2025 Highlights

cea leti

cea leti

2025

January

February

March

April

May

June

July

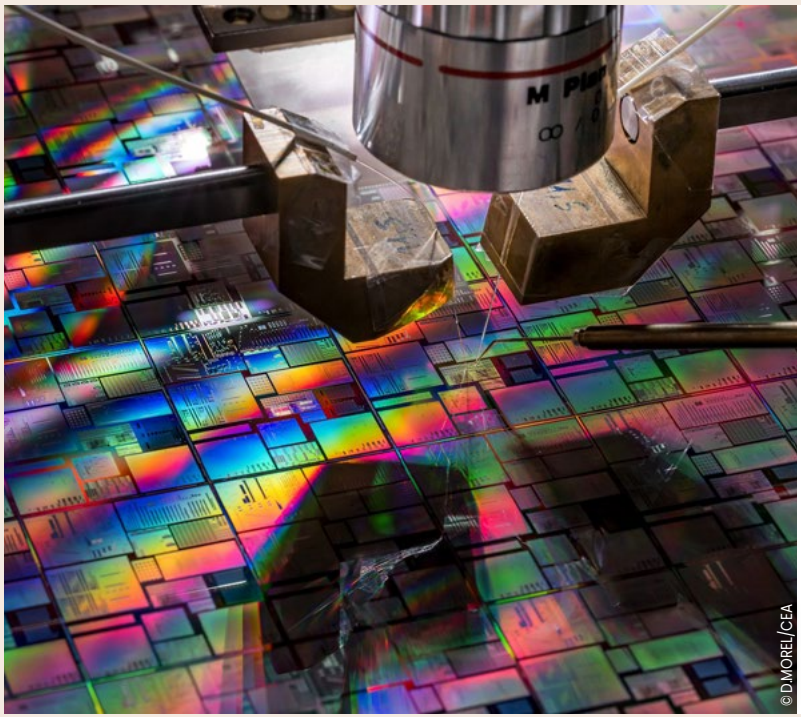
August

September

October

November

December



OPTICS

CEA-Leti advances chemical detection, high-speed communication and LiDAR performance

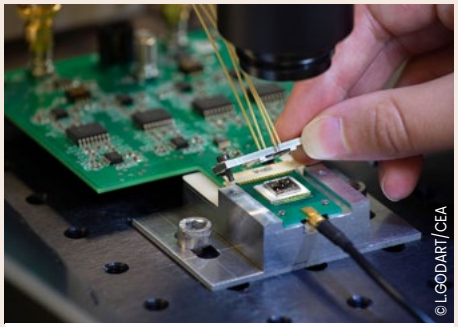
In three papers at Photonics West 2025, CEA-Leti scientists unveiled innovative research results that push the boundaries of chemical detection, high-speed communication, and LiDAR performance with silicon photonics.

SCIENTIFIC EXCELLENCE

Congratulations to Francesco Foglia Manzillo on his EuCAP 2024 award for his research on RF architecture.

SENSOR

Discover PowerFree Count, a self-contained energy harvesting system and sensor integrated into a door to monitor usage.



HEALTH

CEA-Leti and MIT develop nanosensors for high-precision gene therapy quality control.

SCIENTIFIC EXCELLENCE

Congratulations to Renzo A. on his Best Paper Award at ESREF 2024 for his groundbreaking research on crossbar memory arrays.

EVENT

The 2025 Leti Photonics Workshop showcases cutting-edge results shaping the future of photonics-based applications.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

MICROELECTRONICS

Celebrating the launch of the first five pilot lines under the Chips for Europe Initiative.

SCIENTIFIC EXCELLENCE

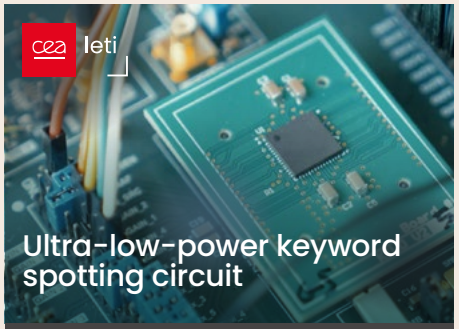
CEA-Leti presented 6 scientific papers and showcased its latest tech demos at Photonics West 2025.

SCIENTIFIC EXCELLENCE

IEDM 2024: Olivier Faynot received the 'IEEE Fellow 2024' award from the IEEE Electron Devices Society.

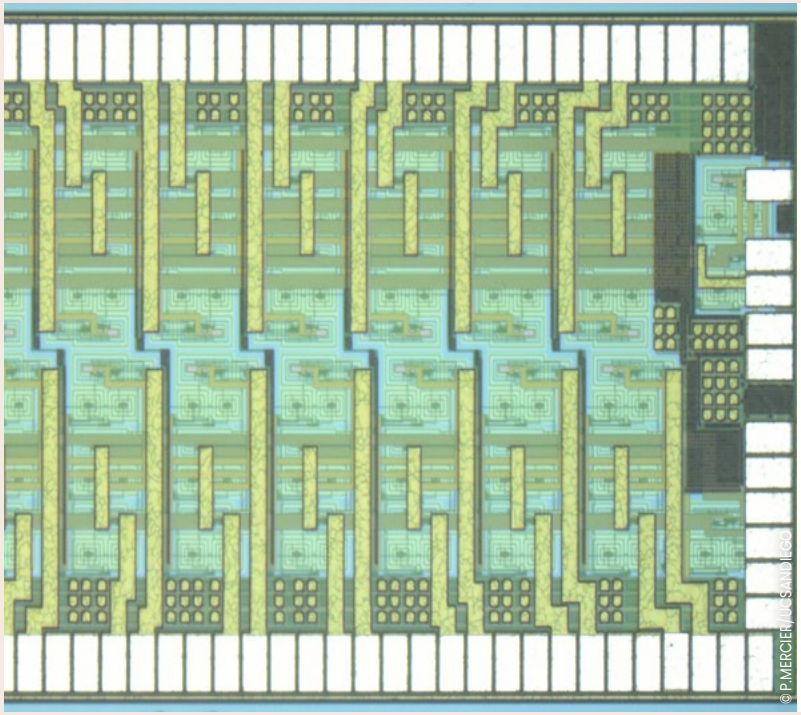
TELECOMMUNICATIONS

A new ultra-broadband approach to drone localization.



VIDEO

A keyword detection circuit that significantly reduces energy consumption while maintaining high recognition accuracy.



