

The ANATRAC research group at the PhLAM laboratory, University of Lille, France invites applications for a **Postdoctoral position in "Mass Spectrometry of Aerosols"**

*The appointment period is initially for **12 months** (February 2020 – January 2021), but can be renewed annually based on availability of funds and satisfactory progress.*

Research Context: Carbonaceous aerosol (soot) emissions from transportation and industries have a major influence on the atmospheric chemistry and human health. Their impact on climate, their reactivity, and toxicity are all determined by their surface chemical composition (directly interacting with the surrounding environment) and nanostructure. It is thus of paramount importance to perform thorough surface chemical characterizations of both natural and anthropogenic carbonaceous aerosols to fully assess the impact of combustion by-products on climate and health and reveal the partitioning of volatile species between the particulate and gas phases. Often completed with morphology and nanostructure analyses, such extensive characterizations are needed to assess the future of these aerosols once released in the atmosphere. The ANATRAC research group has gained extensive expertise in characterising the physico-chemical properties of carbonaceous aerosols by developing state-of-the-art surface science techniques and comprehensive data analysis protocols for over 15 years.

Primary Job Duties: The prime directive of the present project is to investigate the surface physico-chemical properties of carefully chosen aerosol particles. The relevant aerosols will be produced in a controlled manner either in the laboratory or collected from engine exhausts or field campaigns. The chemical characterization of the aerosol surfaces will be performed using a custom Time of Flight (ToF) mass spectrometer instrument coupled to a laser desorption/ionization technique. Various ionization schemes developed in our laboratory will be tested, including VUV sources. The nanostructure will be investigated via micro-Raman spectroscopy and the functional groups present at the surface using Fourier transform infrared spectroscopy (FTIR). Further chemical mapping may be performed using a Secondary Ion Mass Spectrometry (SIMS) instrument available on campus.

Requirements and Application Procedure: Candidates should have a Ph.D. in Physical Chemistry, Physics, or related fields and demonstrate a strong interest in experimental work. Solid communication skills in English (written, oral), a publication record in international peer-reviewed journals, and willingness to work in a team are mandatory. Applicants will be expected to demonstrate their capability to prepare manuscripts for publication in an independent manner. Salary is commensurate with experience, gross salary ranges from 2643.22€ to 3047.48€/month.

Please send electronically a letter of interest, CV, and publication list to Prof. Focsa at cristian.focsa@univ-lille.fr. Review of applications will start as soon as possible and continue until January 20, 2020. Interviews will be conducted in December-January for the position to be filled February 1st, 2020.

Living in Lille: Lille is a pleasant city in northern France, within an hour by train from Paris, about 30 minutes from Brussels and an hour and half from London. This privileged geographic position makes Lille a veritable gateway to Europe. Lille is classified as a city of "Art et Histoire" since 2004, and harbors a beautiful example of the 17th century military architecture, designed by Vauban, and numerous reminders of the Spanish occupation of the region or of the marriage of the French and Flemish cultures.