—Discover BeFerroSynaptic, the latest European project for ending the toing and froing between memories and computing units and dividing power consumption by 1000.

Special Covid-19

> A particle collector capable of detecting airborne viruses

Coriolis Nano, commercialized by Bertin Technologies, was developed by CEA-Leti. The device, which can detect airborne viruses, could help prevent the spread of Covid-19.

> **Check out our new Scientific Report for Technologies for Systems**

Among the significant results and trends, the growing use of learning algorithms applied to hardware developments with a link to upcoming edge-AI applications for both communications and sensors applications (see chapters 1 and 4) is remarkable.

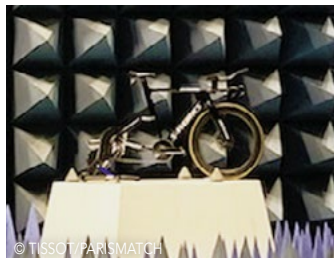


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Human Health

Skin cancer: micro needle patches enable photodynamic therapy to take a step forwards

Discover the latest skin patch that reaches deepest wounds to better treat SkinCancer. COVID19 isn't the only enemy this Summer.



© TISSOT/PARISMATCH

Telecom

High-precision sports timing technology at 2020 UCI Road World Championships

Tissot turned to CEA-Leti, a CEA Tech institute, for a precision timekeeping solution for the 2020 UCI Road World Championships. The goal was to boost the range and reliability of real-time radio transmission of cyclists' times.

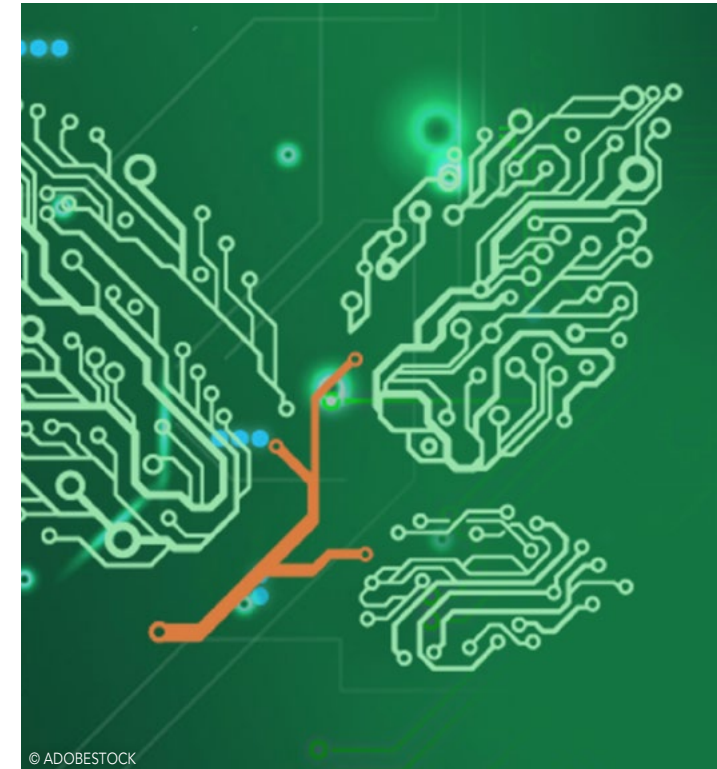


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Scientific Excellence

A new generation of transistors now in labs

For the first time ever, CEA-Leti fabricated nanosheet transistors with seven levels of stacked silicon channels. This advance will pave the way to smaller, more powerful, and energy-efficient devices.



© ADOBESTOCK

Eco-Innovation

Toward a more sustainable electronics industry

Did you know that digital industry account for around 4% of greenhouse gas emissions? CEA-Leti is gradually shifting over to more sustainable practices. Discover how with Thomas Ernst & Léa Di Cioccio, who lead the institute's scientific research programs.



© TRISH23/FOTOLIA

Human Health

X-ray photon-counting detector modules target improved medical diagnoses

Novel X-ray photon-counting detector module (PCDM) developed by CEA-Leti and integrated in Siemens Healthineers X-ray scanner prototype, has shown in clinical trials higher spatial resolution, less noise, fewer artifacts, and color capabilities in patients' images.

