

Curriculum Vitae – Dr. Chiara Petroselli

Researcher unique identifier (ORCID): 0000-0003-2281-6142

Professional Experience:

- 2023 – 2024: Research Fellow, University of Perugia (Italy)
2022 – 2023: Research Fellow, University of Perugia (Italy)
2019 – 2021: Research Fellow, University of Southampton (UK)
2018 – 2019: Research Fellow, University of Perugia (Italy)

Education:

- 2014 – 2018: PhD in Chemical Sciences, University of Perugia (Italy), [SSD: CHIM/12]
PhD Thesis title: “*Physical and chemical characterisation of Saharan dust transported in the central Mediterranean area: climatology and focuses on intense intrusion events*”
2012 – 2014: Master Degree (MsC) in Chemical Sciences, University of Perugia (Italy), [LM-54]
Final grades: 110/110 *cum laude* (MsC award date 24/07/2014)
Thesis topics: environmental chemistry, atmospheric aerosol, Saharan dust
2009 – 2012: Bachelor Degree (BD) in Chemistry, University of Perugia (Italy), [L-27]
Final grades: 110/110 *cum laude* (BD award date 27/09/2012)
Thesis topics: solid-phase PAHs fluorimetry method development

Research Experience:

Environmental analytical chemistry. Quantification of trace elements (ICP-OES, ICP-MS) and soluble fraction (ion chromatography) in various environmental matrices (atmospheric aerosol, water, snow, soil, biologic plant and animal material). Metals speciation and coordination in different environmental (aerosol, snow) and biological (plant organs) matrices. Nutrients dynamics in soil and plant-soil interactions, relevant to agricultural activities.

Fieldwork experience in aerosol sampling in urban, rural and Arctic environments: operating sampling instruments, handling various types of filters (quartz fiber, polycarbonate, Teflon, sterilized filters for microbiological sampling), aerosol vertical profiles measurements using tethered balloon systems. Fieldwork experience in snow sampling in Arctic environments: snow-pit excavation, stratigraphy assessment and snow sampling, samples preservation and pre-processing.

Publications:

1. Walker et al. 2022 “*The impact of xylem geometry on olive cultivar resistance to Xylella fastidiosa: An image-based study*” *Plant Pathology*, <https://doi.org/10.1111/ppa.13674>
2. Bruschi et al. 2022 “*Chemical characterisation of natural and anthropogenic inputs of dust in the seasonal snowpack (2017-2020) at Calderone Glacier (Gran Sasso d'Italia)*” *Environmental Chemistry*, <https://doi.org/10.1071/EN22017>
3. Williams et al. 2022 “*A 3D image-based modelling approach for understanding spatiotemporal processes in phosphorus fertiliser dissolution, soil buffering and uptake by plant roots*” *Scientific Reports*, <https://doi.org/10.1038/s41598-022-19047-1>
4. Cappelletti et al. 2022 “*Vertical profiles of black carbon and nanoparticles pollutants measured by a tethered balloon in Longyearbyen (Svalbard islands)*” *Atmospheric Environment*, <https://doi.org/10.1016/j.atmosenv.2022.119373>
5. Gravina et al. 2022 “*Geochemical Proxies and Mineralogical Fingerprints of Sedimentary Processes in a Closed Shallow Lake Basin Since 1850*” *Aquatic Geochemistry*, <https://doi.org/10.1007/s10498-022-09403-y>
6. Keyes et al. 2022 “*Multimodal correlative imaging and modeling of phosphorus uptake from soil by hyphae of mycorrhizal fungi*” *New Phytologist*, <https://doi.org/10.1111/nph.17980>
7. Moroni et al. 2021 “*Characteristics and Extent of Particulate Matter Emissions of a Ropeway Public Mobility System in the City Center of Perugia (Central Italy)*” *Atmosphere* 12, 1356 (2021), <https://doi.org/10.3390/atmos12101356>
8. Williams et al. 2021 “*Physical characterization of chia mucilage polymeric gel and its implications on rhizosphere science – Integrating imaging, MRI and modelling to gain insights into plant and*

