

Associate Professor position within the atmospheric chemistry group at LCE (Laboratory of environmental chemistry) at Aix Marseille University, France)

Special skills required:

The person recruited will carry out research in the field of atmospheric chemistry. He/she will conduct a research program based on in-depth knowledge of tropospheric chemistry and strong skills in analytical chemistry for on-line and off-line monitoring of the ongoing of chemical reactions and/or the state of contamination by organic constituents in rural and urban atmospheres. Among existing techniques, mass spectrometry, whether or not coupled with chromatographic systems, plays a central role. In addition, LCE's on-line measurement techniques and high-resolution mass spectrometry generate large datasets that require advanced dedicated analysis. Computer programming skills will therefore be useful to these large datasets. Finally, an overview of current and future major international challenges in atmospheric chemistry will be appreciated.

Teaching :

Half of the candidate's time will be spent teaching within the UFR Sciences in courses about Quality, Hygiene, Safety, Health and Environment, namely the QHSSE professional degree and the QHSe Master's degree. These courses focus on QHSE management systems and their developments towards operational excellence. Particular attention will be paid to the issues of laboratory quality, metrology, accreditation, statistical testing, environmental and energy management systems. The person recruited will take part in the development of the "Quality in Research Structures" program proposed for the new Master's accreditation. QHSSE training courses are given on a work study basis (apprenticeship for the most part) and are certified by ISO9001 2015. The person recruited will be involved in supervising apprentices (follow-up of assignments, examinations, etc.) and will be a part of the management team of training courses' quality. Knowledge of socio-economic environments and specific regulations (ICPE, SEVESO, administrative authorizations, etc.) would therefore be appreciated, in order to foster business relations and integrate regulatory issues. As the Master's program is based on a competency approach and almost entirely on projects/problem based learning, an interest in innovative teaching practices (inverted classrooms, "active" pedagogies, hybrid teaching, etc.) and/or their operational set up would be particularly appreciated.

The other half of the service will be carried out within the Chemistry Department, which currently has teaching needs at Bachelor's and Master's levels. The candidate will be expected to integrate the teaching units including analytical chemistry and chromatography in particular. The candidate recruited will potentially be required to teach at all sites where chemistry is taught: Marseille Saint-Jerome, Marseille Saint-Charles, Marseille Luminy and Aix-Montperrin. It will represent half of his/her teaching time.

Research :

In the context of the development of sustainable cities, the city of Marseilles has been selected as one of the 100 cities in Europe to become carbon-neutral in 2030. The Marseilles metropolitan area is a particularly relevant area due to its high population density, strong photochemical activity, important industrial plants and Mediterranean vegetation, which is a major emitter of biogenic Volatile Organic Compounds, known precursors of Secondary Organic Aerosols.

An air pollution monitoring station has been developed on the Marseille-Longchamp site, by the Laboratoire de Chimie de l'Environnement (LCE UMR7376 <https://lce.univ-amu.fr/fr/super-site-aerosol-marseille-longchamp>). It enables medium- and long-term monitoring of urban pollutants, especially atmospheric

aerosols. The observatory has been in operation for around 10 years, and is a valuable tool for monitoring the impact of anthropogenic and biogenic activities on air quality. Its location in the heart of the urban city center, the number of instruments deployed and the length of available datasets (in years) make it a unique site in Europe. More, it has a unique database for studying the physico-chemical properties of submicronic particles (PM1) and quantifying their sources.

Through its partnership with AtmoSud (the association responsible for monitoring air quality in the PACA region), it can be used as a tool for information, decision support and effective evaluation of public policies (short and long term), ensuring direct transfer of the state of the art research to public authorities and the citizens.

As a member of LCE's Instrumentation et Reactivite Atmospherique (IRA) team, the successful candidate will be expected to propose an innovative research program dealing with atmospheric aerosols, in which the Marseille Longchamp Observatory is a pivotal research tool. In the short term, the person recruited is also expected to be in charge of the scientific management of the site, i.e. scientific leadership, hosting experimental campaigns at national and international levels, opening up to pioneering measurements and seeking funding to maintain the observatory at the international forefront in terms of atmospheric variable measurements. The first step will be to integrate the observatory into the French and European ACTRIS (Aerosols, Clouds and Trace Gases Research Infrastructure) research infrastructure. The structure of this network for urban environments is still in progress, and should provide high-quality data and services on short-lived atmospheric constituents and the processes governing their variability. The person recruited will be in charge of developing the data generated by the observatory, with a particular focus on generating new knowledge on the understanding of aerosol formation and fate. The Marseille Longchamp super site, with its unique location in the heart of the Marseilles urban area, will be a unique tool for conducting work in the context of the air quality in the city of tomorrow.

Information :

<https://lce.univ-amu.fr/fr/ira>

<https://lce.univ-amu.fr/fr/offres-demploi-offres-stages-propositions-theses>

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