



PHOTONICS, IMAGING & DISPLAYS

Our everyday life has plenty of photonics in it. Mobile phones rely heavily on displays, video cameras and optical depth sensing. We immerse into the virtual/mixed/augmented reality using advanced visual interfaces shaped as spectacles. The voice and the data move over optical fibers and between satellites being encoded in photons. Those communications can be made absolutely secure with quantum cryptography that relies on photons' individuality. Satellites observe the Earth, and airplanes avoid turbulences using lidars. Lidars also help autonomous vehicles and drones avoid collisions, while advanced imagers make smart cars aware of their constantly changing environment. We can now drive vehicles by night using infrared imaging, the one that also helps firefighters find victims and avoid hidden fires. The headlights of the cars, and our homes are illuminated also by photonic

devices: LEDs.

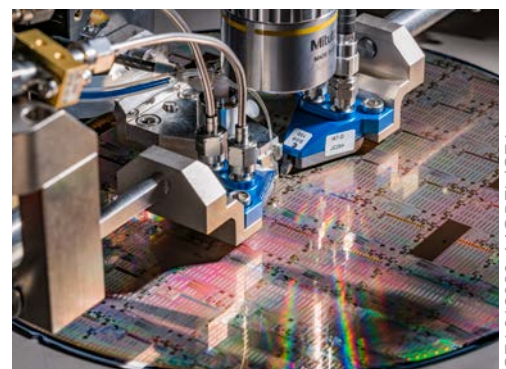
X-ray scanners and Gamma-imagers perform safety checks on freight transiting by sea and air, and allow deep medical examinations in the hospital. Optogenetics opens new frontiers in the brain exploration. Optical sensors help identify deceases in blood samples and monitor air quality. By monitoring our physiological constants, optical sensors in smartwatches and wearable devices help us improve our sports performances.

Modern photonics is a huge industry converging with the nanoelectronics that became essential for our society. The R&D in photonics is a fascinating mix of modern physics and interdisciplinary technological research, where we work at the scales of single wavelength of light, of individual photon, of single electron.

WHY A PHD RELATED TO PHOTONICS, IMAGING & DISPLAYS AT CEA TECH?

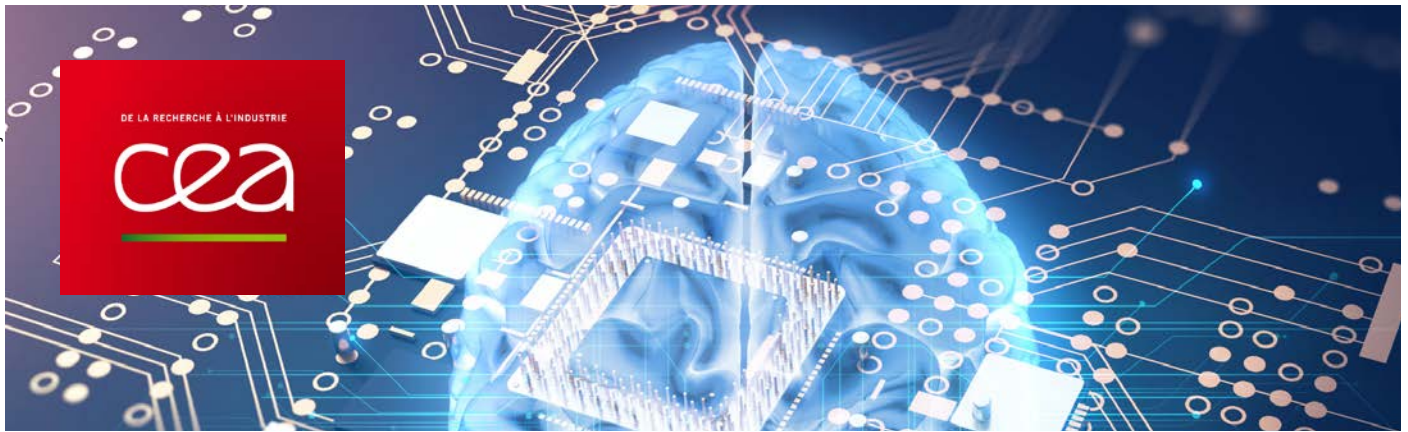


CEA Tech is a top-level, internationally recognized nanotechnology center. Its Photonics department is one of the two largest photonic R&D labs in France. Together with over 300 colleagues working in photonics, including 40 PhD students, you will benefit from Leti's world-class nanoelectronic and photonic nanofab facilities, advanced nanocharacterization center, and computing infrastructure. You will be at a place where advanced fundamental research meets high-tech industrial applications, while directly collaborating internationally with academic labs, start-ups and large industrial companies.



 CEA-Leti Institute in Grenoble Alpes

 45 ongoing PhD projects



CEATECH SCIENTIFIC AND TECHNOLOGICAL CHALLENGES

CEA Tech tackles the three key and ongoing transitions of the 21st century: numeric, energy and medical ones. For each, CEA Tech research teams innovates within a vibrant network of academic and industrial partnerships, to develop the technologies of the future.

CEA Tech, one of the four CEA research divisions, relies on three large research Institutes, two in Grenoble, Leti and Liten and one in Saclay, List, and a network of technology transfer facilities in Bordeaux,

Nantes, Toulouse, Metz, Cadarache and Lille.

Close to 500 young researchers, prepare their PhD in CEA Tech Labs, with a major contribution to the research teams. They share the successes of the CEA, embodied in leading publications, patents, technology transfers to industry, business and start up creation. For years, Reuters ranks CEA as one of the top three most innovative research organizations in the world (1st, 2nd or 3rd).

WHY A PHD AT CEA TECH?

Regardless of the field of research you are looking for, willing to explore prospective ideas or to further advanced technologie, you will likely find among CEA Tech doctoral positions the one that meets your expectations.

Then you can join either Leti (1800 p.) and focus on micro and nanotechnologies, embedded electronics, communications, components for the Internet of Things (IOT), cybersecurity, medical devices and healthcare outpatients (at Clinattec) - or Liten (950 p.) to face the challenges of non-CO2 emitting energies (solar, batteries, hy-

drogen, biomass or smart grids) - or List (750 p.) to innovate in terms of data intelligence, cybersecurity and IOT software, manufacturing (4.0 industries), radiotherapy, health data processing - or a research team located in one of the technology transfer facilities (Bordeaux, Nantes, Toulouse, Metz, Cadarache and Lille).

Whatever the topic you select, whatever the career path you envision, joining CEA Tech for your PhD has a deep meaning. On the one hand, you will be dealing with one major societal challenge, deeply rooted in science

and technology. On the other hand, your PhD will be at the heart of highly innovative ecosystems, each offering unique opportunities in research and career paths.

Indeed, CEA Tech offers a highly efficient mix of digital and hardware skills, world-class facilities such as state-of-the-art 300 mm clean rooms, and integration facilities for hydrogen and battery technologies, and many others. CEA Tech's teams form active partnerships with other research organizations and universities, as well as active cooperation with more than 500 industrial partners in France, Europe, North America and Asia.

We will do our best to accompany your success.



CEA-List Institute in Paris Saclay or CEA-Leti Institute in Grenoble Alpes or CEA-Liten Institute in Grenoble Alpes



500 ongoing PhD projects