Eco-Innovation

Tiny FlexAmes Flexible energy storage and harvesting

Discover TinyFlex Ames, a 1-mm-thick self-powering solution integrating energy storage and harvesting designed for IoT.

More than Moore

Sequential 3D integration soon within reach

CEA-Leti Scientists Demonstrate CMOS Device Fabrication at 500°C, Paving the Way to High-Performance 3D Monolithic CMOS Integration.

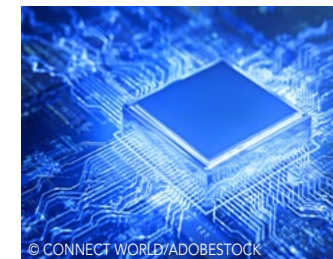
Augmented Reality

A pixelated hologram printed on a miniature component

Display holograms on augmented reality glasses will become reality in the near future! Discover CEA-Leti's latest component technology.



© ZAPP2PHOTO/ADOBESTOCK



© CONNECT WORLD/ADOBESTOCK



© TIERNEY/ADOBESTOCK

> New Scientific Report for Technologies for Optics & Photonics

Activities of the Optics and Photonics division cover most of the biggest industrial markets for photonics: all wavelength imaging (visible, infrared, THz), optical data communications, optical environmental and 3D sensors, solid-state lighting and information displays.



> Sensors help make exercise more fun

Check out MoovLab solutions, a spinoff of CEA-Leti, to get you ready before the winter comes. MoovLab, helps gyms improve customer loyalty with fun and interactive virtual circuit training tailored to each user's individual goals.

> **PhD Generation, why students joined CEA-Leti?**

At CEA-Leti, 200 PhD students from +30 countries are working on R&D projects to tackle the technological and societal challenges of tomorrow. In this series of testimonials, PhD students explain their career paths and motivation to carry out their thesis at CEA-Leti.



> **CEA: 75 years of innovations and scientific advances**

Don't miss the special edition of *Les Défis magazine* dedicated to this anniversary.

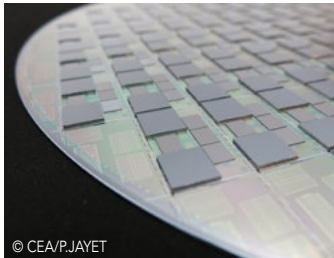


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Telecom

Did you know that **quantum cryptography** is the only way towards secured communications?

Almost daily, we read about breaches of standard cryptography protocols, with major financial-loss and security-risk implications, and the threat to critical infrastructure, such as power-supply systems.



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More than Moore

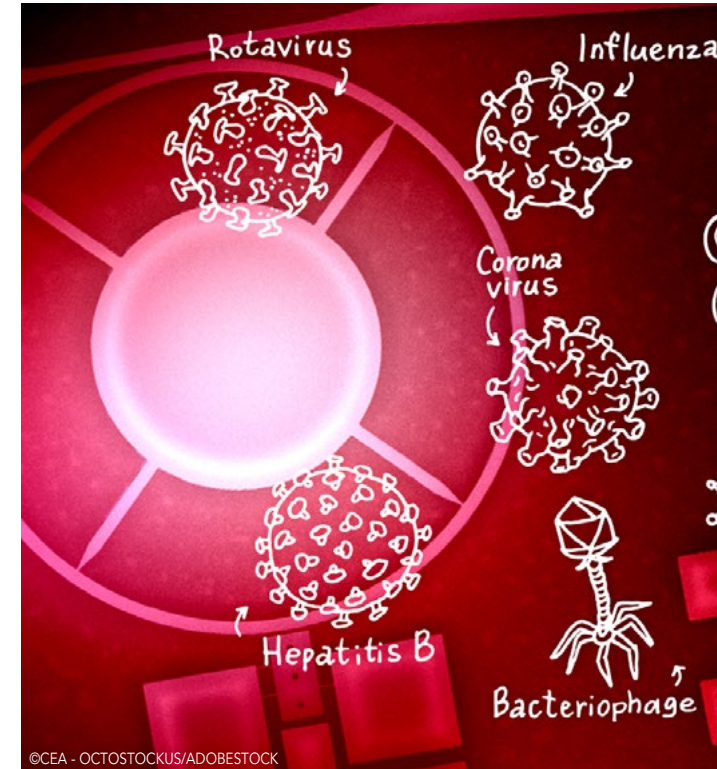
Advanced 3D integration and packaging technologies to **strengthen IT solutions**

Intel Corporation today announced a new collaboration with CEA-Leti on advanced #3D and packaging technologies for processors to advance chip design.

