

The University of Padova seeks a person to work on a project funded by the European Research Council on how to trace volatile organic compounds (VOCs) produced by plants in a variety of conditions implying cooperative and competitive interactions. The person will help with lab experiments to determine VOC concentrations via an online proton-transfer-reaction time-of-flight mass spectrometer (PTR-TOF-MS) and off-line gas chromatography - mass spectrometry (GC-MS).

<https://www.dpg.unipd.it/selezione-il-conferimento-di-n-1-assegno-lo-svolgimento-di-attivita-di-ricerca-nell%E2%80%99ambito-del-1>

The scholar will deploy, operate, and maintain online VOC measurements and will enhance identification with gas chromatography systems. The specific expected outcome of this work will be new understanding of the role of VOCs in plant-plant interactions at both aerial and roots level.

The position and the laboratory are based at the Department of General Psychology, at the University of Padova and the person will join an interdisciplinary team from the University of Padua composed by physicists, plant biologists and cognitive neuroscientists.

The candidate's development will be facilitated through integrative interactions, constructive assessment, and support by all institutions on the project. The postdoc will actively participate in research, management, and communication activities, and will be encouraged to engage in research across institution representing university, national lab, and industry settings.

Additional postdoc activities organized within the project include instrument calibration, maintenance, and configuration of experiments, data analysis, talks, preparation of publications, and project meetings.

## **Duties & Responsibilities**

### Position Duties:

- Participate in PTR-TOF-MS calibration, maintenance, and preparing and running samples.
- Sample VOC traps and perform subsequent GC-MS analysis.
- Lead data processing of soil and plant VOC emissions and uptake alongside contextual variables.
- Contribute to the determination of how the ‘social’ attitude of plants influences plant communication using VOC measurements.

### Knowledge Skills and Abilities:

- Ability to communicate effectively in interdisciplinary teams.
- Knowledge of instrumentation trouble-shooting and maintenance.
- Skills in data analysis using R, matlab, python, Igor, or another scientific programming language.
- Knowledge or related skills with proton transfer reaction time of flight mass spectrometers (PTR-TOF-MS), or MS broadly.
- Ability to self-motivate and manage time effectively.

### Minimum Qualifications

- Master degree, upon hire, in related science field with sufficient technical research experience with demonstrated scientific accomplishments (possibly) including publication of research results in peer-reviewed journals.

- Some experience with advanced analytical instrumentation including, for example, mass spectrometry-based volatile detection and custom automated measurement systems.
- Experience with data analysis and interpretation through scientific programming language(s).

#### Preferred Qualifications

- Experience with concepts and techniques in volatile organic compounds and ecosystem.
- Experience with mass spectrometry.
- Experience with plant-plant interactions.

If interested, please contact Prof. Umberto Castiello ([umberto.castiello@unipd.it](mailto:umberto.castiello@unipd.it))