



INSTITUT  
CARNOT  
Ingénierie@Lyon

www.ingenierie-at-lyon.org

## Mechanics, materials, energy, processes, automatic, electrical engineering, electronics, biochemistry

Ingénierie@Lyon forms an attractive research center for engineering and promotes collaboration among scientists as well as industry and networking partners.

Its industrial adapted offer covers a wide range of scientific and technological know-how, thanks to the actors of 12 laboratories, brought together to address societal challenges.



Conception visuelle ULTIMUM ADVERTISING

## Multidisciplinary approach in engineering, a major asset to major innovations in TRANSPORT, ENERGY, BIO & MED TECHs

### Target markets

- Aeronautics
- Automobiles
- Chemistry and materials
- Classic and new processes
- Energy and the environment
- ICTs, microsystems
- Nuclear
- Railways
- Health technologies



© laboratoires IRL

Ingénierie@Lyon strengthens the capacities of the calculation and experimental facilities by enhancing their resources and operating procedures in view to make them more attractive for industry.

### Platforms

- Acoustics
- Bio-engineering
- Robust design
- Environment (EMC, Flows, Heat, Vibro-acoustics)
- Rotating machinery
- Materials Characterisation
- Materials Processes
- Nanotechnologies
- Tribology
- Vibration

### Major facilities

- Modelling of atmospheric dispersion and Variable Mach number supersonic wind tunnel
- Anechoic chambers- Axial (2MW) and centrifugal (1MW) compressor test-beds
- White room 450 m<sup>2</sup>, ISO 7 & 5, micro-nano fabrication unit and heteroepitaxy platform
- High voltage test centre, 13 m<sup>3</sup> double Faraday cage

- Large scale tribometer (Trybogy) and ultra-high vacuum tribometer
- 6 axis shaker (62 kN)
- Nanoindentation tester
- SEM equipment, granulometers, spectrometers, rheometers

### Researchers are strongly involved

#### in Rhône Alpes technology platforms

AXEL'ONE, NANOLYON, CLYM, PROVADEMSE, COATING Expert...

#### and French excellence opportunities for the future

#### Labex (excellence lab)

MANUTECH SISE. IMU. iMUST. CeLya.

#### Equipex (excellence equipment)

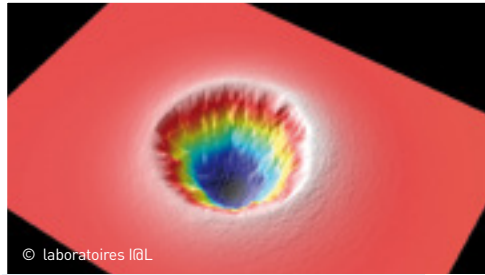
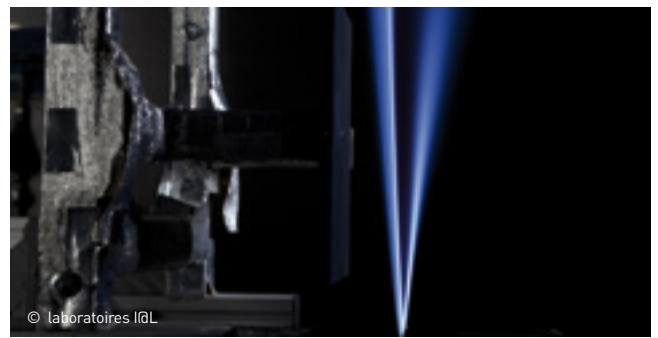
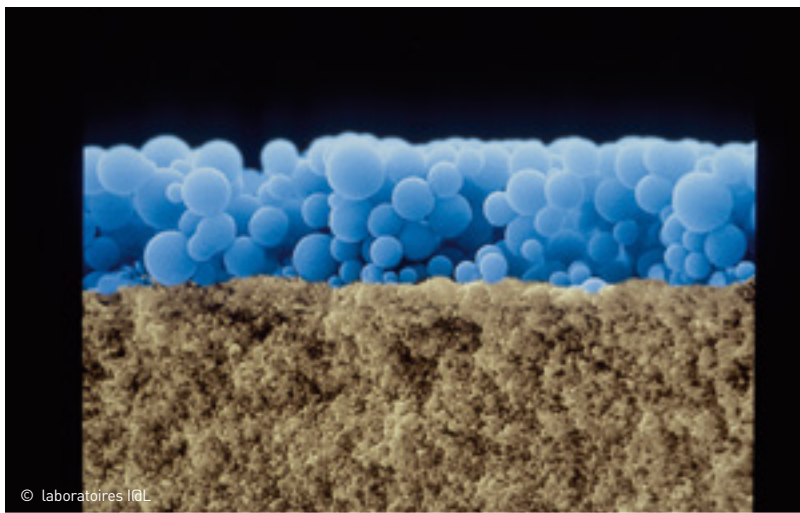
- PHARE. Integrity of rotating machinery subject to extreme stress
- IVTV. Biology and mechanics of aging of human tissue.
- MANUTECH-USD. 3D multiscale characterisation of surface materials
- Equip@MESO. National network of supercomputers

#### LabCom (public lab & SME)

- InCVD. - INL/ SME ANNEALSYS. Deposition processes of chemicals in vapour phase & materials
- P3A. - LMFA/ SME MicrodB. Aero-acoustic antenna platform

### A full spectrum of skills and common resources deployed to meet industrial needs

Ingénierie@Lyon promotes inter-lab and inter-Carnot projects to develop intelligent systems & machines, structures under extreme conditions, tools development for diagnosis and health engineering, high-value materials, economic processes, eco-design, energy management.



## BRING TOGETHER to raise innovative engineering

**Partnership in synergy and network dynamics... closely linked to industrial operators, SMEs -SMIs, VSEs**

**Based on federated skills of 12 public laboratories**

LTDS, LaMCoS, LMFA, IMP, MATEIS, AMPERE, INL, CETHIL, LVA, LMI, LabECAM, LaGEP.

**Ingénierie@Lyon has been created by the main institutions of higher education and research in Lyon:**



Université Claude Bernard Lyon 1



Ingénierie@Lyon interacts with its ecosystem, particularly with French competitiveness clusters as LUTB TRANSPORTS & MOBILITY systems, VIAMECA, PLASTIPOLIS, AXELERA, TECHTERA, and the Automotive and Aerospace clusters, to adapt research orientations to industrial demand.

To provide an optimised response to industrial needs, Ingénierie@Lyon relies on a circuit of transfer comprising small start-ups, spin-offs of the laboratories.

**In France, more than 300 industrial operators, including around 75 SMEs, find their innovative solutions in our multidisciplinary offer. Some are involved in close collaboration as illustrated :**

- Joint laboratories with SAFRAN, RIBER, EDF, ENERBAT, HUTCHINSON.
- Chairs with AREVA-SAFRAN, EDF, ECO EMBALLAGES, SKF, SAFRAN.
- OpenLab Vibro-Acoustic-Tribology@Lyon with PSA Peugeot Citroën.

The laboratories and their supervisory bodies improve international cooperations in Associated Laboratories with South Korea, Japan, China, Brazil, International Joint Research Units with Canada, and get involved in many European projects.

**Research personnel (full-time equivalent): 1 461**  
**including PhD students: 770**

**Partnership research incomes: 26 M€**  
**Global budget: 66 M€**

### CONTACTS

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