Telecom

Spectrum above 90 GHz for wireless connectivity: **Opportunities and challenges for 6G**

Microwave Journal—The spectrum above 90 GHz is foreseen as a key enabler for the next generation of mobile networks. The large amount of spectrum paves the way for high capacity wireless links. Many challenges still need to be overcome to make this technology a success. This article describes some of the scenarios for the spectrum above 90 GHz, coveted by the cellular industry for 6G.

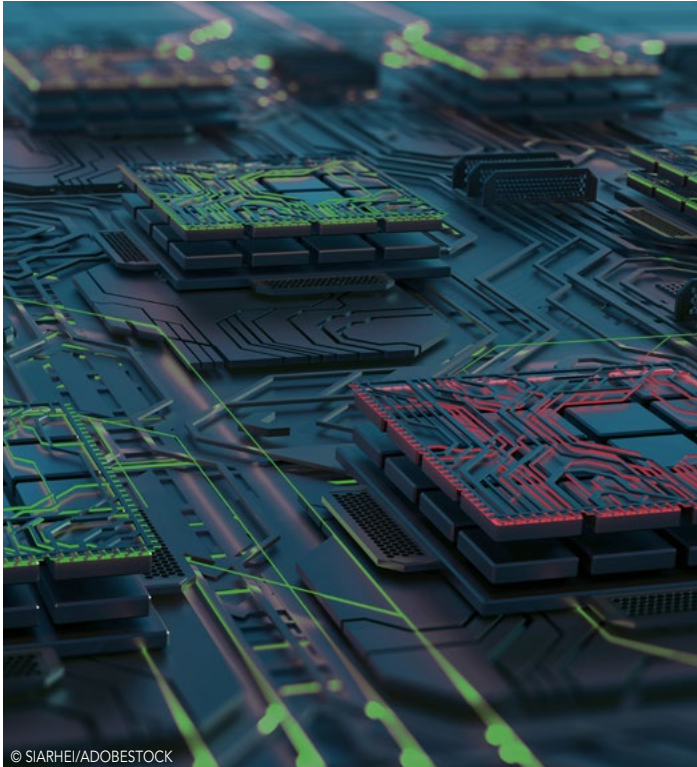


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Human Health

CEA achieves **mass-spectrometry breakthrough that paves the way to detecting viruses**

With ultimate goal of improving virus knowledge, team now will use its optomechanical system to design a prototype for airborne virus analysis. The results of the work were published in a paper titled "Optomechanical Mass Spectrometry" in *Nature Communications*.



© SIARHEI/ADOBESTOCK

Infrastructure

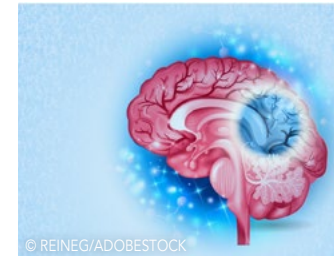
CEA-Leti acquires defect inspection

CEA-Leti's 300 mm pilot line now equipped with two brandnew fault detection equipment improve yields and chip performance, to meet the needs of its industrial R&D partners. The new UVision® 8 optical inspection system performs a chip-to-chip comparison to identify differences in pattern shape or appearance and detect the presence of particles or other debris.

Human Health

Cooling glioblastoma

Cooling glioblastoma to help the 250 000+ patients diagnosed with glioblastoma—an aggressive form of brain cancer—don't miss Clinatex and CEA-Leti latest research towards a local treatment.



© REINEG/ADOBESTOCK

Special Covid-19

Are you washing your hands the right way?

Discover SureWash, the very first system capable of measuring quality of hand washing in realtime hospitals. It also provides special training to improve hygiene practices.



