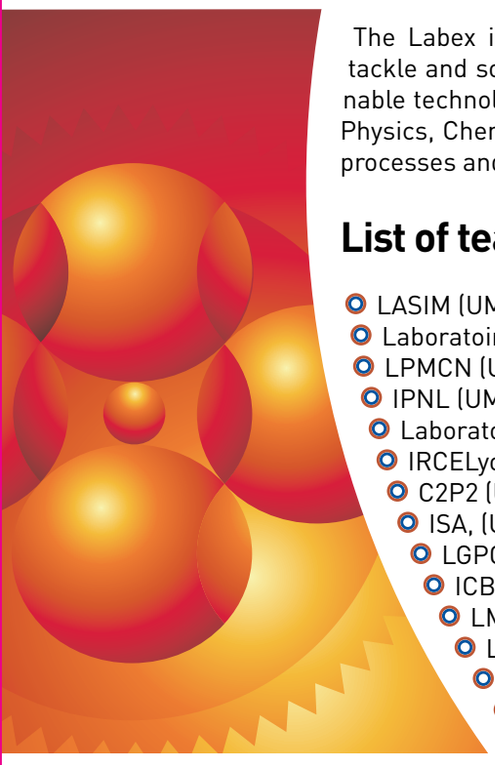
IMUST
UNIVERSITE DE LYON

- Université de Lyon
- CNRS
- INSA-Lyon
- Univ Lyon 1
- ENS Lyon
- Centrale Lyon
- CPE Lyon

iMUST (institute for Multiscale Science & Technology)

The atome to the object : materials, mechanism, multiscale, multisciences. The service of technological innovation.

The Labex iMUST aims at encouraging multi-disciplinary & multi-scale research, to tackle and solve challenging problems in materials science and environmentally sustainable technologies. iMUST brings together skills and expertise developed in the fields of Physics, Chemistry and Engineering to address two fundamental topics: i) materials and processes and ii) clean technologies.



List of team involved

- LASIM (UMR CNRS 5579)
- Laboratoire de Physique (UMR CNRS 5672)
- LPMCN (UMR CNRS 5586)
- IPNL (UMR CNRS 5822)
- Laboratoire de Chimie (UMR CNRS 5182)
- IRCELyon (UMR CNRS 5256)
- C2P2 (UMR CNRS 5265)
- ISA, (UMR CNRS 5280)
- LGPC (UMR CNRS 2214)
- ICBMS (UMR CNRS 5246)
- LMI (UMR CNRS 5615)
- LPCML (UMR CNRS 5620)
- AMPERE (UMR CNRS 5005)
- IMP (UMR CNRS 5223)
- LTDS (UMR CNRS 5513)
- MATEIS (UMR CNRS 5510)
- INL (UMR CNRS 5270)
- LAGEP (UMR CNRS 5007)
- LAMCOS (UMR CNRS 5259)
- LMFA (CNRS CNRS 5509)
- LPMA (CNRS-RHODIA)
- IFP Énergies Nouvelles

IMUST

Catalysis

Functional materials

Complex fluids

Flows and Interfaces

Modeling

Multiscale Multiphysics Numerical Simulation

Instrumentation

Characterization

Key figures

- 280 researchers and teachers researchers
- 1000 persons
- Research budget : 640 k€/an over 10 years

Competence and expertise

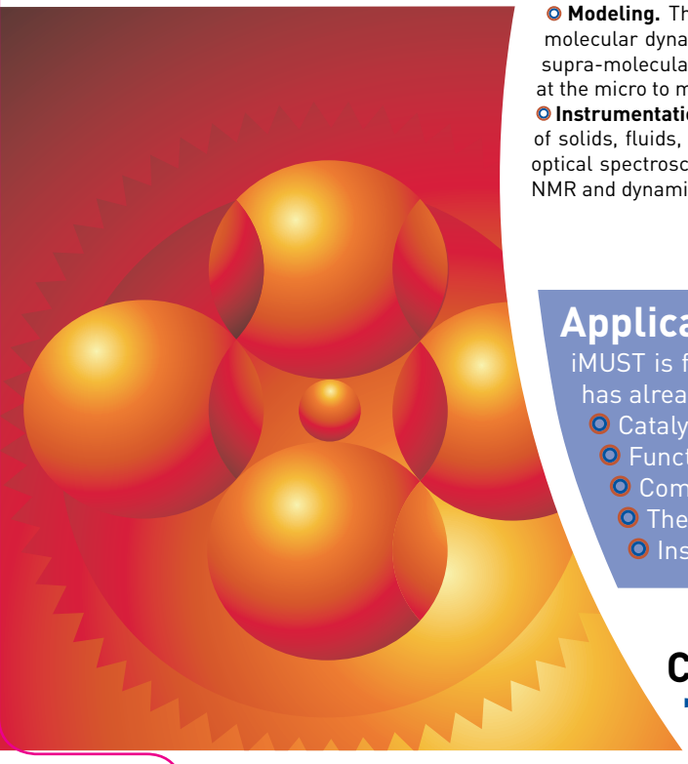
Catalysis and catalytic processes. Lyon is a world-wide renowned place for catalysis and catalytic processes and owes its reputation to an exceptional scientific and industrial environment, with the largest academic & industrial research centers concentration in France.

Functional materials. The partners have well recognized expertise in design of new optical materials and nanomaterials mostly using bottom-up approaches, their characterization with high temporal and spatial resolution, and their applications, including biomedical ones.

Multiscale fluids. iMUST gathers groups with world-wide reputation in turbulence, macro to nano scale hydrodynamics and functional fluids, with both fundamental and engineering perspectives. It includes the key area of micro and nano fluidics, nano size engineering and macro-scale behaviors.

Modeling. The participants have a renowned expertise in multi scale simulations: ab-initio methods and molecular dynamics at atomic to molecular scales, phase field, lattice Boltzmann and level-set methods for supra-molecular structure of complex materials and continuum dynamics and various computational methods at the micro to macroscopic scales.

Instrumentation. The IMUST partners have developed new methods for multiscale investigation and imaging of solids, fluids, nanomaterials, and individual nano object. They include high spatial and temporal resolution optical spectroscopies, nano force measurement apparatus, X-ray or electron beam tomographies, solid state NMR and dynamical polarization, new methods of analytical chemistry, and nano object manipulation tools.



Application fields

iMUST is focused on five major scientific domains, for which the University of Lyon has already an established international reputation:

- Catalysis & catalytic processes
- Functional materials, synthesis and design of objects
- Complex fluids, flows and interfaces
- Theory, modeling and simulation
- Instrumentation and characterization

Collaborations :

→ **Competitive clusters :** AXELERA, LUTB, Plastipolis

→ IFPEN, CEA, Saint Gobain, Solvay, Rhodia groupe Solvay, SKF, Lafarge, Bluestar Silicones, Total, BASF, Areva, Arkema ...

Contacts :
www.labeximust.org

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