MICROELECTRONICS

UC SanDiego and CEA-Leti scientists report breakthrough microactuator driving system at ISSCC 2025

Researchers at University of California San Diego (UC San Diego) and CEA-Leti unveiled a groundbreaking microactuator driving system, combining innovative solid-state battery technology with novel integrated circuit designs for 2-in-1 storage and voltage boost conversion techniques.

cea leti

2025

January

February

March

April

May

June

July

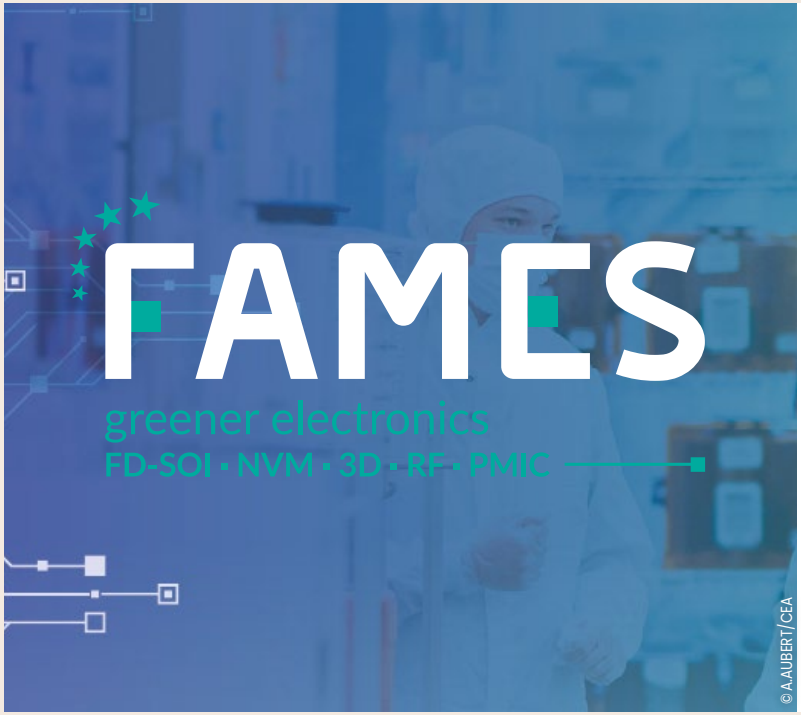
August

September

October

November

December



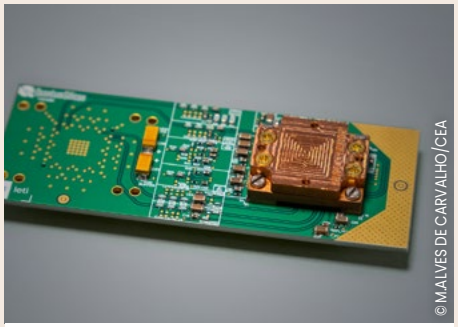
MICROELECTRONICS

FAMES Pilot Line in *Nature Reviews Electrical Engineering*

In a recent article in *Nature Reviews Electrical Engineering*, CEA-Leti reported that the FAMES Pilot Line will strengthen European sovereignty in microelectronics by opening new research avenues to enhance performance and reduce power consumption in mixed-signal circuits.

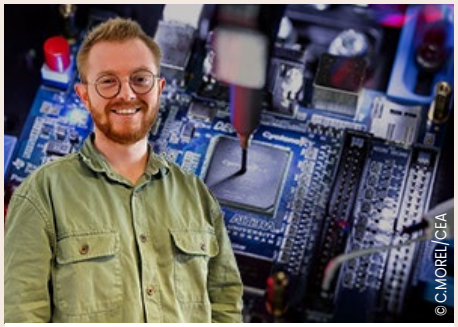
FUTURE GENERATIONS

CEA-Leti welcomed students from diverse backgrounds, offering them a closer look at research and innovations to inspire future innovators.



QUANTUM

CEA and Quobly report simultaneous, microsecond qubit-readout solution with 10x power-use reduction.



SCIENTIFIC EXCELLENCE

Julien Maillard won the Best Student Paper Award at Secrypt 2024 for his paper on hybrid cyberattacks targeting embedded devices.

SCIENTIFIC EXCELLENCE

CEA-Leti presented 9 papers and co-chaired one session at SPIE Advanced Lithography + Patterning 2025.

STARTUP

Inauguration of Quobly's new facilities: a key milestone on the roadmap towards the industrialization of this quantum gem!

2025

January

February

March

April

May

June

July

August

September

October

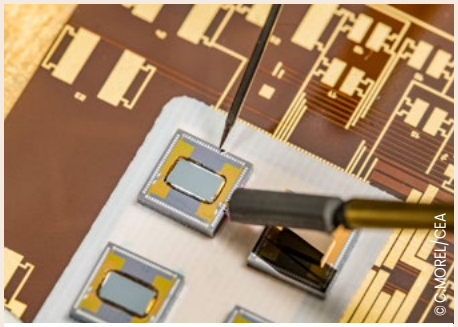
November

December

REPORT

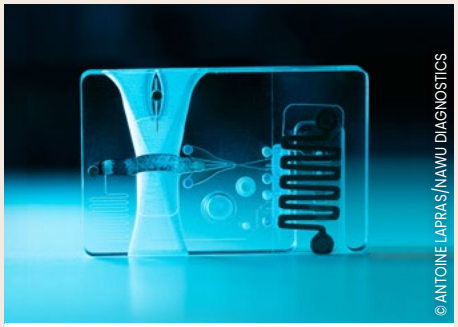
2025 CEA-Leti Scientific Report: An in-depth look at research highlights from 2024-2025

Whether you are a technology enthusiast, business leader, or researcher, the CEA-Leti 2025 Scientific Report is an essential resource for staying up-to-date on our latest developments and major impact on high-stakes industries.



OPTICS

High-operating-temperature infrared detection of low numbers of photons with no information loss.

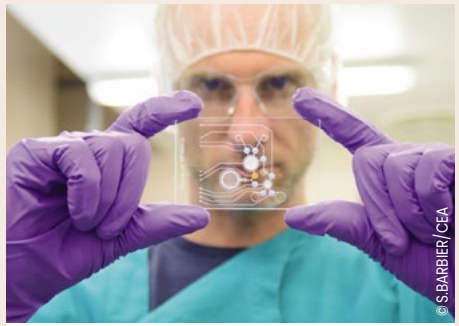


HEALTH

Launch of nawu diagnostics: Detecting respiratory infections in 30 minutes.

SCIENTIFIC EXCELLENCE

CEA-Leti's booth at Embedded World 2025 showcases five demonstrators, highlighting advances in smart, secure embedded systems and circuits.



HEALTH

CEA-Leti and Infiplast spearhead a new microfluidic subsidiary.

EVENT

The 2025 LID Taiwan brought together global industry leaders, researchers and fellow innovators from Taiwan's cutting-edge semiconductor ecosystem.

cea leti

2025

January

February

March

April

May

June

July

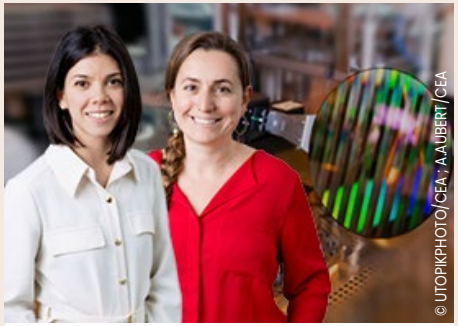
August

September

October

November

December



SCIENTIFIC EXCELLENCE

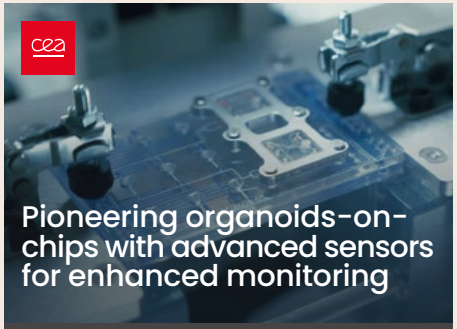
Congratulations to Karine Abadie and Ivanie Mendes on their IITC award for advancing microprocessor innovation.