© MARIDAV/ADOBESTOCK

Computing

Discover Quantum Computing, Towards large-scale quantum computers with silicon qubits

Founded in 2018, the Quantum Silicon Grenoble consortium brings together CEA-Leti / IRIG, Institut Néel CNRS, and Université Grenoble Alpes researchers, working towards the development of a 100-qubit processor.



© FOTOSTAR/ADOBESTOCK

> Leti Innovation Days 2020: New turms in innovation to embrace the world

A 2-hour discussion of the challenges and opportunities for innovation-driven SMEs and large companies. Watch the replay!



> Mag4Health: The end of bulky MRI equipment?

Mag4Health, a future startup and CEA-Leti spinoff, won an award at the i-Lab 2020 competition. The project aims to develop a helmet-sized magnetoencephalography (MEG) system that represents a major advance with regard to today's bulky machines.

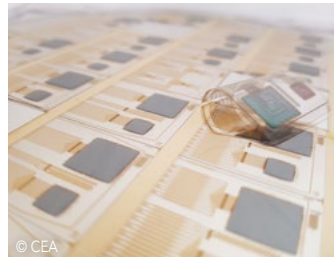
> **Become an Expert in Artificial Intelligence**

We are happy to announce Season 2 of our 12-episode web series dedicated to AI.



> **Check out our new Scientific Report for Technologies for Biologies and Health!**

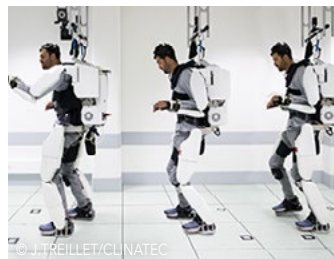
It includes sensors and actuators, imaging technologies, microfluidics, chemistry, biochemistry and electrochemistry, biology and instrumentation, including mechanics, software, information processing and electronics.



Innovation

Discover Chip-In-Flex, 1st fully flexible label incorporating an RFID chip and sensors

Today, electronic systems are becoming smaller, thinner and, above all, flexible. Curved surfaces, such as dashboard, smartphone shell, textiles, can now be functionalized!



Human Health

Clinatec recently succeeded to improve its cerebral motor activity location technique

Clinatec has been trying to effectively determine the best location in the brain for its WIMAGINE® implant, which measures the brain activity of tetraplegic patients.



Scientific Excellence

Laser beams with no III-V materials are no longer a dream...

Discover CEA-Leti, STMicroelectronics, Forschungszentrum Jülich latest results featuring a IV-IV semiconductor device emitting a laser beam.



© SHPOCK/ADOBESTOCK

Defense & Security

Nanometric wrinkles and artificial fingerprints

Discover two powerful anti-counterfeiting innovation holding excellent potential for creating anti-counterfeiting labels on processors, jewelry, watches, and other valuables. By melting a thin layer of material onto an object, CEA-Leti researchers can produce a micrometric pattern, resulting in a unique non-reproducible artificial fingerprint.



Report

CEA-Leti's 2020 scientific report: Download it now!

Are you working within an R&D unit on the lookout for NEW ready-to-be-transferred microelectronics technologies? CEA-Leti's open access scientific report outlines in a lively and dynamic manner the latest you need to know for industry.

Safety

Discover Rescue Drone, Smartphone location technology for mountain rescue

As winter approaches, we are proud to announce our new Rescue Drone technology. Now mountain rescuers have an additional tool to help them locate avalanche victims.



© ANDREAS P. MACIEJ GERSZEWSKI/ADOBESTOCK

Telecom

Wireless activation of detonators, a key innovation in the blasting industry

CEA-Leti and Davey Bickford Enaex extend their R&D collaboration to bring more digital solutions to mining and blasting industries that improve safety for workers and increase productivity.



© DAVEY BICKFORD

More than Moore

Latest results & insights on 3D Technologies, Power Electronics & Quantum Computing

IEDM2020WCEA-Leti will unveil its latest scientific results in 3D sequential integration for neural networks, 3D RRAM for in-memory computing and GaN-on-Si for power electronics at IEDM 2020, Dec. 12-16. Institute scientists are lead authors on four papers and contributing authors on five more that will be presented during the conference.

