



**OPTICAL TECHNOLOGIES**  
FOR THE INDUSTRY  
OF THE FUTURE

# FRANÇOIS ARAGO PLATFORM

Renowned French Physicist 1786-1853

*Platform of Excellence for the Grandjean Mission*

› Cobotics › Additive printing › Mixed reality › Embedded artificial intelligence



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

Label



# 350 m<sup>2</sup>

including 150m<sup>2</sup> of clean room space on the Brest campus



As a player in innovation and technology transfer for IMT Atlantique and the Institut Mines-Télécom in the field of optical technologies for the industry of the future, **ARAGO** hosts the Pierre-Gilles de Gennes laboratory and two companies, Orthoptica and Eyes3Shut, both spin-offs of IMT Atlantique. ARAGO received the CARNOT platform label in 2016.

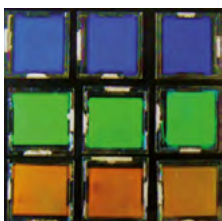
## ► Unique resources in France

A unique technological sector in France: the P-G de Gennes laboratory, attached to the Optics department, has 2 clean rooms (class 100 and 1000) dedicated to optical technologies. Initially devoted to liquid crystal technologies and the design and production of micro-optics, its activity has been extended to conjugated polymers and opto-mechatronics.

Excellent team and technological research facilities

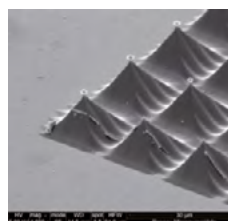
## Types of technologies

### LIQUID CRYSTAL TECHNOLOGY



Liquid crystals and liquid crystal polymers, with or without dopants (dichroic, chiral), in all possible configurations (fibrous, SLM, shutters, optical valves, etc.).

### MICRO-OPTICAL TECHNOLOGY



Modeling, design, prototyping, direct writing massively parallel (standard & multiphoton), nano-imprint replication, characterisation of optical micro-nano-structures for photonics

### ORGANIC ELECTRONICS



Functionalization of conjugated polymers, textile actuator devices. Organic conductive materials deposited by printing technique. Sensors for connected object.

### OPTO-MECHATRONICS



3D Integration additive/subtractive manufacturing, self-alignment and tracking by micro-actuators (MEMS), micro-manipulation and location of optical beams.

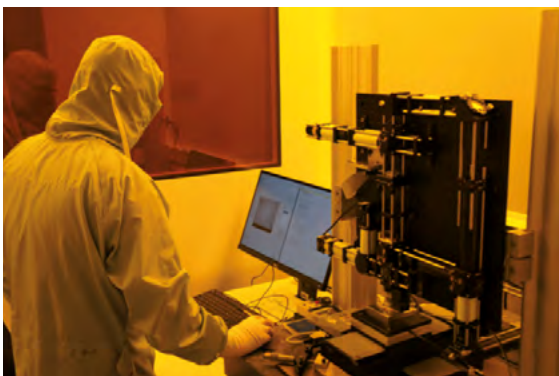
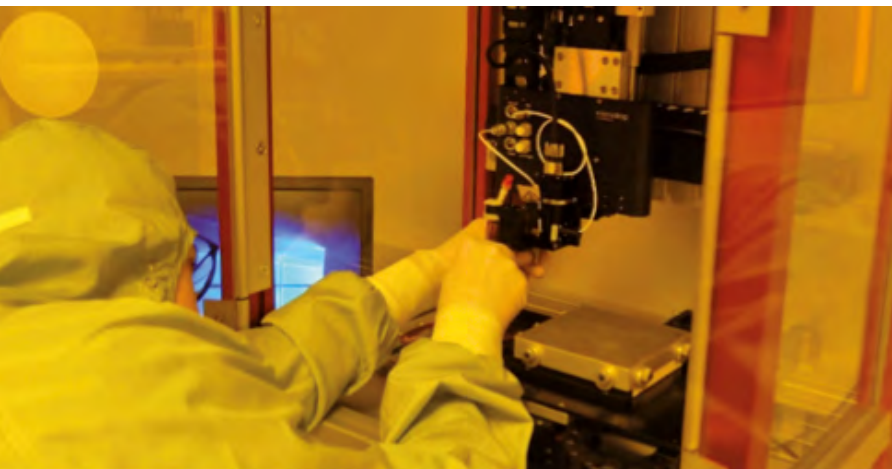
A specific technological environment, purpose-made arrangements



From idea to implementation or a pilot production line

# What we offer

- > Setting up European projects, access to our network of platforms in partnership with the INL (International Iberian Nanotechnology Lab) <https://inl.int/>
- > Design and industrialization study
- > Access to technical means of prototyping for industry
- > Support, development of intellectual property



*Multi-photon photo-tracer (EU Phenomenon project) for the production of sub-micron 3D diffraction structures.*

- quality control (spectro, profilo, SEM)
- flexible electronic connectors
- optical calculation software (free-form)



*Pilot production line for active skin on a plastic substrate*



# Multiple partnership opportunities

## A few things we have done

### > In collaboration with SURYS

Design of security holograms for anti-counterfeiting and development of a pilot line for replication by UV nano-imprint, transferred to Surys.



*Holograms designed and carried out on mock-up of currencies by Surys*

### > In collaboration with NEXTER

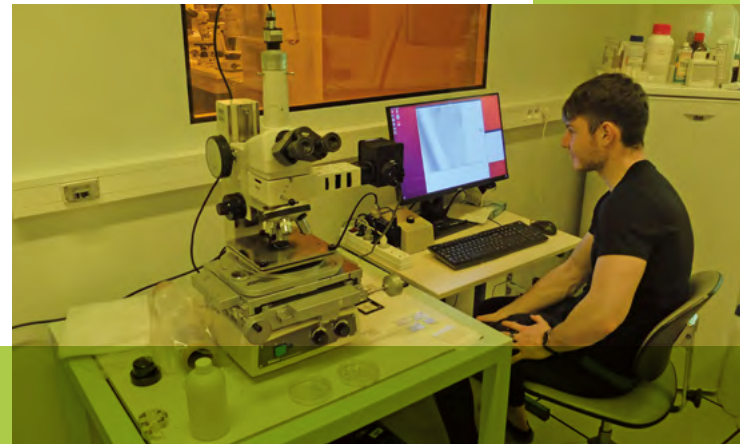
Implementation of a pilot production line for camouflage tiles based on the technology developed at IMT Atlantique, using liquid crystals.



*The Nerva robot with active skin, presented at Eurosatory 2018, Forum innovation défense 2019 and Vivatech 2019 - TF1 8pm news on May 17, 2019.*

### > In collaboration with the Mines of Saint-Etienne (Gardanne)

Design of an embedded eye tracking system in a scleral contact lens, integrating a flexible micro-battery (Cyborg-Lens)



## Discover the platforms



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*La presse en parle*



**L'USINENOUVELLE**

*«This French connected contact lens is of interest to Microsoft and the U.S. military.»*

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