Study of reactivity and photoreactivity of particles with atmospheric interest by means of levitation techniques (optic and acoustic) coupled to the Raman microspectroscopy

In the framework of the project CLIMIBIO (http://climibio.univ-lille.fr/) aiming at studying climate change and its impact on biodiversity and human health, the research group "Physicochimie de l'Environnement" at LASIR (UMR CNRS 8516) recruits a postdoctoral researcher to investigate the reactivity and the photoreactivity of organic/inorganic aerosols with atmospheric interest at the individual particle scale.

Context

The role of aerosols in the climate change process is still poorly known. Aerosol particles are often complex mixtures of chemical species that are exposed to pollutant gases, humidity and light during transport in the troposphere. The (photo)reaction of organic compounds adsorbed or condensed on the surface of inorganic particles can result in a complex heterogeneous process. These physical-chemical transformations, taking place at the individual particle scale, involve spatial-temporal changes in the size, chemical composition and mixing state. The study of these transformation processes in laboratory is essential to a better understanding the influence of aerosols on the physical-chemical properties of the atmosphere.

Profile description

The candidate will participate in the coupling of the optical levitation technique with the Raman microspectroscopy. In collaboration with an engineer, he will optimize and validate this technique on well known chemical systems. Afterwards, he will use optic and acoustic levitation techniques coupled to the Raman microspectroscopy to study the (photo)reactivity of organic/inorganic particles without the influence of a contacting surface.

Position requirements

The candidate should have a PhD in chemistry, physical-chemistry or a relevant subject area.
Very good knowledge in vibrational spectroscopy is required.
An experience in instrument development is desired.
Some knowledge in theoretical calculations (ab-initio, DFT, etc.) will be appreciated.
Ability to communicate the results orally and in writing
Good communication skills in English (written and oral)
Teamwork skills, versatility and rigor.

Starting date: January 2017
Duration: 1 year
Gross salary: approximately 2500 €/month.

Interested candidates
Send CV, motivation letter, and references to Dr. Yeny TOBON (yeny.tobon-correa@univ-lille1.fr)