> Redfinch: pioneers a compact, fast, and sensitive photoacoustic sensor EU Project—NaturalGas

consumption is rising steadily. Detecting in real time the tiniest leaks in aging infrastructures has become a crucial issue.

> CEA-Leti's silicon technologies and component report is now available!

Find within all the technologies fueling the digital transition. Get the latest in CMOS, quantum computing, advanced SOI substrates, new memories for AI, patterning, circuits for Datacom, GANpower and much more.



> **CEA-Leti celebrates its 15th anniversary as a Carnot Institute**

15 years of research which has boosted technology transfer! Happy birthday Carnot network!

> **Aledia rely on CEA-Leti's pilot lines**

Aledia, a French startup pioneering a disruptive technology for microLED displays, announces it has produced its first nanowire chips on 300mm silicon wafers using CEA-Leti pilot lines.

> **Leti Devices Workshop 2020: Efficient and frugal solutions for data deluge management**

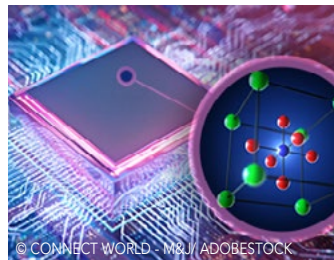
One-hour digital discussion of key technologies for data-deluge management. Watch the entire replay!



Automotive

SiC and electromobility: CEA-Leti supporting Soitec with Smart Cut™ technology

Founded in 1992 by four CEA researchers who wanted to exploit Smart Cut™ technology to produce silicon on insulator (SOI) wafers on an industrial scale, Soitec is one of the first startups to arise from CEA-Leti.



Scientific Excellence

World first: Toward even smaller power converters

Power converters are found in every electrical device you can think of! To substantially reduce their energy losses, CEA-Leti implemented a new mechanical storage strategy.

Human Health

Medical microscopes get closer to patients

Electrooptics—Algorithms let developers shrink microscopes, enabling innovation by building on existing technology, discovers Andy Extance. Even as you read this, you are ageing with every single word—so medical technology's promise of extending our healthy lives is greatly welcome. And it's more than a promise—in most countries the average age is increasing. But that brings more ailments with it.



© TATIANA SHEPELEVA/FOTOLIA

Edge AI

In-memory computing pathways for edge-AI & neural networks

IEDM 2020—CEA-Leti presented 2 papers this week at IEDM that confirm the advantages of combining 3D architectures and resistive-random-access-memories (RRAM) for in-memory computing (IMC), and their applications for Edge-AI and neural networks.



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Infrastructure

CEA-Leti expands 300 mm line with new contact fabrication capabilities

CEA-Leti has added even more new 300 mm equipment this year. The institute's clean rooms can now fabricate their own low-resistance ohmic contacts—a BEOL process where the electrical junctions that link the active components of a circuit to the circuit's connectors are made. This new capability will give even more weight to the R&D services CEA-Leti offers semiconductor-industry partners.

Power Electronics

Overcoming challenges to making GaN energy-saving, power-electronics devices

IEDM 2020—CEA-Leti recent work demonstrated that it is possible to accurately model and predict these threshold voltage instabilities with great precision power.

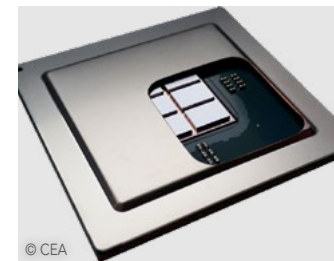


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Computing

High-performance processors to power exascale computing

IEDM 2020—CEA-Leti and CEA-List present their latest result in 3D integration technologies & many-core architectures and open a path towards heterogeneous processors that will enable exascale-level supercomputers.



© CEA

> Neuronal microscopy for cell behavioural examination and manipulation.

EU Project—REVEAL intends to lay down the foundations of the 'neuronal microscopy' in the realms of 2D and 3D cell live imaging.

Special Covid-19

> Avalun Covid-19 antigen test now on market

CEA-Leti's Startup Avalun released its Covid-19 antigen test a few days ago. This powerful growth driver will also help speed up the rollout of Avalun's portable lab, LabPad® Evolution.

Stay tuned!
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