SCIENTIFIC EXCELLENCE

CEA-Leti presented three scientific papers, and three keynotes, including one inspiring opening keynote at DATE 2025.

MICROELECTRONICS

CEA and CNRS co-hosted the PEPR Electronics scientific days alongside C'Nano 2025, bringing together academia and industry.

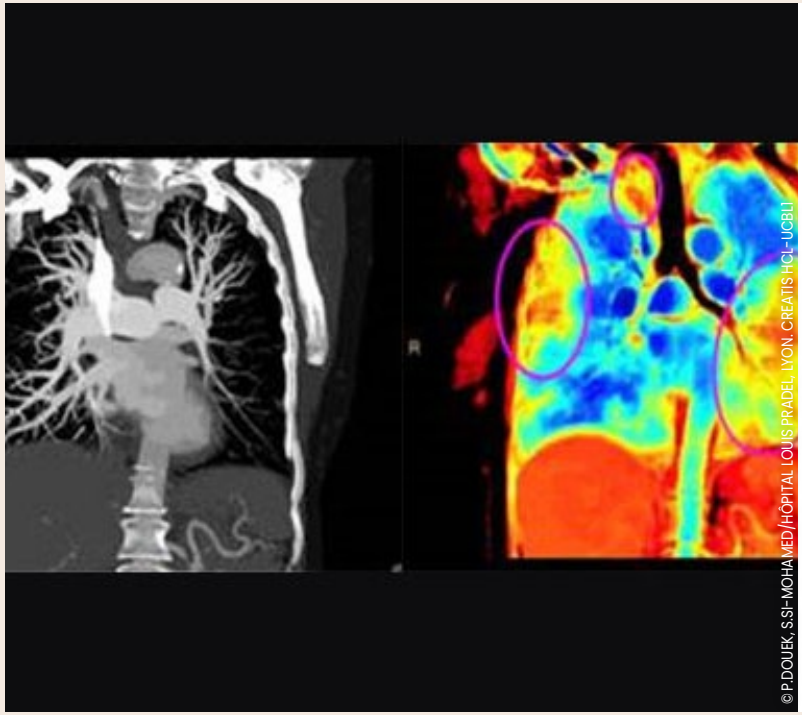


VIDEO

Discover CEA-Leti and CEA-Irig's latest breakthroughs in more predictive and personalized medicine.

MICROELECTRONICS

FAMES Pilot Line launches its first Open-Access Call for chipmakers, fabless companies, startups or academic labs, to sumit proposals.



HEALTH

Improving imaging for cancer and cardiovascular disease diagnosis

France 2030 has announced its support for the ImaSpiiR-X consortium, providing €18.2 million in funding over 60 months to move from black-and-white X-ray medical imaging—which displays only tissue density—to full-colour spectral imaging, capable of identifying tissue composition.

cea leti

2025

January

February

March

April

May

June

July

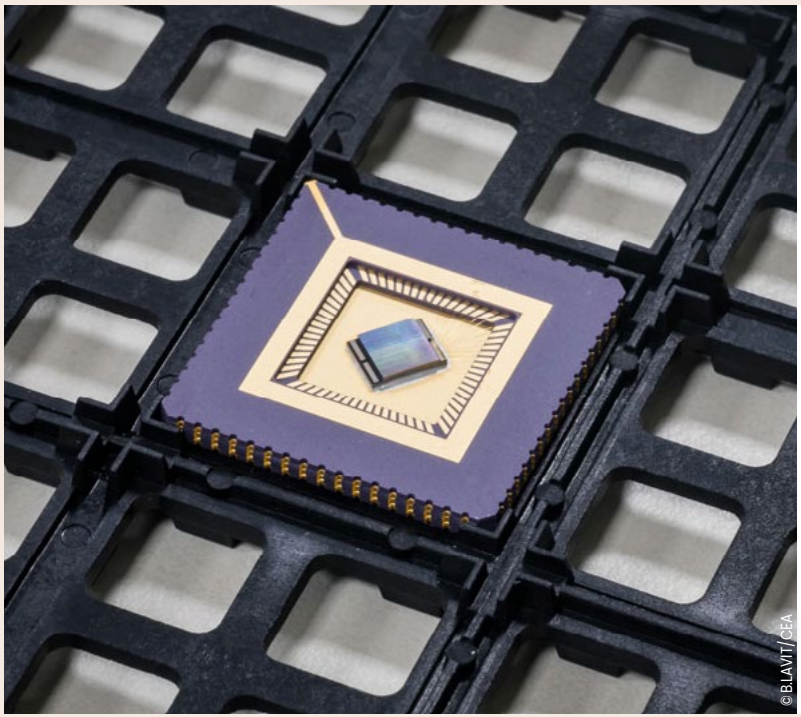
August

September

October

November

December



MICROELECTRONICS

iNGage: The 80th CEA-Leti startup driving innovation in MEMS navigation sensors

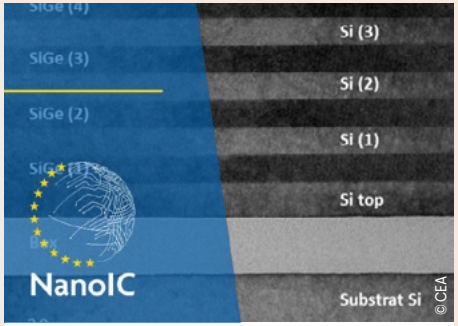
As CEA celebrates its 80th anniversary, CEA-Leti is proud to introduce iNGage—the 80th startup to emerge from its labs! iNGage is developing low-cost, high-performance, miniaturized Inertial Measurement Units. The company's innovative approach is the product of fifteen years of research in micro- and nanoelectronics.

SCIENTIFIC EXCELLENCE

Michael Tchagaspanian presented CEA-Leti's ambitions to strengthen cooperation with Taiwan's semiconductor ecosystem on Taiwan's TV channel PTS.

SCIENTIFIC EXCELLENCE

CEA ranks 30th in the Clarivate 2025 Top 100 Global Innovators—and first among public research organizations worldwide.



MICROELECTRONICS

Through four major R&D challenges, CEA-Leti contributes to the NanoIC pilot line, advancing microelectronics beyond current technological limits.

VIDEO

Season 5 of *PhD Generation* kicks off with Salaheddine Toubi, Ph.D. student at CEA-Leti, exploring augmented reality and photonics.

