



A PhD position is available at the “Institut de Combustion, Aérodynamique, Réactivité et Environnement” (ICARE) in Orléans, France. The successful candidate’s PhD thesis: “Characterizing the reactivity of multigenerational air pollutants” will focus upon the reactivity of pollutants within our atmosphere.

Atmospheric oxidation produces whole families of chemicals that are very poorly understood. These include the peroxidic species (hydroperoxides, peroxides, peroxy acids, peroxy acyl nitrates), epoxides, organic acids and nitrates, which are thought to play important roles in air pollution and aerosol formation. Traditionally, many of these compounds have been difficult to measure using conventional chemical analyses. Recently, progress in soft-ionization techniques such as chemical ionization mass spectrometry (CIMS) and proton-transfer reaction mass spectrometry (PTR-MS) have allowed direct quantification of these exotic molecules. The goal of this project is to make significant progress in understanding the chemical reactivity of these molecules using state-of-the-art analytical techniques and experimental methods.

To achieve this, the student will make use of the unique facilities of ICARE. This includes:

- A broad variety of analytical techniques – Mass spectrometry (PTR-ToF-MS, ToF-CIMS), separation techniques (GC-MS/FID, UHPLC-MS), optical methods (multipass FTIR, UV spectroscopy, cavity ring-down spectroscopy).
- A large range of chemical reactor apparatuses – including HELIOS, the largest outdoor simulation chamber in France, and part of the pan-European research infrastructure ACTRIS (<https://www.actris.eu/>).
- A wealth of international experience available in our research group.

Do you have an undergraduate or masters degree in chemistry, physics or the environmental sciences? Do you have an interest in cutting-edge analytical chemistry techniques? Would you like to join an international team of scientists as we try to quantify the effects of natural and anthropogenic emissions on the environment and the climate?

If the answer is yes/ oui to each of these questions, then please send an email with your CV (including 3 references) and a description of your research interests to Dr. Max McGillen (max.mcgillen@cnrs-orleans.fr) and Prof. Wahid Mellouki (mellouki@cnrs-orleans.fr). Please note, the appointment will begin on the 1st of October, 2022, with the final selection being made by the end of May.