PRAT
at the heart of your projects

PRAT is open to the national and international scientific community and to industrial actors for intermittent studies or, on a broader scale, in the framework of shared research projects.

- Collaborative projects supported by regional, national and European funding,
- Service provisions/ Expertises,
- Support of university training and of information towards the public at large and schools,
- Decision support relative to air quality and forecasting.

Natural irradiation atmospheric simulation chamber in Orléans. (HELIOS)

The Institute for combustion, aerothermic, reactivity and Environment (ICARE: Institut de Combustion, Aérothermique, Réactivité et Environnement) and the Laboratory of Physics and Chemistry of the Environment and Space (LPC2E: Laboratoire de Physique et Chimie de l'Environnement et de l'Espace) conduct research on climate change and air quality, combining laboratory studies and field measurements with a strong potential for developing cutting-edge experimental means. They federate a solid expertise in characterizing indoor and outdoor pollution.

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PIVOTS

www.plateformes-pivots.eu

PIVOTS is a coordinated set of experimental and analytical platforms dedicated to the development of environmental engineering and metrology for activities with a high consumption of natural resources. Along the entire value chain, it brings together public and private-sector actors in monitoring the quality of the environment and the sustainable management of natural resources (soil, subsurface, surface water, groundwater, sediment, air).

With the support of:

This operation is co-financed by the European Union. Europe is committed to the Center-Val de Loire region with the European Regional Development Fund.

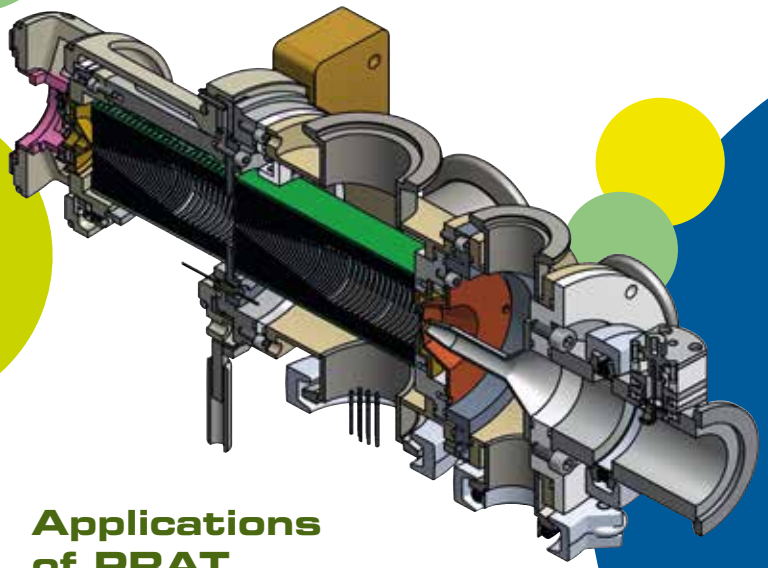
PIVOTS

PRAT

Analyze indoor and outdoor air quality, and assess the impacts of air pollution

Experimental means and tools,
some unique in France,
to study air pollution, one of the main health-related blights on a planetary level.

Analyze indoor and outdoor air quality, and assess the impacts of air pollution



The experimental packages of PRAT make possible supplementary studies in the laboratory and in the field:

- **HELIOS:** an atmospheric simulation chamber with natural irradiation for studying the photo-chemical processes of the atmosphere under controlled and realistic conditions (the only platform on this scale in France).
- **SUPER SITE VOLTAIRE-HELIOS:** dedicated to the measurement and monitoring of atmospheric pollutants in the Orléans metropolis (gases and particles), in collaboration with Lig'Air, the Centre-Val de Loire region air quality monitoring network.
- **ANALYTICAL PARK:** a state-of-the art site equipped with certain unique instruments specifically developed at the National Center for Scientific Research (CNRS) and the University of Orléans.

Applications of PRAT

- **Inter-comparison and test of instruments devoted to air characterization,**
- **Investigation of the atmospheric impact of new chemicals** (solvents, phytosanitary substances, depolluting materials, ...),
- **Degradation of the volatiles organic compounds (VOCs) in the atmosphere: health- and climate-related** impacts,
- **Characterization of the outdoor pollution** (gaseous and particulate) as related to means of transportation, heating, industrial activities, fires, ...
- **Transformation of pesticides in the air and their impacts,**
- **Indoor pollution:** identification of the primary and secondary sources of toxic pollutants such as formaldehyde.

Available means of study

- **HELIOS:** has a hemispheric shape, made of Teflon with a volume of 90 m^3, relative humidity could be varied and controlled to mimic the atmospheric conditions, investigations could be made under solar or artificial irradiation, or without irradiation,
- **Super Site for monitoring various pollutants, the ones under regulations such as** (O3, NOx and PM10) as well as the non-regulated ones (VOCs, PM 2.5, HONO, ...); weather station; site for training students from various universities,
- **Important analytical park for measuring gases and particles:** PTR-ToF-MS; API-ToF-MS; CPG-FID, PID, TD; CI; UHPLC-LCMS; IRTF; Specific analyzers of NOx, O3, HCHO, HONO, SMPS, CRDS for particles,
- **Instrumental development:** spectrometers (i) for optical absorption: OF-CEAS for numerous trace gases and CRDS NO3 radical; (ii) for mass analysis: Orbitrap TM and CIMS techniques for aerosols and ROx radicals.

State-of-the-art analytical park for measurement and monitoring of atmospheric pollutants (gases and particles).