VIDEO

Overcoming direct bonding distortion for next-generation chips.

cea leti

2025

January

February

March

April

May

June

July

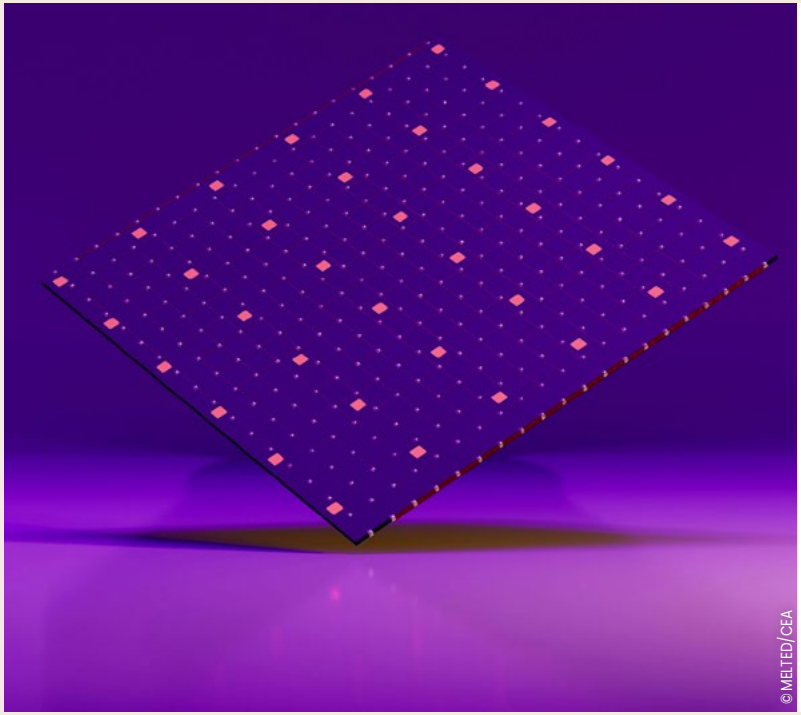
August

September

October

November

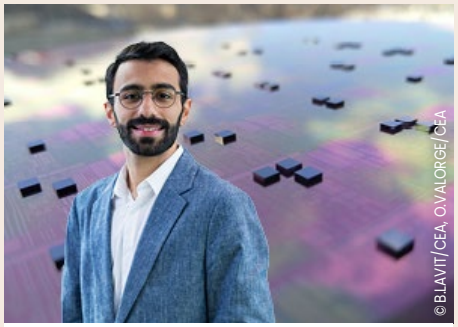
December



OPTICS

GaN MicroLED and organic photodetector co-integration announced for multifunctional displays

Targeting next-generation of display technology, CEA-Leti presented its heterogeneous co-integration of GaN microLED technology and organic photodetectors (OPDs), a major step toward multifunctional displays that combine both display and sensing capabilities.

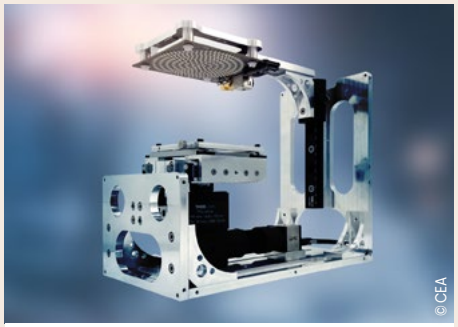


MICROELECTRONICS

PhD student Mohammad Alsukour's research on hybrid bonding won the Best Paper award at 3DIC.

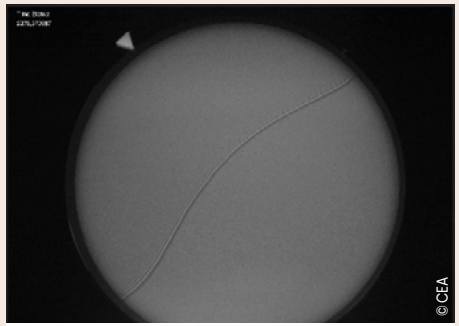
SCIENTIFIC EXCELLENCE

CEA-Leti took part in the RISC-V Summit, showcasing two CEA demonstrators, a product presentation, and several scientific posters.



HEALTH

CEA-Leti introduces HoloPhase 3D, a compact and cost-effective label-free 3D microscope designed for long-term, non-invasive imaging of biological samples.



MICROELECTRONICS

CEA-Leti has pioneered a novel method for integrating molybdenum disulfide (MoS_2) onto 200 mm silicon wafers using molecular direct bonding.

VIDEO

What if your screen could read your heartbeat, recognize your gestures, and unlock with your fingerprint?

cea leti

2025

January

February

March

April

May

June

July

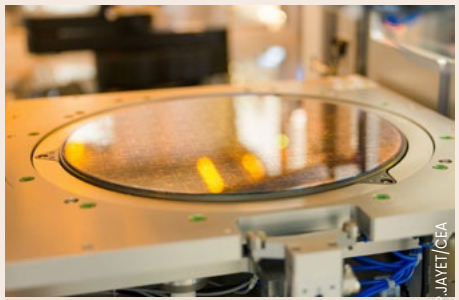
August

September

October

November

December

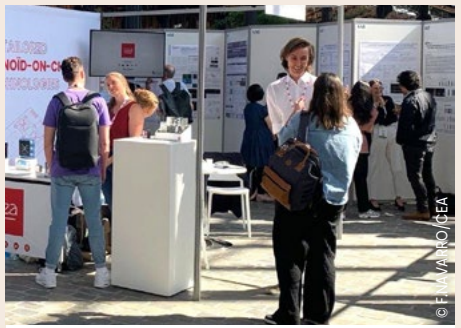


MICROELECTRONICS

Successful characterization and optimization of nanocrystalline copper deposition for fine-pitch hybrid bonding

OPTICS

ECTC 2025—CEA-Leti presented its latest research on high-density LiDAR integration for next-generation autonomous vehicles.



SCIENTIFIC EXCELLENCE

CEA-Leti & CEA-Irig showcased the Organoids-on-Chip technology at EUROoCs Brussels, gave two talks and joined the poster session.

SCIENTIFIC EXCELLENCE

The multidisciplinary team behind the Brain-Computer Interface (BCI) program has won the 2025 World Innovation Team Best Practices – Gold Medal!

MICROELECTRONICS

The CEA, CNRS, and Université Grenoble Alpes are launching SPINfab, a unique academic pilot line dedicated to spintronics.

SUSTAINABILITY

Can Europe make chips more sustainable—without slowing innovation?

The GENESIS Project launches to lead Europe's transition to sustainable semiconductor manufacturing, bringing together 58 partners charged with implementing cutting-edge solutions for emission control, materials innovation, waste reduction, and raw material reuse.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

PARTNERSHIP

Applied Materials and CEA-Leti expand joint lab to drive innovation in specialty chips

Applied Materials and CEA-Leti announced the next phase of their longstanding collaboration to tackle one of today's most urgent tech challenges: enabling more energy-efficient AI data centers.

SCIENTIFIC EXCELLENCE

Congratulations to Stéphane Nicolas for his ECTC award on 3D integration, key to smarter, smaller, and advanced image sensors.

COMMUNITY

At CEA-Leti, collaboration grows through shared moments—like a recent team breakfast that sparked ideas, connection, and community.

CYBERSECURITY

CEA-Leti and Soitec announce strategic partnership to leverage FD-SOI for enhanced security of integrated circuits

The initiative focuses on experimentally validating and augmenting FD-SOI security benefits—from substrate to circuit design—providing data, demos, and roadmaps to meet rising cybersecurity needs in automotive, industrial IoT, and secure infrastructure markets.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

EVENT

LID World Summit 2025, a record-breaking edition

Over 3 days, CEA-Leti gathered 1,250+ attendees from 25 countries who brought their energy and expertise across 8 conferences, 3 exhibitions, 2 receptions, and numerous insightful business meetings and networking opportunities.
Save the date: LID World Summit returns on June 23–25, 2026—the place to be for anyone shaping the future of semiconductors.

SCIENTIFIC EXCELLENCE

CEA-Leti CEO Sébastien Dauvé opened the event with a keynote on shaping a competitive, ethical, and sustainable digital future.

SUSTAINABILITY

CEA-Leti CTO Jean-René Lèquepeys unveiled RESOLVE, a flagship initiative to cut chip energy use 1000× by 2032.

