



**RESEARCH
DEPARTMENT**



HR EXCELLENCE IN RESEARCH

// Excellence in Research
for an Innovative society //



RESEARCH & PHD PROGRAMS STRENGTHS OF THE INSTITUTE

INSA Rouen Normandie is the largest regional public engineering school. It has eight research laboratories in perfect synergy with the educational programs it offers. This dual skill allows INSA to provide an open-ended response to societal challenges and research challenges on the following areas of expertise:



CHEMISTRY - HEALTH - PROCESS ENGINEERING - INDUSTRIAL ECOLOGY

This field has 90 years of experience in engineering education and research dedicated to organic synthesis, polymer materials and process engineering. Its mission is to design controlled and secure industrial systems in the respect and protection of the environment, to develop drug molecules, to develop more efficient polymers...

Laboratories	COBRA, organic and bioorganic chemistry, reactivity and analysis // PBS, polymers, biopolymers, surfaces // LSPC, chemical process safety laboratory
Research networks	Normandy Institute of Molecular, Medicinal and Macromolecular Chemistry FR CNRS 3038
Center for studies and research for companies	CERTI SPEA, processes safety, environment and analysis
Investment for the future (French Government program of excellence)	E.U.R. XL-Chem, LABEX SynOrg, organic synthesis of living molecules // institute Carnot springboard I2C // E.U.R. XL Chem.



INFORMATION SYSTEMS - MATHEMATICAL MODELING AND NUMERICAL SIMULATION

This center of expertise focuses in many sectors such as the control of information systems (from sensors to users), medical and geophysical imaging, artificial intelligence, data science, modeling and control, complex systems or mathematical modeling and numerical simulation of physical phenomena...

Laboratories	LITIS, computer science, information processing and systems laboratory // LMI, Laboratory of mathematics
Research networks	Normandy Mathematics FR CNRS 3335 // NormaStic FR CNRS 3638



ENERGIES - PROPULSION - MECHANICAL - MATERIALS - CIVIL ENGINEERING - SUSTAINABLE CONSTRUCTIONS

This field develops training and research in the field of energy sciences, associated materials and the study of their impacts (new systems applied to propulsion, depollution, combustion, new materials for energy, for nuclear, bio-polymers, eco-materials, clean energies...)

Laboratories	CORIA, interprofessional research complex in aerothermochemistry // GPM, materials physics group // LMN, Laboratory of Mechanics
Research networks	Research Institute of Energy, Propulsion and Environment FR CNRS 3519 // Institute for Materials Research FR CNRS 3095
Center for studies and research for companies	CERTI EP, clean energies // CIEMME, center of innovation and expertise in mechanics, materials and energies of INSA Rouen
Investments future (French Government program of excellence)	LABEX EMC3, materials for energy and clean combustion // AMI large wind power // EQUIPEX Genesis, group of studies and nanoanalyses of the effects of irradiations // Institute Carnot, energy and propulsion systems.



THE RESEARCH: STRENGTH OF THE INSTITUTE

From this model based on excellence, innovation perspective, and community involvement, INSA Rouen Normandie expends its research activities within three main topics: CHEMISTRY - HEALTH - PROCESS ENGINEERING - INDUSTRIAL ECOLOGY // INFORMATION SYSTEMS - MATHEMATICAL MODELING AND NUMERICAL SIMULATION // ENERGIES - PROPULSION - MECHANICAL - MATERIALS - CIVIL ENGINEERING - SUSTAINABLE CONSTRUCTIONS. These topics cover the following scientific areas linked to INSA Group European research strategy: Digital society and Information // Energy for a sustainable development // Environment: natural, industrial and urban environments // Global health and Chemistry // Transport: structures, infrastructures and mobilities.

THE RESEARCH DEPARTMENT









In addition to the skills of the researchers, there are the driving forces of the Research Department. It is the interface between laboratories and their partners and its expertise is formalized around the following missions: engineering of regional and national projects // collaborative research // Phd programs organization // support for innovative national and European projects and patents. INSA Rouen has 150 registered PhD students and delivers around 40 PhD diploma every year. International PhD programs with China (CSC), Dominican Republic, Indonesia and Lebanon are active and specific to INSA Group. Other international PhD programs are also active.

MUTUALIZATION LOGIC AND PARTNERSHIP RESEARCH

In addition to fundamental studies, a large part of the INSA Rouen research is run in close collaboration with companies and authorities. According to these strong involvements, highly relevant researches are performed for solving societal issues and generate nonconventional scientific responses.

INSA ROUEN NORMANDIE LABORATORIES

Four of the eight INSA Rouen Normandie laboratories are also CNRS research units. Thus, the institute actively contributes, in collaboration with the universities of Rouen Normandy and Le Havre Normandy, to the 'Région Normandie' scientific research, in France and throughout the world.

