



**Post-doctoral position (18-month) on investigating the drivers leading to changes in aerosol-forming volatile organic compounds in north of France within the context of climate change**

The Department of Atmospheric Sciences and Environmental Engineering (SAGE) of IMT Lille Douai, France (<http://sage.mines-douai.fr/>), has ongoing research activities focused on the impact of climate change on air quality and atmospheric composition. SAGE is currently composed of a staff of about 50 persons including 15 full-time faculty members.

This fixed-term position is available for a total duration of 18 months at the SAGE department (59500 Douai, France), with an expected starting date on April 2018.

**Project description:**

The north of France is submitted to frequent episodes of high particulate matter (PM) concentrations in ambient air, to which secondary organic and inorganic aerosols contribute largely. In the context of climate change it is predicted a possible increase in the emission of biogenic volatile organic compounds (VOCs), known as effective precursor gases for secondary organic aerosol (SOA). This change may modify not only the availability and chemical composition of SOA, but also of secondary inorganic aerosols (SIA). Indeed several laboratory studies have shown the influence of SIA precursor gases (e.g. SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>) on SOA formation yields and vice-versa of VOCs on SIA formation. These interactions are still not fully elucidated.

The main objective of this work is to investigate, within a context of climate change, drivers leading to changes in volatile organic compounds (VOCs) composition and levels that are precursors of aerosol particles observed in northern France. A special focus will be put on the coupling of both VOCs and SIA precursor gases for the formation of secondary particles.

This work will involve the following tasks:

- 1) Participate to an intensive field campaign in northern France to measure aerosol particles as well as inorganic species and VOCs of interest for their formation;
- 2) Analyze the field measurements to highlight the drivers controlling ambient levels of VOCs, inorganic species and aerosol particles in regards to their sources, the origin of air masses and meteorological parameters of interest for climate change;
- 3) Present these results into the context of existing literature and promote this work through the writing of an international publication.

The successful applicant will hold a Ph.D. degree in a relevant area of atmospheric sciences and will have a good knowledge of the field of research, as well as skills in Aerosol Mass Spectrometry and/or Proton-Transfer-Reaction Mass Spectrometry (PTR-MS). A previous experience of field measurements, as well as knowledge of the IGOR software and source-receptor models, will be assets for this position. Good proficiency in English is a prerequisite. A driving license would be a plus.

Applicants are invited to send their Curriculum Vitae, a cover letter, and two reference letters to:

- Pr. Véronique RIFFAULT ([veronique.riffault@imt-lille-douai.fr](mailto:veronique.riffault@imt-lille-douai.fr))
- Dr. Sébastien DUSANTER ([sebastien.dusanter@imt-lille-douai.fr](mailto:sebastien.dusanter@imt-lille-douai.fr))
- Dr. Esperanza PERDRIX ([esperanza.perdrix@imt-lille-douai.fr](mailto:esperanza.perdrix@imt-lille-douai.fr))