EVENT

At LID World Summit, from live demos to one-to-one meetings, it's all about real conversations and meaningful exchanges.

SCIENTIFIC EXCELLENCE

LID World Summit hosted the symposium "AI & Microelectronics" under the High Patronage of Mr. Philippe Baptiste, Minister of Higher Education and Research.

VIDEO

This year's summit was a true catalyst for innovation, collaboration, and future-focused thinking. Relive the most memorable moments.

cea leti

2025

January

February

March

April

May

June

July

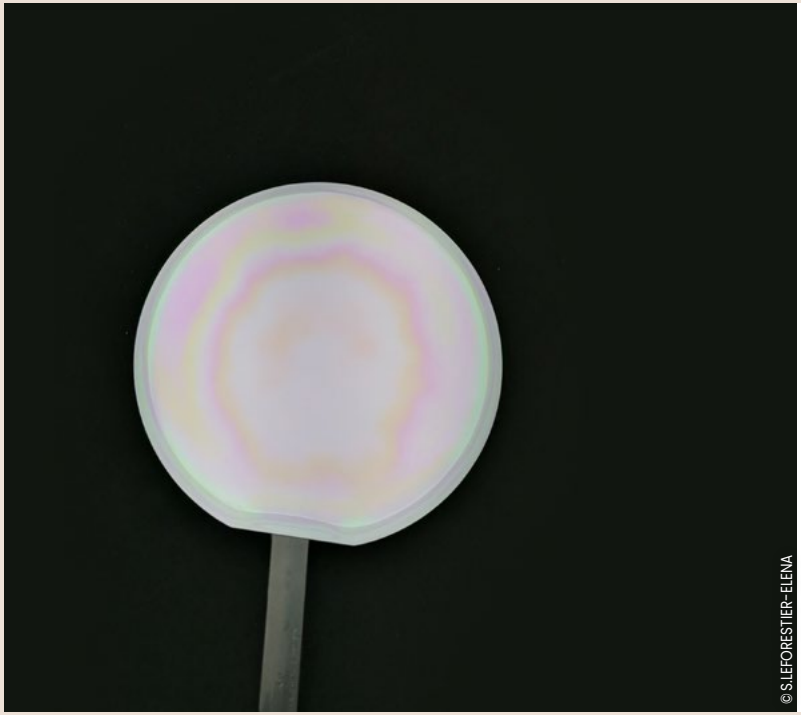
August

September

October

November

December



SCIENTIFIC EXCELLENCE

Pioneering LNOI for next-gen photonic circuits and Europe's first commercial supplier of LNOI wafers

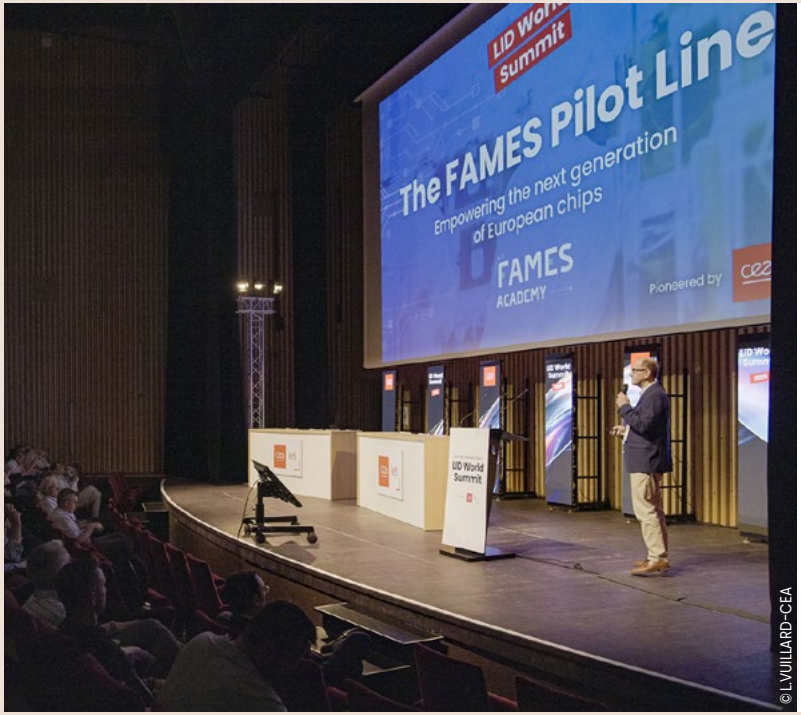
A recently concluded 42-month EU project, ELENA, announced the development of the first-ever, European-made lithium niobate on insulator (LNOI) substrates for photonic integrated circuits—a breakthrough that establishes a fully European supply chain for thin-film lithium niobate (TFLN) technology.

FUTURE GENERATIONS

LID World Summit welcomed high school students to discover CEA-Leti's tech through sessions on health, smart systems, and silicon advances.

FUTURE GENERATIONS

LID World Summit—Fifteen top PhD candidates, postdocs, and early-career researchers from CEA-Leti pitched cutting-edge technological challenges.



MICROELECTRONICS

FAMES Academy: Training Europe's chip engineers in FD-SOI and advanced design

LID World Summit—The FAMES Pilot Line announced the official launch of the FAMES Academy, a strategic educational initiative designed to support the EU's commitment to develop next-generation chips.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

© FOTOGURMESPB/ADOBESTOCK

MICROELECTRONICS

Superconducting interconnects for scalable qubits

How can we scale up the number of qubits without disrupting system performance? CEA-Leti research engineers are tackling this key challenge in quantum computing by developing an innovative superconducting interconnect brick that could enable a higher density of chip-to-chip connections while minimizing thermal transfer between chips.

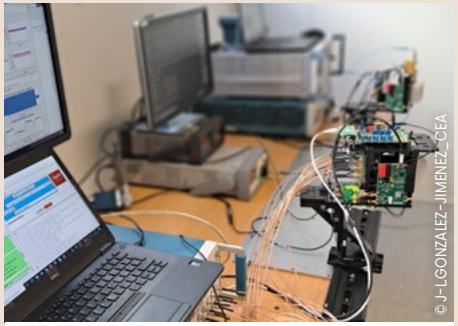
WEBINAIRE

During an ACSIEL webinar, Jean-René Lequèpeys, CTO of CEA-Leti, shared Leti's vision on a key challenge: cutting digital systems' energy use by 1,000.

© P.JAYET/CEA

HEALTH

PEPR MED-OOC Launch: A new program designed to improve patient care through bioengineering.



© J-LGONZALEZ-JIMENEZ_CEA

TELECOMMUNICATIONS

CEA-Leti introduces a 140 GHz wireless solution—a compact, low-power technology delivering unprecedented speed for tomorrow's connectivity.

PODCAST

Host Justine Murphy welcomes Eléonore Hardy, Silicon Photonics Partnerships Manager at CEA-Leti, on the podcast *Following the Photons*.