- microbial amended soils*” *Soil Biology and Biochemistry* 162 (2021) 108404, <https://doi.org/10.1016/j.soilbio.2021.108404>
9. Beck et al. 2021 “*Differing mechanisms of new particle formation at two Arctic sites*” *Geophysical Research Letters* 28 (2021), issue 4, <https://doi.org/10.1029/2020GL091334>
 10. Petroselli et al. 2021 “*Characterization of long-range transported bioaerosols in the Central Mediterranean*” *Science of the Total Environment* 763 (2021) 143010, <https://doi.org/10.1016/j.scitotenv.2020.143010>
 11. Crocchianti et al. 2020 “*Spatiotemporal correlation of urban pollutants by long-term measurements on a mobile observation platform*” *Environmental pollution* 268 (2021) 115645, <https://doi.org/10.1016/j.envpol.2020.115645>
 12. Petroselli et al. 2020 “*Space and Time-Resolved Monitoring of Phosphorus Release from a Fertilizer Pellet and its Mobility in Soil Using Microdialysis and X-ray Computed Tomography*” *Soil Science Society of America Journal* 2021; 1-12, <https://doi.org/10.1002/saj2.20161>
 13. Petroselli et al. 2020 “*Iron speciation in different Saharan dust advections and effect of the procedural blank on the results from X-ray Absorption Spectroscopy and selective leaching experiments*” *Atmosphere* 2020, 11, 735, <https://doi.org/10.3390/atmos11070735>
 14. Tositti et al. 2020 “*Deposition processes over complex topographies: experimental data meets atmospheric modeling*” *Science of the Total Environment* 744, 140974 <https://doi.org/10.1016/j.scitotenv.2020.140974>
 15. Ruiz et al. 2020 “*Image-based quantification of soil microbial dead zones induced by nitrogen fertilization*” *Science of the Total Environment* 727, 138197, <https://doi.org/10.1016/j.scitotenv.2020.138197>
 16. McKay Fletcher et al. 2019 “*Linking root structure to functionality: the impact of root system architecture on citrate-enhanced phosphate uptake*” *New Phytologist* 227, 376-391, <https://doi.org/10.1111/nph.16554>
 17. Goretti et al. 2019 “*Heavy metal bioaccumulation in honey bee matrix, an indicator to assess the contamination level in terrestrial environments*” *Environmental Pollution* 256, 113388, <https://doi.org/10.1016/j.envpol.2019.113388>
 18. Selvaggi et al. 2019 “*Evaluation of geochemical baselines and metal enrichment factor values through high ecological quality reference points: a novel methodological approach*” *Environmental Science and Pollution Research* 27, pages 930-940, <https://doi.org/10.1007/s11356-019-07036-3>
 19. Moroni et al. 2019 “*Potential source contribution function analysis of long-range transported aerosols in the Central Mediterranean: a comparative study of two background sites in Italy*” *Rendiconti Lincei. Scienze Fisiche e Naturali* 30, pages 337-349, <https://doi.org/10.1007/s12210-019-00792-x>
 20. Petroselli et al. 2018 “*Iron Speciation of Natural and Anthropogenic Dust by Spectroscopic and Chemical Methods*” *Atmosphere* 10, 8, <https://doi.org/10.3390/atmos10010008>
 21. Petroselli et al. 2018 “*Disentangling the major source areas for an intense aerosol advection in the Central Mediterranean on the basis of Potential Source Contribution Function modeling of chemical and size distribution measurements*” *Atmospheric Research* 204, 67-77, <https://doi.org/10.1016/j.atmosres.2018.01.011>
 22. Federici, Petroselli et al. 2018 “*Airborne bacteria and persistent organic pollutants associated with an intense Saharan dust event in the Central Mediterranean*” *Science of the Total Environment* 645, 401-410, <https://doi.org/10.1016/j.scitotenv.2018.07.128>
 23. Goretti et al. 2018 “*Mustelids as bioindicators of the environmental contamination by heavy metals*” *Ecological Indicators* 94, 320-327, <https://doi.org/10.1016/j.ecolind.2018.07.004>

Awards:

- International Brian Chambers Award 2020 for Early Career Researchers’ Achievements in Crop Nutrition, International Fertiliser Society (IFS). Overall winner with the study “*Fertiliser granules release all the phosphorus shortly after soil wetting: a high-resolution spatiotemporal study*”

Affiliations:

- Member of the Italian Chemical Society (SCI) since 2017
- Member of the Italian Aerosol Society (IAS) since 2015