Laboratories	COBRA	CORIA	GPM	LITIS	LMI	LMN	LSPC	PBS
								
Tutorship institutions	INSA Rouen Normandie, Université de Rouen Normandie, CNRS	INSA Rouen Normandie, Université de Rouen Normandie, CNRS	INSA Rouen Normandie, Université de Rouen Normandie, CNRS	INSA Rouen Normandie, universités de Rouen Normandie et du Havre Normandie	INSA Rouen Normandie	INSA Rouen Normandie	INSA Rouen Normandie, Université de Rouen Normandie	INSA Rouen Normandie, Université de Rouen Normandie, CNRS

PARTNERSHIPS

The research themes studied in the INSA Rouen Normandie laboratories are regularly requested for partnerships. This proactive policy is developed at the national, European and international levels. These partners come from a wide variety of backgrounds. With them, the institute conducts many collaborative projects and can also position itself as an expert serving the socio-economic world. The research themes of INSA Rouen Normandie's laboratories are fully in line with the regional strategy for research and innovation based on intelligent specialization (SRESRI).

Leading partners



Campus Sciences & Engineering Rouen Normandie

By its location, INSA Rouen Normandie has developed close partnerships with surrounding structures; CRIANN (HPC center in Normandy) especially with DataLab Normandie and MNSN (Numerical Simulation structure with HPC applications linked to CRIANN and Labex AMIES), CEREMA, SGS multilab, SIEMENS-GAMESA, D2T ... The institute is also involved in «Seine Innopolis», a business, experimentation and innovation center dedicated to information and communication technologies. INSA Rouen is a key actor of the project "Rouen Intelligent Mobility for all" (leading by Rouen Normandie Métropole) of the PIA National program "Innovation Territory - Great Ambition" (TIGA).

Community of Universities and Institutions (ComUE)

The main institutions of the Normandy higher education and research are part of Normandy University. The founding members of this ComUE are the universities of Caen Normandie, Le Havre Normandie and Rouen Normandie, ENSICAEN, ENSA Normandie and, of course, INSA Rouen Normandie. The doctoral schools and research federations are structured on the scale of Normandy University.

Competitiveness clusters

The institute is a member of Mov'eo, Nov@log, Astech, System@tick, Cosmetic Valley, Normandy AeroEspace and Énergies Normandie and Pharma Valley, TES. All are key players in their field whether it is automotive, aerospace or pharmacy / cosmetics, numerical aspects. They offer their sector a national or even an international influence.

Normandy valorization

INSA Rouen Normandie is a driving force in setting up Normandy valorization. The objectives of Normandy valorization are to standardize and to harmonize the activities of the valuation structures, to identify and to detect the transfer potential in the different research structures or to stimulate the maturation of research projects in order to facilitate their transfer to the socioeconomic world.

POSSIBLE RESEARCH COLLABORATIONS

For each collaboration, there is a solution!

- ✓ The single partnership on a well-defined problem: research collaboration contract, research service contract or technology transfer contract.
- ✓ The industrial chair: to develop research expertise on themes defined in partnership with partner companies. Such a collaboration was set up for instance with the Safran group.
- ✓ The common laboratory: pooling high-level skills and sharing experiences. Analyzes and surface, CERTAM, CEVAA, EDF, Holodiag, Janssen Cilag and TOTAL have developed this type of partnership with INSA Rouen Normandie.

Carnot Institute

The Carnot label awarded by the Ministry of National Education, Higher Education and Research aims to develop research partnerships and is attributed to public research structures. CORIA and GPM collaborate within the Institute Carnot Energy and Propulsion Systems (ESP). COBRA and PBS collaborate within the Institute Innovation Chemistry Carnot (I2C).

Investments for the future

At the initiative of the French Ministry of National Education, Higher Education and Research, the investments for the future are aimed at enhancing productivity, innovating and increasing the competitiveness of companies, as well as at promoting employment.

INSA Rouen Normandy, in collaboration with its partners, has won several of these calls for projects:

- two LABEX (laboratories of excellence): SynOrg and EMC3;
- an AMI (call for expressions of interest): large wind turbines;
- EQUIPEX (equipment of excellence): GENESIS;
- E.U.R. XL Chem.

These successes show the skills and assets of Normandy, its ability to bring all its stakeholders together to build and run programs to boost research and training of our country.

Serving the socio-economic world

INSA Rouen Normandie offers a wide range of research skills that help companies and institutions to position themselves among the most innovative. Research contracts, joint laboratories, supervision of theses..., all collaborations that feed in advances and know-how stakeholders. Indeed, from these relationships come discoveries, development tools, patents and sometimes start-ups. Note that the privileged opening of doctoral research to the socio-economic world is made possible thanks to the industrial convention of Research Training (CIFRE). It allows the company to access new scientific and technological skills. This partnership contributes to the process of innovation and the employment of doctors in companies. Many PhD students from INSA Rouen Normandy have already been concerned by this program.