© J.BERTHET/CEA

EVENT

The 2025 LID Transducers Workshop highlighted the potential of sensors and actuators, focusing on our latest optomechanical innovations.

cea leti

2025

January

February

March

April

May

June

July

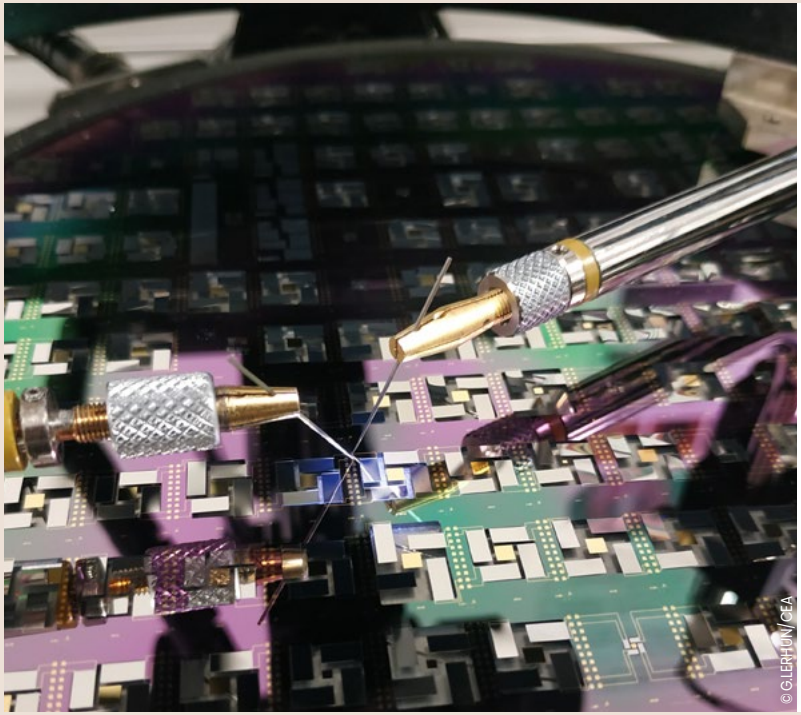
August

September

October

November

December



SENSOR

A scene scanner that can withstand high incident laser intensities for longer ranges

What if your scanning system could combine compactness, flexibility, and precision in one coin-sized device? CEA-Leti presents its 2D MEMS Micro-Mirror: a compact, piezoelectric-actuated mirror system designed for high-precision scanning.

SCIENTIFIC EXCELLENCE

Congrats to Charles Bon-Mardion on his Best Paper Award at IEEE ESTC, showcasing CEA-Leti's work on superconducting stacks for cryogenic systems.

HEALTH

CEA-Leti at the forefront of bioproduction innovation: Nadège Nief shares her vision on producing more, better, and affordable therapies.

OPTICS

CEA-Leti joins STARLight: positioning Europe at the forefront of next-generation silicon photonics.

OPTICS

Through CEA's Audace! program, CEA-Leti and partners develop photon-by-photon detection to reveal extremely weak signals in astrophysics and quantum optics.

VIDEO

In 'The Making of Truth' series, Chrystel Deguet, Deputy Director of CEA-Leti, reveals the hidden microelectronics inside our everyday objects.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

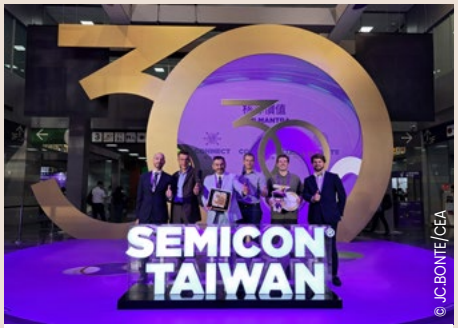
November

December

OPTICS

CEA-Leti presents a breakthrough in ultra-compact, high-resolution AR/VR displays

Together with CRHEA, CEA-Leti achieved R&D results paving the way for full-color microdisplays using a single material system—a long-standing goal for AR/VR. Their paper in Nature Communications Materials reports record-setting red emission from InGaN quantum wells.



SCIENTIFIC EXCELLENCE

CEA-Leti participates in Semicon Taiwan 2025, presenting cutting-edge research through two technical talks and joining the French Pavilion.

CYBERSECURITY

As part of CEA's "Audace!" program, CEA-Leti and its academic partners are creating a digital twin to help secure the embedded systems of tomorrow.

MICROELECTRONICS

CEA-Leti hosted SISPAD 2025, welcoming top researchers to share insights on modeling, simulation, and cutting-edge semiconductor devices.

SCIENTIFIC EXCELLENCE

Jean-René Lèquepeys, CTO of CEA-Leti, delivered a presentation at the G7 Semiconductor Subgroup meeting in Dresden, Germany.

VIDEO

Discover how CEA-Leti is revolutionizing spectrometry by miniaturizing EPR devices, cutting size and energy use to transform multiple industries.

cea leti

2025

January

February

March

April

May

June

July

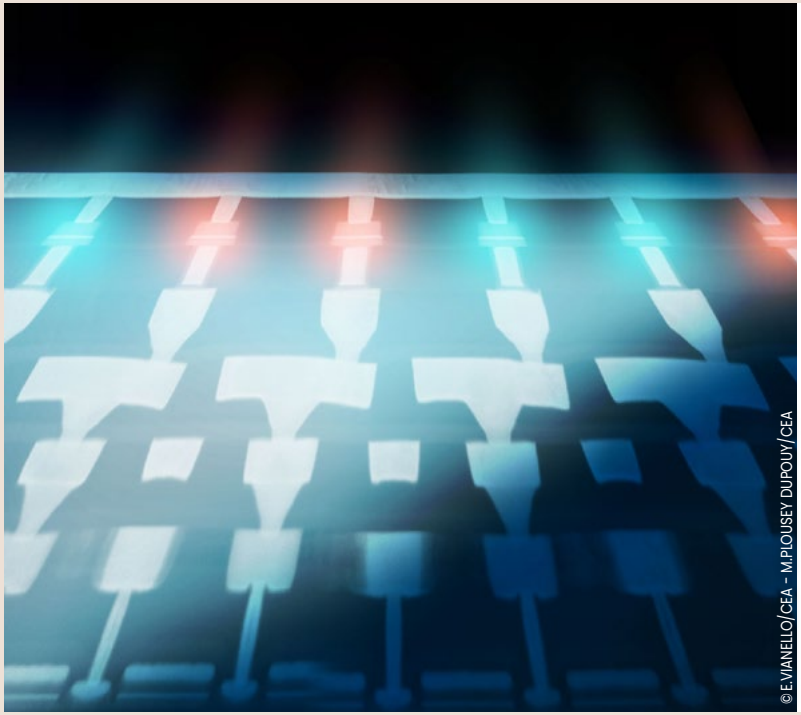
August

September

October

November

December



EDGE IA

CEA develops first hybrid memory technology enabling on-chip AI learning and inference

In partnership with French academic collaborators, the team reports in *Nature Electronics* a CMOS-compatible memory stack merging ferroelectric capacitors and memristors, solving a major edge AI challenge: achieving efficient training and inference without exceeding energy or hardware limits.

SCIENTIFIC EXCELLENCE

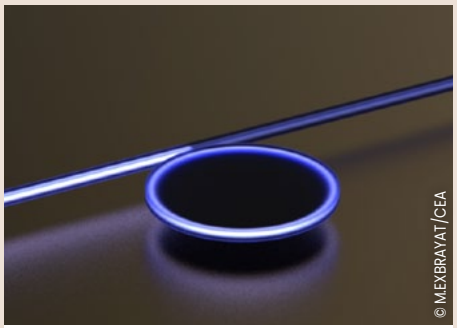
CEA-Leti CEO Sébastien Dauvé delivered a keynote at EMPC 2025 on advanced 3D integration and industrial system co-optimization.

