

#Combustion #Energy
#Automotive
#AerospaceIndustry
#LaserDiagnostics
#NumericalSimulation

CORIA

« Complexe de Recherche
Interprofessionnel
en Aérothermochimie »

www.coria.fr

RESEARCH
laboratory



CORIA lab is supported by CNRS (French national research center for science, label UMR6614), Normandy University of Rouen and INSA Rouen Normandy. It is integrated into the PSIME Doctoral School and associated to energy, propulsion and environment research federation. It plays a central part in the «Institut Carnot» ESP, and is member of the Laboratory of Excellence EMC3.

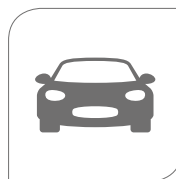
Research fields

- ✓ Optics and laser diagnostics
- ✓ Combustion
- ✓ Sprays and two-phase flows
- ✓ Reactive and supersonic flows
- ✓ Plasma
- ✓ Numerical simulation

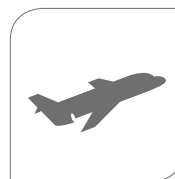
Application areas



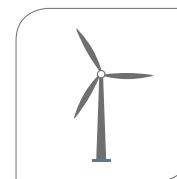
Energy



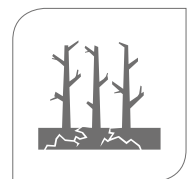
Automotive industry



Aircraft and rocket engines



Wind power



Study on pollution

Staff over

180

Founded in

1975

Around

20
doctors per year

Know-how and expertise

✓ Optics and laser diagnostics

Development of optical and laser metrologies, new laser sources, for innovations linked to transition to secure, clean and efficient energy systems.

✓ Numerical simulation

Development of numerical methods of high performance calculation, simulation and modeling [[YALES2 calculation code](#), ARCHER, SitComB...].

✓ Plasma

Research on plasma for transition to secure, clean and efficient energy systems or spacecraft atmospheric entry.

✓ Reactive and supersonic flows

Development of theoretical models, advanced numerical calculation and metrology to understand and describe flows in energy domains: aeronautics, aerospace, wind turbine...

✓ Combustion

Development of academic knowledge on combustion for improvement of transition to secure, clean and efficient energy systems and pollutant emission decay of aircraft and car engine, energy production or industry.

✓ Sprays and two-phase flows

Research on drop formation and transport in turbulent flows. Domains of energy.

🔗 A wide range of collaborations

Numerous enterprises are interested by the CORIA's skills: ADWEN, Air Liquide, Continental, Delphi, EDF, Engie, Fives Pillard, GE Healthcare, IBM, PSA, Renault, Renault F1, Rhodia, Safran, Saint Gobain, Thalès, Total, Valéo, Zodiac... CORIA is internationally renowned and has worldwide collaborations: England, Germany, China, Australia, Belgium, United States, Tunisia, Algeria, Sweden, Brazil, Hungary, Czechoslovakia ...

Resources

Unique facilities in Europe

Laser diagnostic Platform: for velocity and species concentration in reactive flows at high temperature, for characterization of particles in fluids, and for development of laser sources.

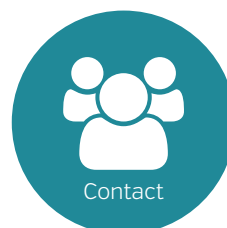
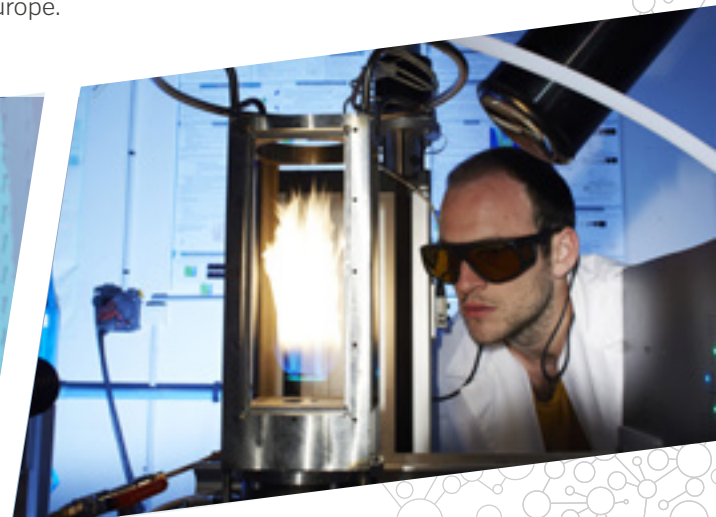
Numerical center for high performance scientific calculation in fluid mechanics, combustion and plasmas, using the most performing calculators in Europe.

Test benches with laser diagnostics with complex flows at high pressure and temperature.

Keep in mind

INSA Rouen Normandie is the first public engineering technical university of Normandy. The 10 different engineer education tracks, the 7 masters in research and the 2 masters in applied sciences are deeply connected to its 8 research laboratories.

INSA Rouen Normandie provides three education tracks directly connected to the CORIA lab: engineer in energetics and propulsion, engineer in energy performance master in energy.



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