

PhD contract: Organic pollutants in the urban atmosphere

The role

We offer a **4-year contract** for a PhD student, linked to the project ***Synergistic investigation of Organic Pollutants in the urban Atmosphere*** (PID2024-162194OB-I00), recently funded by the Spanish State Research Agency, and led by Dr María Cruz Minguillón and Dr Roger Seco.

The candidate will **participate in the entire scientific process**, i.e., experiment design, instrumentation operation, calibration, and maintenance, data processing and analysis, data interpretation, and dissemination of results (through scientific articles publication and communications in international conferences).

The PhD student will use **advanced scientific instrumentation** like online mass spectrometers (PTR–ToF–MS and ACSM) for measuring the atmospheric concentrations of volatile organic compounds (VOCs) and atmospheric aerosols (particulate matter) at our air quality urban supersite in Barcelona.

Our goal is to generate **simultaneous and continuous observations**, for one-year period or longer, **of fine particulate matter composition and VOCs with a high-time resolution and apply source apportionment techniques**. This synergistic interpretation of both the aerosol and the gaseous phases of organic atmospheric pollutants will provide unmatched insight about the organic atmospheric pollution in the city of Barcelona, which can then be generalized to the urban areas of the Western Mediterranean.

A secondment of approx. **3 months in a foreign research center** is planned, which will allow for an International Doctorate Certification.

What do we look for?

- **Qualifications**

M.Sc. studies (300 ECTS completed that allow the student to be admitted into a PhD program before the signing of the work contract) in environmental sciences, environmental engineering, physics, chemistry, biology, geology, or related fields.

- **Professional experience**

Previous experience is not required but previous work with scientific instrumentation, programming, handling of long time series datasets, and scientific documents writing will be considered assets.

- **Competences**

- Ability to operate scientific instruments, programming, and data handling and analysis are essential. This can be achieved by demonstrable experience and/or a strong commitment to learn and master these skills.
- Excellent user level of Microsoft Office. The knowledge of other programs such as Igor Pro (Wavemetrics) or R will be an asset.
- Fluency in oral and written English. The publication of the results in international scientific journals, oral communications in international conferences, as well as communication with international partners, require a good command of the English language, both oral and written.
- Personal characteristics such as interpersonal skills, analytical and problem-solving skills and the ability to work independently and as part of a team are required. Also, high motivation, initiative, and independence.

What do we offer?

- **Contract duration: 4 years**
- Target start date: The **predoctoral contract will start as soon as possible** after the official resolution of the CSIC PIF2025 predoctoral contract call. This could happen **around March-April 2026**.
- Research and training in an exciting scientific environment with excellent career-development opportunities.

The group

The student will work primarily under the supervision of **Dr. Roger Seco** (<https://www.idaea.csic.es/person/roger-seco>) and **Dr. María Cruz Minguillón** (<https://www.idaea.csic.es/person/maria-cruz-minguillon>) and collaborate with other members of the **EGAR group**.

The Environmental Geochemistry and Atmospheric Research (EGAR) group is specialized in air quality assessment and monitoring, using state of the art air pollutant instrumentation combined with innovative monitoring strategies based on sensor networks. The team has strong expertise in source apportionment to aid in the identification of major sources affecting air quality degradation, which in turn supports the implementation of mitigation strategies. Similarly, EGAR is experienced in health impact assessment to translate air pollution impacts into premature mortality and morbidity outcomes, easier to understand by the general population. This combination of monitoring tools and methodologies provides the ideal framework to assess the effectiveness of innovative air quality monitoring and modelling tools.

The institute

The **Institute of Environmental Assessment and Water Research (IDAEA)** is an environmental research center of the **Spanish National Research Council (CSIC)** devoted to the study of the human footprint on the biosphere. Much of the research work at this institute is centred on two of the great environmental challenges of our time: cleanliness and availability of water and quality of air. Distinguished by its interdisciplinary approach, our research spans chemistry, biology, toxicology, hydrology, and geology, addressing a wide range of environmental challenges.

IDAEA has demonstrated strengths in the analysis of organic pollutants and their impact on ecosystems, the study and management of water resources, the development of multivariate resolution algorithms in chemometrics, and in the study of inhalable particulate matter and toxic gases.

IDAEA was recognized as a **Centre of Excellence “Severo Ochoa”** (2020-2023), underscoring our scientific leadership and global impact.

We offer a diverse and inclusive environment where no discrimination against disability, gender, nationality, religion or sexual orientation will occur during the selection process.