MICROELECTRONICS

CEA-Leti researchers presented an exceptional talk at Paris's Palais de la Découverte, unveiling the next-generation nanotransistors of tomorrow.

FUTURE GENERATION

CEA-Leti offers more than 100 internships each year for motivated students ready to take their next step.



MICROELECTRONICS

CEA-Leti's optomechanical sensor merges MEMS and optical technology, enabling motion detection with sensitivity down to a single virus.

VIDEO

Follow CEA-Leti researcher Titouan Le Goff as he showcases his work characterizing high-performance infrared camera imagers.

cea leti

2025

January

February

March

April

May

June

July

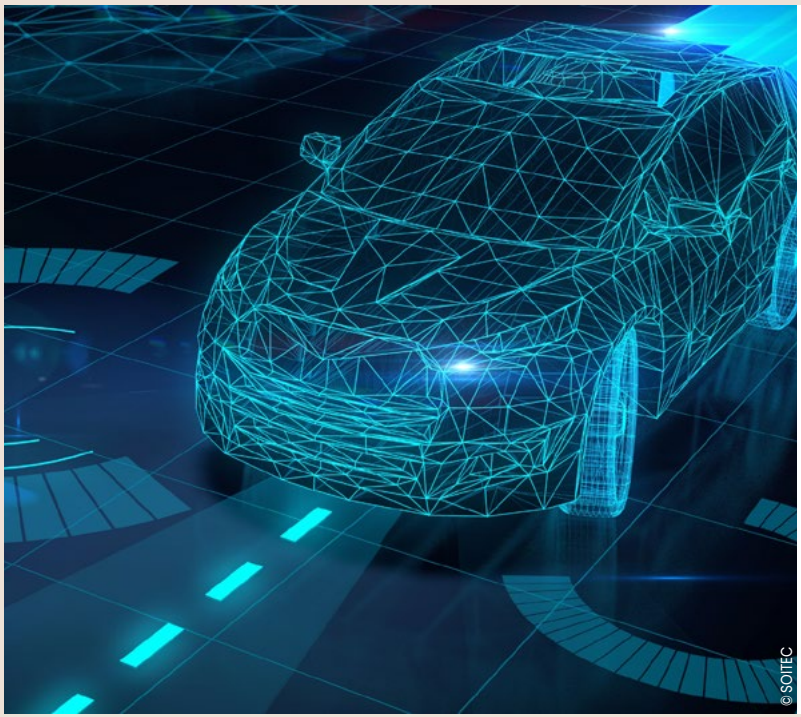
August

September

October

November

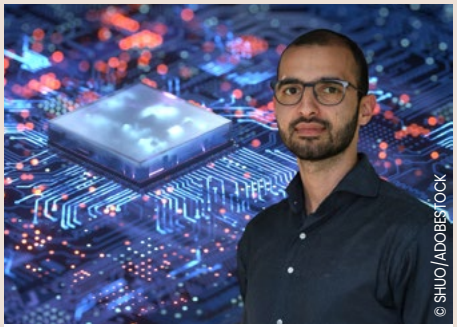
December



CYBERSECURITY

Soitec and CEA partner to develop automotive cybersecurity with advanced FD-SOI technology

As vehicles become more connected and software-defined, Soitec and CEA show FD-SOI substrates provide intrinsic hardware protection against fault injection attacks, addressing vulnerabilities in microcontrollers highlighted by automotive cybersecurity standards ISO/SAE 21434.



SCIENTIFIC EXCELLENCE

Congratulations to Youssof Fassi on his Awards at APEC and PCIM for research merging system data and physics to enhance predictive maintenance.

EVENT

LID Tokyo 2025 took place at the French Embassy with France's Deputy Head of Mission and top Japanese semiconductor industry representatives.

FUTURE GENERATIONS

At Parvis des Sciences 2025, families and students explored microelectronics and future technologies with CEA-Leti researchers sharing their passion.

EVENT

CEA-Leti attended RDV Carnot 2025 in Lyon, showcasing its end-to-end support process from concept development to product realization.

STARTUP

Founded in February 2025 and winner of Bpifrance's i-Lab competition, iNGage, a CEA-Leti spin-off, announces its first €6M funding round.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

OPTICS

Accelerating AI interconnects with microLED data links

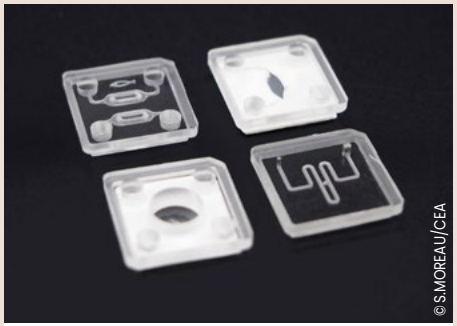
CEA-Leti is launching a multilateral program on microLED technology for ultra-fast data transfer, with a particular focus on accelerating artificial intelligence (AI) growth. The lab-to-fab initiative draws on the institute's deep expertise in microLED process technology.

ENERGY

What if hydrogen fuel cells and batteries could be coupled with higher-efficiency, lighter, more compact converters?

SCIENTIFIC EXCELLENCE

CEA-Leti participates in Semicon Europa 2025, showcasing the next generation of semiconductor technologies and innovative manufacturing processes.



HEALTH

EU-funded project Toxbox is building an all-in-one platform combining in vitro and in silico methods to offer a powerful alternative to animal testing.

PARTNERSHIP

CEA-Leti is pleased to announce the signing of a MoU with ASML, an innovation leader in the global semiconductor industry.

STARTUP

Scintil Photonics secures €50M to revolutionize data transmission. The future of AI depends on speed and Scintil Photonics is taking that literally.

cea leti

2025

January

February

March

April

May

June

July

August

September

October

November

December

TELECOMMUNICATIONS

What if underground utilities could be detected and mapped in real time with centimeter-level precision?

MICROELECTRONICS

CEA-Leti had the opportunity to contribute to EU Chips Act progress, strengthening pilot-line ties and advancing Europe's microelectronics innovation.

OPTICS

CEA-Leti gathered around fifty industry leaders, researchers and regional partners for a full day dedicated to Imaging, Display and Photonics.

VIDEO

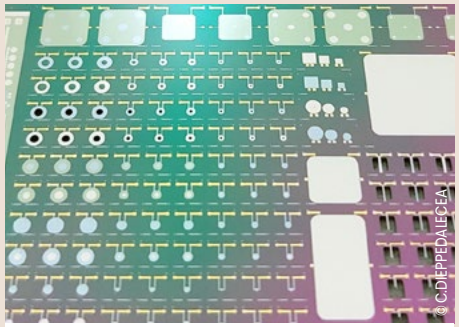
Watch this video to discover how CEA-Leti is driving the next leap in semiconductor innovation, where performance meets sustainability.

MICROELECTRONICS

Sébastien Dauvé represented CEA-Leti at the SIA 2025 Awards Dinner, uniting industry leaders shaping the future of semiconductors.

