

PHYSICS LABORATORY – LPENSL

BASIC, MULTIDISCIPLINARY AND APPLIED RESEARCH LABORATORY

<http://www.ens-lyon.fr/PHYSIQUE>

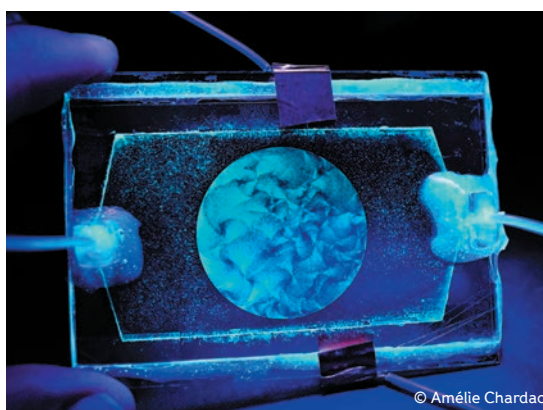


RESEARCH TOPICS

- MATTER & COMPLEXITY
- WAVES, FLOWS & FLUCTUATIONS
- SIGNALS, SYSTEMS & PHYSICS (SISYPH)
- THEORETICAL PHYSICS

CROSS-CUTTING THEMES

- HYDRODYNAMICS & GEOPHYSICS
- SOFT MATTER
- PHYSICS OF BIOLOGICAL SYSTEMS
- MATHEMATICAL PHYSICS & FUNDAMENTAL INTERACTIONS
- CONDENSED MATTER & QUANTUM INFORMATION
- STATISTICAL PHYSICS
- INFO PHYSICS, SIGNAL & SYSTEMS



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RESEARCH EQUIPMENT AND TOOLS

Technical platforms

- AFM and MEB with electron beam lithography
- Turntable dedicated to fluid mechanics
- Clean room
- Mechanical and electronic engineering

Equipment

- Wind tunnel
- Rheometers
- Optical tweezers
- Instrumentation in fluid mechanics
- High-frequency ultra-sound imaging
- 3D printing
- Micro milling machines
- Cryostats for studies down to 20mK
- High-frequency, high-resolution optical imaging, infrared imaging
- Anechoic Faraday cage

KEY FIGURES

181

staff including **77** permanent researchers, **84** PhD students and post-doctoral fellows, and **20** research support staff

Over the last 5 years:

25

prizes and distinctions including **2** CNRS medals, **4** IUF and **1** member of the French Academy of Sciences

825

publications

76

public fundings including **5** ERC, **5** Horizon 2020, **61** ANR

34

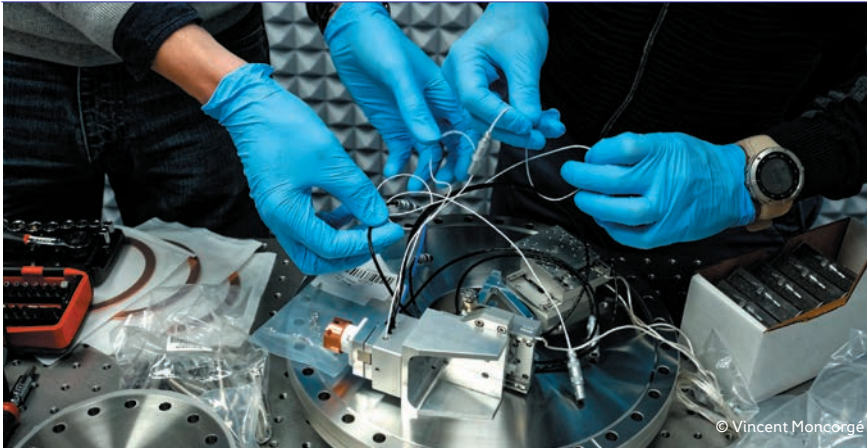
private financing

10

patent families (**5** in operating license), **4** software (**2** in operating license), **7** secret know-how (**4** in operating license)

TRL scale between **1** and **5**

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FOCUS ON

FROM THE LABORATORY TO THE SOCIO-ECONOMIC WORLD

- Participation in 26 CNRS research groups (GDR) in 5 years.
- 25% of academic collaborations focused on the international. International Associated Laboratories (Chile, Norway, Israel).
- Collaboration and services with international private groups (Pharmacy, chemistry, petroleum, steel, instrumentation, cosmetics).

Institutional partnership research

Research Ambition Pack In collaboration with the SOLVAY research laboratory in Saint Fons.

- Objective: to develop experiments and methods to study the dynamics of polymers at the nanoscale in thin films a few nanometers thick.
- Industrial application: product improvement thanks to a better knowledge of the properties of polymers in high-performance materials.
- Experimental techniques: measurements using local dielectric measurements or SNOM (near-field optical microscope), use of clean rooms, characterization by STM (scanning electron microscopy) and AFM (atomic force microscopy).

Private partnership research

Long-term collaboration with TOTAL SA.

- Objective: to provide fundamental understanding of physical phenomena and characterization of multiphase flows in porous media, in order to increase the rate of hydrocarbon recovery by minimizing infrastructure.
- Intellectual property generated: filing of two patents.

Consulting service

Consulting service for the start-up AZOTH SYSTEMS specialized in the prevention of decompression accidents in diving thanks to an ultrasonic sensor.

- Objective: to improve the technique of classification of physiological measurements by using recent signal processing methods for the analysis and classification of transient signals.
- Role of the laboratory: to support the start-up in the implementation of standard methods by answering its questions and helping it to take charge of existing tools (programming language toolboxes).

CONTACT

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