

Heterogeneous kinetics and atmospheric photochemistry

General description of the group

The Department of "Atmospheric Sciences and Environmental Engineering" (SAGE) of the IMT Lille Douai Engineering School and Research Center in Douai, France (<http://sage.imt-lille-douai.fr/>) has ongoing research activities focused on atmospheric chemistry, air quality and the impacts of human activities on atmospheric composition. It has currently a staff of about 60 people including 18 full-time faculty members. Research projects aim at a better understanding of the physical and chemical processes involved in the formation, transport and aging/transformation of gaseous and particulate pollutants in the outdoor or indoor atmosphere.

The primary objectives are: (i) to characterize pollutants and identify their sources through field campaigns in various environments, (ii) to determine their fate in the atmosphere, with a special focus on their impacts on health and ecosystems, and (iii) to develop innovative air treatment processes to improve air quality. The SAGE department also develops analytical methods and sensor techniques allowing to conduct laboratory and field-based studies.

The activities of the "**Reactivity and Air Treatment**" research group combine advanced skills in (i) trace pollutant monitoring by chromatographic, spectroscopic and spectrometric techniques to determine chemical kinetic parameters in the gas and heterogeneous phases and (ii) sorption, photocatalysis and non-thermal plasma techniques to deplete pollutants in air treatment systems.

We are looking for a highly motivated post-doctoral researcher with solid background in chemical kinetics and atmospheric photochemistry who is ready to work on challenging and innovative topics. The successful candidate will be a member of a dynamic team of international researchers and get a unique expertise in operating state-of-the-art experimental techniques and instrumentation available in the department. She/He will be also involved in national and international projects and collaborations.

Objective of the position

The successful candidate will be carrying out the following activities:

- Investigate heterogeneous processes between inorganic and organic compounds with bulk aerosol surfaces (e.g. mineral dust, volcanic ash, mineral oxides).
- Determine the hygroscopic properties of fresh and aged mineral/volcanic particles deploying novel methods developed in the lab.
- Supervise PhD students, write progress reports.
- Present the results to international and national conferences and publish them in high level peer-review journals.

Required qualifications

- PhD in Chemistry, Physical Chemistry, Atmospheric Sciences or in relevant fields.
- Extensive and solid background in chemical kinetics, atmospheric photochemistry, and heterogeneous photocatalysis.
- Experience in working with flow tube reactors is essential.
- Experience in mass spectrometry (electron impact and/or chemical ionization methods) and infrared spectroscopy.
- Author or co-author of at least two (2) publications in peer-review journals.
- Experience in processing datasets using at least one of the following softwares: Excel, Origin, IgorPro.
- High level of communication and interpersonal skills and the ability to adapt to a multicultural/multinational environment.
- High level of organizational, analytical and problem solving skills.
- Proficiency in spoken and written English.

Additional skills that would be considered as an advantage:

- Experience in working under molecular flow conditions deploying Knudsen cells will be much appreciated.
- Solid background in vacuum technology.
- Proficiency in spoken and written French.

The recruitment will be on a full time basis for a fixed term period of 12 months with the potential of contract renewal depending on performance and availability of funds. Dead line for applications is March 31st. Applicants should send a) a motivation letter and detailed Curriculum Vitae and b) a recommendation letter or at least two references of previous or current employer(s) or supervisor(s), to **Dr. Manolis N. Romanias** and **Prof. Frederic Thevenet** to the following email addresses:

Dr. Manolis N. Romanias: emmanouil.romanias@imt-lille-douai.fr

Prof. Frederic Thevenet: frederic.thevenet@imt-lille-douai.fr