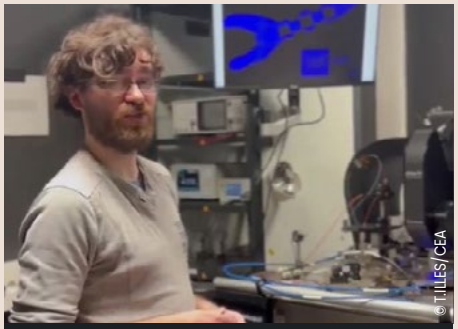
SCIENTIFIC EXCELLENCE

Semicon Europe 2025: Pablo Renaud won the "SEMI 20 Under 30 Award," a recognition for CEA-Leti's work on 3D integration.



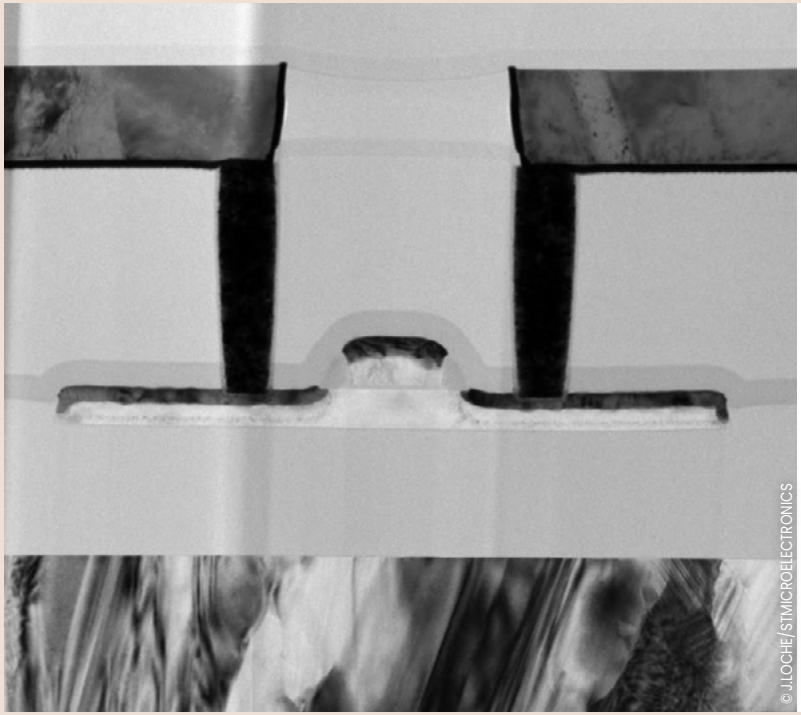
MICROELECTRONICS

Innovative materials and processes to transition piezoelectric devices to tomorrow's lead-free world.



VIDEO

Microdisplays in your glasses? Follow CEA-Leti engineer Anthony Cibié as he works to measure and improve micro-LED performance.



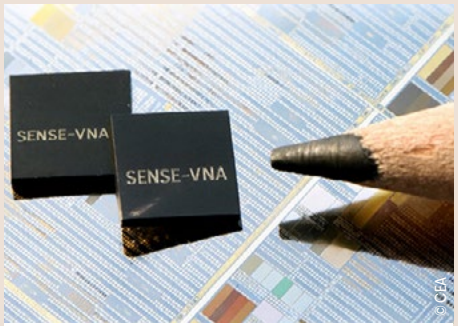
MICROELECTRONICS

New high-performance RF Si Platform

CEA-Leti & STMicroelectronics' paper at IEDM 2025 demonstrates path to fully monolithic silicon RF front-ends with 3D sequential integration. Joint work shows next generations of RF and optical front-end modules (FEM) could be built by the assembly of different silicon technologies at wafer level, allowing the dense co-integration of best-in class functions.

MICROELECTRONICS

R&D advanced for the FAMES Pilot Line: 400°C CMOS Breakthrough opens critical doors to 3D integration goals.



SENSOR

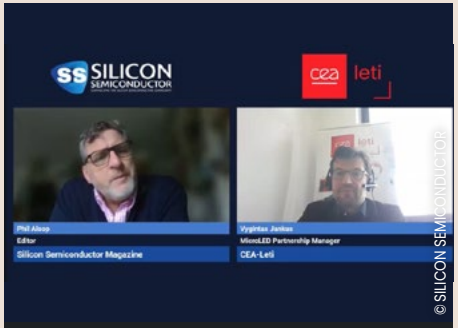
Sense-VNA: Making the invisible visible with RF dielectric sensing technology powered by an integrated, on-chip Vector Network Analyzer (VNA).

SENSOR

Towards embedded predictive maintenance: Guillaume Prevost wins the "Best Paper Award" at PHM

EVENT

CEA-Leti and Soitec's Tech Connect at IEDM brought industry leaders together to explore lab-to-fab advances in semiconductors, AI, and connectivity.



INTERVIEW

Phil Alsop of Silicon Semiconductor welcomes Vygintas Jankus, MicroLED Partnership Manager at CEA-Leti. Watch the full interview.

2025

January

February

March

April

May

June

July

August

September

October

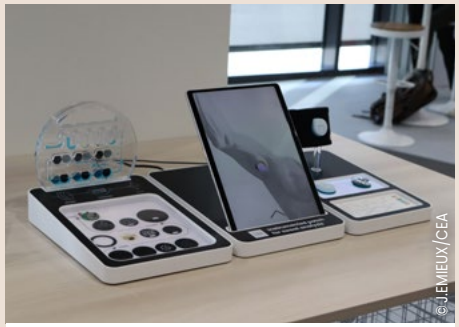
November

December

FUTURE GENERATIONS

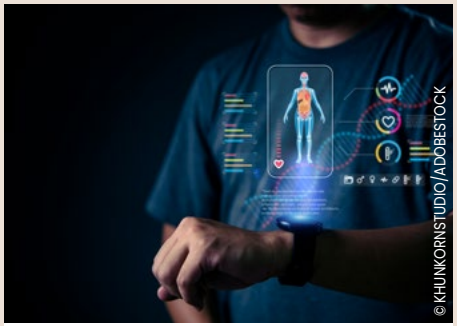
Accelerating the shift to more sustainable electronics

At the 2025 Symposium on Sustainable Electronics, the University of Grenoble Alpes (UGA) and CEA-Leti, with CNRS and IRT Nanoelec, launched the Jean-Pierre Raskin Senior Professor Chair. Focused on greener electronics, it supports Grenoble's drive for more responsible, efficient, and sovereign microelectronics.



HEALTH

Breakthrough: CEA-Leti worked with STMicroelectronics on a wearable system for continuous sweat monitoring.



OPTICS

Listening to molecules: Physiolas is a new generation of miniaturized photoacoustic sensors that enable real-time, non-invasive monitoring of biomarkers.

CYBERSECURITY

CEA-Leti strengthens its leadership in cybersecurity assessment by receiving two new ANSSI accreditations as a CESTI.

Research results presented in this document were achieved through a large number of projects, many of which were financed by local, national, and European public institutions.

We therefore acknowledge and are deeply grateful for the support of the Auvergne-Rhône-Alpes Region, *Le Grésivaudan* Community of Communes, the French State (France 2030, National Research Agency, Bpifrance), and the European Commission (Horizon and Digital Europe, Chips Joint Unit and DG CNECT).

CEA-Leti is a Carnot Institute and hosts the Nanoelec Research Institute.

EUROPEAN UNION

Chips JU

FRANCE 2030

La Région Auvergne-Rhône-Alpes