

Postdoctoral research position: volatiles in the ocean

At the Simó Lab (<https://simolab.icm.csic.es>), Institut de Ciències del Mar, Barcelona, we are seeking a postdoctoral researcher to work on the analysis of marine VOCs by PTR-MS. The position is funded with a project-associated contract for a 24-month period. Together with the applicant, we will pursue to extend this through EU or national calls. The facilities and projects of the research group offer opportunities from field to lab-based work, and from descriptive to process-oriented research. The position is meant to start in January 2024, but earlier incorporation can be considered.

Job description

Planktonic microorganisms in the ocean produce and release volatile organic compounds (VOCs) as by-products of their metabolic and feeding activities. In marine ecosystems, VOCs have evolved functions that include alleviation of oxidative stress, chemical communication, and climate regulation. We aim at deciphering the chemical, eco-physiological and environmental factors driving their production and cycling, and their temporal and spatial scales of variability. The ultimate goal is to get necessary information for diagnosing and simulating their distribution in the surface ocean and exchange with the atmosphere.

The postdoc researcher will be in charge of our Vocus (Tofwerk) PTR-ToF-MS to measure VOCs in marine air and seawater. Focus will be placed on biogenic VOCs whose concentrations are regulated by biological and photochemical processes, with a special focus on sulfur containing compounds. A custom-made Segmented Flow Coil Equilibrator (SFCE; Wohl et al. 2019) is currently installed in our research lab and will be used to measure dissolved VOCs from seawater. Production and consumption processes will be investigated using stable isotope-labeled VOCs.

For experimental lab work, the researcher will have access to cultures of bacteria, phytoplankton and herbivore protists, a sunlight simulator, and fully equipped biological and gas chromatography labs. Field work will include oceanographic expeditions to the Mediterranean, North Atlantic, and polar environments.

Candidate profile

Candidates should hold a Ph.D. in chemistry or similar, and ideally should have expertise in PTR-MS or similar mass spectrometry techniques (e.g., CIMS, ACSM, AMS). Interest in oceanography, marine ecology and Earth system science will be extremely valuable but expertise is not mandatory, as the researcher will get training and support from the group.

Other abilities that will be valued are:

- Conducting fieldwork
- Multivariate statistics
- Use of Igor PRO, R, Python, Matlab or similar
- Fluent English and strong scientific writing skills (papers and proposals)
- Multidisciplinary collaboration

Place of work and conditions

The place of employment is the Institut de Ciències del Mar (Institute of Marine Sciences, ICM-CSIC) of the Spanish National Research Council (CSIC) in Barcelona, Catalonia, Spain. The researcher will have a desk in an office shared with other postdocs, generous lab space and access to all labs and facilities of the ICM. The salary will range between 40,000€ and 45,000€/year (before taxes) depending on experience.

About the research group

The ICM-CSIC (<https://www.icm.csic.es/en>) is the fourth largest research institute of the CSIC and the largest dedicated to marine sciences. Under the motto "Ocean Science for a Healthy Planet," the ICM conducts frontier research and foster both knowledge and technology transfer on topics related to ocean and climate interactions, conservation and sustainable use of marine life and ecosystems, and impact mitigation of natural and anthropogenic hazards.

The PI of the project, Prof. Rafel Simó, is a marine biogeochemist, leader of the Simó Lab (<https://simolab.icm.csic.es>) (@simolab_ on twitter) and coordinator of the broader ICM's Research Group on Marine Biogeochemistry, Atmosphere and Climate. Currently he holds an ERC Advanced Grant (2019-2025) on the roles of demethylated sulfur compounds in marine microbial interactions. The postdoctoral researcher will work closely with him and Dr. Martí Galí, as well well as with the rest of the Simó Lab team. Over more than two decades, the Simó Lab has studied marine methylated sulfur compounds and volatiles: from single-cell biogeochemistry through microscale microbial interactions and food-web fluxes, all the way up to satellite observations and global-scale modelling of marine volatile emissions and their atmospheric impacts.

The members of the Simó Lab collaborate with top scientists across various disciplines, from biological and chemical oceanography to atmospheric chemistry, Earth System modelling and remote sensing. The postdoc researcher will have the opportunity to benefit from this network of collaborations, including training and insights from the previous SFCE and PTRMS expert of the Simó Lab, Dr. Charel Wohl (UEA, UK).

Contact information

For further information, please contact the project leader Rafel Simó (rsimo@icm.csic.es), or the project manager Elena Torrecilla (torrecilla@icm.csic.es)

Application procedure

Please send us your CV, including your publication list, accompanied by

- (a) a cover letter detailing your relevant experience and motivation, and
- (b) a letter of reference

Informal pre-contact is also welcome.

In case you are shortlisted, we will contact you to arrange a videoconference interview. Do not hesitate to come see us if you visit Barcelona during the recruitment process.