Recognized expertise ANR

Finally, pledging real expertise, many organizations support the Institute's research projects: Normandy Region, BPI France, the National Research Agency (ANR), the European Commission through the European Regional Development Fund (ERDF), H2020 or the European INTERREG territorial cooperation program, investments for the future National program...



<https://hal.archives-ouvertes.fr/INSA-ROUEN>

INTERNATIONAL RECOGNITION

PUBLICATIONS, MOBILITY AND DISTINCTIONS

The publications in the best scientific journals and international communications carried out by INSA Rouen Normandie teams contribute to the development of our society. The institute is very dynamic internationally and thus it promotes mobility every year, especially by welcoming professors from major foreign laboratories. It should also be noted that INSA Rouen laboratories and researchers regularly receive scientific awards: IUF senior member, Roadef award, Jaffé award, Abertis award, IBM faculty award... Let us also note that from 2019, INSA Rouen has created a book collection with EDP Sciences (Paris, France).



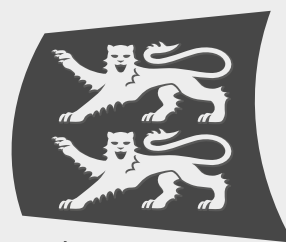
FOCUS ON

REGIONAL STRATEGY OF RESEARCH

The positioning of INSA Rouen Normandy is historically in perfect adequacy with the Norman territory. Note in particular the coherence existing between the three main poles of the establishment and the three strategic poles of the Normandy region:

- CBSB strategic cluster: new technologies in Chemistry and Biology applied to Health and Well-being.
- Strategic pole EP2M: Energy, Propulsion, Matter, Materials.
- Strategic pole SN: Digital Sciences.

These are present in the projects of the program of investments of future and in the contribution of Normandy University to the regional scheme of higher education, research and innovation in Normandy.



RÉGION
NORMANDIE



EUROPEAN UNION



PhD HOUSE

INSA Rouen Normandie hosts the «PhD House» of the Science and Engineering Campus at Rouen Madrillet. Located in the Magellan building at INSA, it is the welcome point for all the PhD students of the campus. This PhD house works in synergy with other «PhD Houses» located in Normandy (Mont St Aignan, Caen and Le Havre). INSA Rouen is linked to three Doctoral schools: EDNC (Chemistry), ED MIIS (computer sciences and mathematics) and ED PSIME (Physics,...).

EUROPEAN UNIVERSITY - ECIU



INSA Group is associated to the European Consortium of Innovative Universities (ECIU). ECIU is the leading international consortium of research intensive universities, with collective emphasis on innovation, creativity and societal impact, driving the development of a knowledge-based economy. ECIU University is born in november 2019: ECIU University was one of 17 international initiatives selected by the European Commission, after it

announced a call for European Universities as part of the EU Erasmus+ programme

Members of ECIU: Aalborg Universitet (Denmark), Universidade de Aveiro (Portugal), Universitat Autònoma de Barcelona (Spain), Dublin City University (Ireland), Technische Universität Hamburg- Harburg (Germany), Kaunas University of Technology (Lituania), Linköpings Universitet (Sweden), Tampere University of Technology (Finland), University of Stavanger (Norway), University of Trento (Italia), Universiteit Twente (Netherlands) and Tecnológico de Monterrey (Mexico). INSA Group is member of ECIU since June 2019.

HUMAN RESOURCES STRATEGY FOR RESEARCHERS (HRS4R)



HR EXCELLENCE IN RESEARCH

INSA Rouen Normandie is labelled «HR Excellence in Research» by the European Commission as part of the implementation of the Human Resources Strategy for Researchers (HRS4R). This label rewards INSA Rouen Normandie's assertive approach to improve its practices in recruiting, welcoming and managing researchers' careers. The aim is to promote the careers of researchers in the European Research Area (ERA).

Objective: to converge our procedures with the European Charter for Researchers & the Code of Conduct for the Recruitment of Researchers (40 points) regarding 4 main thematic:

- Ethical principles and professional responsibilities;
- Recruitment, career development, occupational and geographic mobility;
- Working and safety conditions, professional environment;
- Training.



INSA ROUEN NORMANDIE

INSA Rouen Normandie is the largest public engineering school in Normandy. It belongs to INSA Group, [National Institutes of Applied Sciences], the leading French group of engineering institutes.

INSA Rouen Normandie is a unique research center which joins education activities, research laboratories, international relations and socio economic partners. INSA Rouen scientists contribute to overcome the main societal and innovative challenges by combining excellence in research in engineering sciences, as well as the interfaces between disciplines from the development of innovative and multi-disciplinary approaches. INSA Rouen has eight research laboratories in perfect synergy with the engineer diplomas it proposes. This dual competence allows INSA Rouen to provide an open-ended response to societal challenges.

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