



## MICROELECTRONICS TECHNOLOGICAL RESEARCH AND DEVELOPMENT CENTER



6 labs  
3 companies  
6 start-ups hosted



Close to 100 funded projects  
More than 80 patents registered  
650 publications



More than 160 persons involved  
Participation to education programs  
International collaborations

CERTeM is a public/private collaborative research group in the field of **microelectronics**. Thanks to its skills and equipment, CERTeM offers innovative solutions in the field of energy efficiency. CERTeM has state-of-the-art technological platforms for R&D projects of its members and their partners, as well as start-ups developing innovative materials and devices.

## OUR RESEARCH TOPICS

### MATERIALS

#### Energy efficiency of electrical systems

Improving the efficiency of electrical devices requires an optimization of energy conversion. CERTeM projects include the objectives of reduction of losses in AC switches, energy management and power converters.

### PROCESSES

#### Integrated systems for mobile electronics

Mobile electronics development requires the production of miniaturized electronic components with enhanced features. CERTeM develops materials and processes with high performances as well as new techniques for device encapsulation.

### COMPONENTS

#### Micro energy sources

Research and manufacture of new micro energy sources has increased with the development of IOT (Internet Of Things). CERTeM research work concerns energy generation, energy storage and energy harvesting.

### PACKAGING

ENERGY EFFICIENCY  
POWER CONVERSION  
**MATERIALS**

INNOVATION  
**MICROELECTRONICS**  
NEW ENERGY SOURCES

**COLLABORATIVE RESEARCH**  
MINIATURIZATION  
ELECTRONIC COMPONENTS

# OUR TECHNOLOGICAL PLATFORMS

## CERTeM R&D PLATFORM

CERTeM R&D platform is a **400m<sup>2</sup> class 100 clean room** that contains all the equipment needed to **manufacture components from small samples up to 8 inches wafers** (chemistry, etching, photolithography, annealing, welding, chemical-mechanical polishing...). This micro-manufacturing platform is completed by a lab dedicated to **physical and electrical characterization** of materials and components. CERTeM R&D platform benefits from STMicroelectronics Tours company's infrastructures.

## CERTeM PLUS PLATFORM

CERTeM Plus includes two clean rooms, for a total of 950m<sup>2</sup> (ISO 7 and ISO 8). The platform is dedicated to interconnexion and packaging of 3D components and advanced characterization. Inaugurated in 2014, the aim of this platform is to develop **3D electronic chips** and **miniaturized components**. CERTeM Plus platform is a collaborative space that also hosts start-ups and partner's equipments.



## OUR MEMBERS



**GREMAN** - Research group on materials, microelectronics, acoustics & nanotechnology (Univ. Tours, CNRS UMR 7347, INSA CVL), **LMR** - Mechanics and rheology laboratory (Univ. Tours, INSA CVL) and **PCM2E** - Laboratory of Physical Chemistry of Materials and Electrolytes for Energy (Univ. Tours).



**French Alternative Energies and Atomic Energy Commission (CEA)** is a major actor in research, development and innovation. CEA's Ripault center develops new materials, from design to manufacturing and characterization.

**SiLiMiXT** is a start-up that emerged from GREMAN Laboratory UMR 7347. SiLiMiXT develops porous silicon technologies (PSi products, processes, equipment and maintenance) for industry and R&D.

SiLiMiXT



**GREMI** - Research Group on Energetics of Ionized Media (Univ. Orléans, CNRS UMR 7344) specialized in plasma and laser processes and **ICMN** - Interfaces, Containment, Materials and Nanostructures (Univ. Orléans, CNRS UMR 7374) specialized in divided matter.



**STMicroelectronics Tours** designs, manufactures and sells semiconductor electronic components for telecommunications, power conversion, home appliances, consumer electronics, computers, IOT and the automobile industry markets.

**Vernon** is the european leader in ultrasound transducers. The company is an expert in medical imaging, ultrasound therapy, non-destructive testing, energy harvesting and piezoelectric devices.



### CERTeM

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