

# *Piergiorgio Moschini*

02/04/1994, Rome (Italy)

Department of Earth Sciences, Sapienza University of Rome

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*Curriculum Vitae*

## EDUCATION AND TRAINING

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*2019-present*: **Ph.D. student (XXXV cycle)** in Earth Sciences, Sapienza University of Rome (Rome, Italy). “Volcanic hazard assessment at Mt. Etna: A time integrated, polybaric and polythermal perspective”.

*24/10/2019*: **Master’s degree** in Exploration Geology at Sapienza University of Rome (Rome, Italy) with a final score of 110/110 cum laude.

- Thesis in “Fluids, Rocks and Environmental Radioactivity”:  
“Radon signal vs CO<sub>2</sub> flux from natural to laboratory conditions:  
The case study of Nisyros volcano (Aegean arc, Greece)”.

- Thesis abstract:

The geochemical behavior of radon has been investigated at Nisyros volcano (Aegean arc, Greece) during a field campaign of 17 days (March-April 2019) in which <sup>220</sup>Rn + <sup>222</sup>Rn activity concentrations and CO<sub>2</sub> fluxes have been measured. Single point analyses and chemical maps indicate that the intense volcanic activity induced rock fracturing and opening of rock discontinuities that facilitate CO<sub>2</sub> degassing. The characteristic high concentrations of radon over high CO<sub>2</sub> fluxes reflect gas migration through highly fractured materials. This property can turn fault zones into preferential pathways for advective CO<sub>2</sub>-carrying fluid transport. These natural data have been integrated with further laboratory investigations on different volcanic materials in which the radon signal has been analyzed under different conditions of CO<sub>2</sub> flux. Low <sup>220</sup>Rn

concentrations measured in correspondence to high CO<sub>2</sub> fluxes suggest that the ascending deep gas dilutes the radon atoms. This inverse correlation is addressed to substantial rock fracturing and connected porosity, so that the CO<sub>2</sub> flux is high enough to overwhelm the source of radon radionuclides.

*30/03/2017:* **Bachelor's degree** in Geological Sciences at Roma Tre University (Rome, Italy) with a final score of 101/110.

- Thesis in “Georesources and Geomaterials”:  
“Heating experiments on lazurite”.

- Thesis abstract:

An experimental work was carried out in order to analyze the thermal behavior of natural lazurite (a constituent mineral of lapislazzuli) via vibrational spectroscopic techniques (Raman spectroscopy and IR spectroscopy).

## RESEARCH EXPERIENCE

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*11/2020:* Visiting researcher at the institute for geochemistry and petrology at ETH Zürich (Zürich, Switzerland). Microanalysis with laser ablation-inductively coupled mass spectrometry (LA-ICP-MS) on experimental and natural products.

*01-03/2020:* Visiting researcher at the Institute of Mineralogy at the Georg August University of Göttingen (Göttingen, Germany). Experimental sessions (isothermal-isobaric and decompression-cooling experiments) using an internally heated pressure vessel (IHPV).

*2019-present:* Visiting researcher at High Pressure High Temperature Laboratory of Experimental Volcanology and Geophysics, National Institute of Geophysics and Volcanology (INGV), Rome, Italy. 1) Microanalysis with Field Emission Scanning Electron microscope (FE-SEM) and Electron Probe Micro Analyzer (EPMA) on

experimental and natural products; 2) Use of vertical tube gas-mixing furnace and piston cylinder (QuickPress-type).

- 05-07/2019:* Visiting researcher at High Pressure High Temperature Laboratory of Experimental Volcanology and Geophysics, National Institute of Geophysics and Volcanology (INGV) (Rome, Italy). Analytical (FE-SEM, EPMA) and experimental (vertical tube CO-CO<sub>2</sub> gas mixing furnace) sessions on natural samples collected at Nisyros Island.
- 05-07/2019:* Visiting researcher at the Laboratory of Experimental Volcanology and Petrology (EVPLab) of University of Roma Tre (Rome, Italy). Raman spectroscopy analyses of glass inclusions in pyroxenes from Tufo del Palatino and Tufo Lionato (Alban Hills; central Italy).
- 03-04/2019:* Field researcher at Nisyros Island (Nisyros, Greece) within a project funded by the ETH-Zurich. Tracking of CO<sub>2</sub> fluxes and Radon emissions on the volcanic ground surface.

## AWARDS

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- Outstanding student within the “Honour Programme” at Sapienza-University of Rome (Rome, Italy). “Quantification of H<sub>2</sub>O concentrations by Raman spectroscopy over glassy scoria and melt inclusions of foiditic samples from Alban Hills Volcanic District”.

## PUBLICATIONS

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- Bini, G., Chiodini, G., Lucchetti, C., Moschini, P., Caliro, S., Mollo, S., Selva, J., Tuccimei, P., Galli, G., Bachmann, O., 2020. Deep versus shallow sources of CO<sub>2</sub> and Rn from a multi-parametric approach: the case of the Nisyros caldera (Aegean Arc, Greece). *Sci Rep* 10.
- Moschini, P., Mollo, S., Gaeta, M., Fanara, S., Nazzari, M., Petrone, C.M., Scarlato, P., 2021. Parameterization of clinopyroxene growth kinetics via crystal size distribution (CSD) analysis: Insights into the temporal scales of magma dynamics at Mt. Etna volcano. *Lithos* 396–397, 106225.

- Mollo, S., Moschini, P., Galli, G., Tuccimei, P., Lucchetti, C., Iezzi, G., Scarlato, P., 2021. Carrier and dilution effects of CO<sub>2</sub> on thoron emissions from a zeolitized tuff exposed to subvolcanic temperatures. R. Soc. open sci. 8.

## TEACHING EXPERIENCE

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*2021:* Teaching assistant in the class “Fluids, Rocks and Environmental Radioactivity” for M.Sc. students at Department of Earth Sciences, Sapienza University of Rome (Rome, Italy).

*2020:* Bachelor’s degree thesis co-advisor.

“Analisi micro-tessiturale delle fontane dell’Etna: Implicazioni per la stima delle velocità di risalita del magma nel condotto vulcanico”

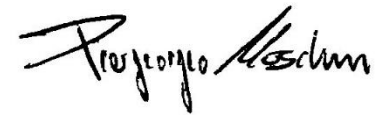
*2019:* Teaching assistant in the class “Fluids, Rocks and Environmental Radioactivity” for M.Sc. students at Department of Earth Sciences, Sapienza University of Rome (Rome, Italy).

## PERSONAL AND TECHNICAL SKILLS

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- Mother tongue: Italian
- Other languages: English (good reading-writing-verbal skills)
- Good knowledge of Windows-Linux/Unix-Mac OS computer systems.
- Good knowledge of Microsoft Word/Excel/PowerPoint.
- Good knowledge of MATLAB©.
  
- List of analytical tools and techniques I am familiar with:
  - Raman spectroscopy;
  - Infrared spectroscopy;
  - Electron probe microanalysis (EPMA);
  - Field emission gun-scanning electron microscopy (FE-SEM);
  - RAD7 radon detector;
  - CO<sub>2</sub> flux accumulation chamber;
  - Vertical tube CO-CO<sub>2</sub> gas mixing furnace;
  - Piston-cylinder apparatus;
  - Internally heated pressure vessel;
  - Laser ablation-inductively coupled plasma-mass spectrometry

(LA-ICP-MS).

A handwritten signature in black ink, reading "Piergiorgio Moschini". The signature is written in a cursive style with a large initial 'P' and a distinct 'M'.