

## General information

### Offer title : Post-doctoral position in atmospheric chemistry (M/F) (H/F)

Reference : UPR3021-ISAZOL-083

Number of position : 1

Workplace : ORLEANS

Date of publication : 16 May 2024

Type of Contract : FTC Scientist

Contract Period : 24 months

Expected date of employment : 1 October 2024

Proportion of work : Full time

Remuneration : between 2905.76€ and 4081.77€ gross depending on experience

Desired level of education : Niveau 8 - (Doctorat)

Experience required : Indifferent

Section(s) CN : Fluid and reactive environments: transport, transfer, transformation processes

## Missions

Chemical cycles operating in Earth's atmosphere are responsible for many important phenomena, and have major consequences for air pollution, climate change and the evolution of the atmosphere over time. Some of the reactions within these cycles exhibit isotopic fractionation. This process leaves a fingerprint on the products of these reactions. If records of these products are preserved, as in the case of ice cores, for example, the isotopic analysis of these records can provide vital information about how Earth's past environment changed over time.

Current developments in clumped isotopic chemical analysis techniques should provide chemical information of unprecedented detail, allowing us to understand isotopic enrichment on the scale of chemical bond rather than bulk samples. The goal of this project is to study selected cycles involving sulphur and nitrogen chemistry in several reaction chambers: HELIOS (CNRS, Orléans) and CESAM (UPEC, Paris). Both of these chambers are uniquely well-equipped to understand atmospheric chemical composition in fine detail, which will be used to develop detailed atmospheric degradation mechanisms. At the same time, isotopic composition will be studied using a state-of-the-art orbitrap technique, which will be used for isotopic analysis in collaboration with Institut de Geosciences de l'Environnement (Grenoble).

## Activities

The Atmospheric Reactivity group at ICARE-CNRS in Orléans has developed the largest atmospheric simulation chamber using natural irradiation in France and the third largest in Europe, HELIOS (cHambRE de simuLation atmosphérique à Irradiation naturel d'Orléans). Both of these chambers are uniquely well-equipped to understand atmospheric chemical composition in fine detail, which will be used to develop detailed atmospheric degradation mechanisms.

The candidate will be responsible for experiments in an atmospheric simulation chamber and processing of data from instruments on the analytical platform.

## Skills

the successful candidate must :

- Hold a PhD in chemistry, physical chemistry or analytical chemistry
- Be able to communicate orally and in writing in English; French would be appreciated
- Be able to work independently
- Be able to work as part of a team

Knowledge in one or more of the following areas:

- Chemistry
- Analytical chemistry
- Atmospheric physical chemistry
- Isotope analysis
- Mass spectrometry

## Work Context

The CNRS ICARE laboratory in Orléans carries out research in the fields of combustion chemistry and physics, propulsion plasmas and atmospheric and environmental chemistry. The total number of staff is around 100, including 17 permanent scientists and 16 academics. The research activities of the Atmospheric Reactivity (RA) group deal mainly with laboratory and field studies of the gas phase and heterogeneous chemical processes of interest in the troposphere. RA is also associated with the Observatoire des sciences de univers en région Centre, one of the institutes of the University of Orléans, and belongs to the French national network of earth and space observatories Sciences (INSU-CNRS). It has access to the various OSUC laboratories and facilities.

The position is located in a sector under the protection of scientific and technical potential (PPST), and therefore requires, in accordance with the regulations, that your arrival is authorized by the competent authority of the MESR.

### Constraints and risks:

N/A

### Additional information:

Project Team

Max MCGILLEN (CNRS/ICARE, Orléans, France) – supervisor ([max.mcgillen@cnrs-orleans.fr](mailto:max.mcgillen@cnrs-orleans.fr))

Bénédicte PIQUET-VARRAULT (LISA, Paris, France) – co-supervisor. ([benedicte.varrault@u-pec.fr](mailto:benedicte.varrault@u-pec.fr))

Joël SAVARINO (IGE, Grenoble, France) – project leader ([joel.savarino@cnrs.fr](mailto:joel.savarino@cnrs.fr))

