

Federica Bruschi

PhD Candidate in Chemical Sciences

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Education

Ph.D. in Chemical Sciences

Nov 2020 – In progress

University of Perugia (Italy)

Dissertation: *Analytical method development and instrument inter-comparison for stable isotope ratios and trace elements in biogeochemical matrices*

SSD: CHIM/01

MsD in Chemical Sciences

[LM-54]

Oct 2018 - Jul 2020

University of Perugia (Italy)

Thesis topic: *chemical characterization and comparison of snow and firn from low and high latitudes exposed to the sea*

Final Grade: 110/110 cum laude

BD in Chemistry

[L-27]

Oct 2015 - June 2018

University of Perugia (Italy)

Thesis topic: *chemical characterization of snow samples from the Calderone Glacier*

Final Grade: 110/110 cum laude

Experiences in external Institutes

Ghent (Belgium)

15th Sep 2022 – 15th Mar 2023

A&MS Group, Ghent University

- Advanced methods for isotopic analyses
- MC-ICP-MS and Time-of-Flight measurement
- Chromatographic isolation procedures
- Work in a class 10 clean laboratory (metal-free)

Venice (Italy)

8th Nov 2021 – 5th Dec 2021

CNR – ISP (Polar Sciences Institute)

- Extraction of organic compounds from aerosol filters
- Work in clean laboratories (metal-free and organic-free)

Research Experience

Environmental and analytical chemistry. Experience in measuring ultra-trace elements (ICP-MS QQQ), soluble fraction (Ion Chromatography) and Sr and Pb stable isotope ratios in different environmental matrixes (water, snow, ice, soil, atmospheric aerosol plants and animal samples). Method developing experience for ICP-MS QQQ and little experience (with supervision) in isotopic analysis with MC-ICP-MS and ToF ICP-MS.

Fieldwork experience in sampling aerosol in background and Arctic environment with different types of instruments and filters (quartz fibers, PTFE filters, polycarbonate filters). Snow sampling experience in mountain and Arctic environment (snow-pit excavation, stratigraphy assessment, density measurements, high and low spacial resolution sampling and preservation).

Preprocessing of different matrixes (freeze-drying, grinding, resuspension of soils, microwave-assisted digestion) and chromatographic isolation procedures.

Publications

1. Goretta et al., 2023 "Bioaccumulation of Trace Elements along the Body Longitudinal Axis in Honey Bees", Appl. Sci. 13, 6918, <https://doi.org/10.3390/app13126918>

2. Cappelletti et al., 2023 “Long-range transport and deposition on the Arctic snowpack of nuclear contaminated particulate matter” *Journal of Hazardous Materials* 452, 131317, <https://doi.org/10.1016/j.jhazmat.2023.131317>
3. 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>
4. Gravina et al. 2022 “Sources and trends of trace elements and polycyclic aromatic hydrocarbons in a shallow lake in the Mediterranean area from sediment archives of the Anthropocene” *Environmental Science and Pollution Research*, <https://doi.org/10.1007/s11356-022-22939-4>
5. 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>
6. Spolaor et al., 2020 “Investigation on the Sources and Impact of Trace Elements in the Annual Snowpack and the Firn in the Hansbreen (Southwest Spitzbergen)” *Frontiers in Earth Science* 8, 536036, doi: 10.3389/feart.2020.536036

Research Expeditions

Ny-Ålesund (Svalbard Island)
25th Oct 2020 – 19th Jan 2021

Acting Station Leader for the Italian Research Station (Dirigibile Italia)

- Logistic responsibility
- Snow and aerosol samplings

Ny-Ålesund (Svalbard Island)
07th Jul 2019 – 27th Aug 2019

Acting Station Leader for the Italian Research Station (Dirigibile Italia)

- Logistic responsibility
- Support of other groups’ research activity and fieldwork (aerosol sampling, water sampling, cryoconite samplings, permafrost sampling, on-site measurements of CO₂ fluxes)

Supervision activities

- 2022 – Co-supervision of Davide Gandolfo’s experimental Bachelor Thesis on the characterization of the chemical composition of the dust depositions on the needles of *cedrus atlantica* in a regional background site;
- 2022 – Co-supervision of Marco Massetti and Alex Lorenzo Rotoloni’s experimental Bachelor Thesis both focused on the chemical characterization of resuspended soils, respectively coming from Australia-Patagonia regions and the Arctic region;
- 2021 – Co-supervision of Letizia Trovarelli’s experimental Bachelor’s Thesis on the characterisation of the soluble fraction of Monte Martano’s aerosol.

Conferences – Oral Presentations

1. *SCI-TUMA 2022 – 38th Meeting of the Italian Chemical Society of Toscana, Umbria, Marche and Abruzzo*, Perugia (Italy), Sep 2022
“Study of the evolution of the anthropogenic impact on the Trasimeno lake (Central Italy) using lead isotopic ratios and trace elements concentrations”
2. *SCI-ABC 2022 – 19th National Conference of the Environmental and Cultural Heritage Chemistry division of the Italian Chemical Society*, Torino (Italy), Jun 2022
“Study of the evolution of the anthropogenic impact on the Trasimeno lake (Central Italy) using lead isotopic ratios and trace elements concentrations”
3. *Italian Aerosol Society Working Group 4 – First Italian workshop on Aerosol in mountain sites*, Falcade (Italy), Sep 2021
“Comparison between chemical and physical characterization of the seasonal snowpack (2017-2021) at Calderone Glacier (Gran Sasso d'Italia) and atmospheric aerosol sampled on Monte Martano (Central Appennine)”
4. *DUST 2021 – 4th International Conference on Atmospheric Dust*, online conference, Oct 2021

“Chemical and physical characterization of the seasonal snowpack (2017-2020) at Calderone Glacier (Gran Sasso d'Italia)”

5. *24th Alpine Glaciology Meeting*, online conference, Mar 2021

“Chemical and physical characterization of the seasonal snowpack (2017-2020) at Calderone Glacier (Gran Sasso d'Italia)”

Conferences – Poster Presentations

1. *IUGG 2023 – 28th General Assembly of the International Union of Geodesy and Geophysics*, Berlin (Germany), Jul 2023

“Chemical characterization of Arctic resuspended soils using trace elements and Sr and Pb isotope ratios”

2. *European Winter Conference on Plasma Spectrochemistry (EWPCS) 2023*, Ljubljana (Slovenia), Jan 2023

“Determination of trace elements and Sr and Pb isotope ratios in Arctic resuspended soils by tandem ICP-MS and MC-ICPMS”

Public outreach experience

- 26th Dec 2020 - Interview for the program “Linea Bianca” live on Rai 1 and streaming on RaiPlay from the Italian Arctic Research Station
- 17th Dec 2020 – Interview for the radio program “Moka” live on Rai Radio 1 from the Italian Arctic Research Station
- 12th Dec 2020 – Interview for the 8th edition of “Rome Maker Faire” (live on Youtube) from the Italian Arctic Research Station.
- 23rd Sep 2021 – Coordinator of the open lab “Arctic Quest” during the European Researcher’s Night 2021 in Perugia (Italy). Presentation of self-made videos concerning polar research activities and the Arctic environment and quiz game about climate change and arctic amplification.
- 28th Sep 2018 – participation to open lab “Esplorando il Polo Nord” during the European Researcher’s Night 2018. Exhibition of posters and photos on Climate Change, Arctic Amplification, polar research activities and researchers’ life at the North Pole. Q&A with the researchers from Perugia

Language skills

- Italian: mother tongue
- English: Independent user (B2)

Perugia, _____

Signature
