

Piergiorgio Moschini

02/04/1994, Rome (Italy)

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Curriculum Vitae

EDUCATION AND TRAINING

2019-present: **Ph.D. student** 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** magna cum laude in Exploration Geology at Sapienza University of Rome (Rome, Italy).

- Thesis in “Fluids, Rocks and Environmental Radioactivity”:
“Radon signal vs CO₂ 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 ²²⁰Rn + ²²²Rn activity concentrations and CO₂ 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 CO₂ degassing. The characteristic high concentrations of radon over high CO₂ fluxes reflect gas migration through highly fractured materials. This property can turn fault zones into preferential pathways for advective CO₂-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 CO₂ flux. Low ²²⁰Rn

concentrations measured in correspondence to high CO₂ 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 CO₂ 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 lapislazuli) via vibrational spectroscopic techniques (Raman spectroscopy and IR spectroscopy).

RESEARCH EXPERIENCE

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). Use of vertical tube gas-mixing furnace and piston cylinder (QuickPress-type).

2019-present: Visiting researcher at High Pressure High Temperature Laboratory of Experimental Volcanology and Geophysics, National Institute of Geophysics and Volcanology (INGV), Rome, Italy. Microanalysis with Field Emission Scanning Electron

microscope (FE-SEM) and Electron Probe Micro Analyzer (EPMA) on experimental and natural products.

- 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-CO₂ 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 CO₂ fluxes and Radon emissions on the volcanic ground surface.

AWARDS

- Outstanding student within the “Honour Programme” at Sapienza-University of Rome (Rome, Italy). “Quantification of H₂O concentrations by Raman spectroscopy over glassy scoria and melt inclusions of foiditic samples from Alban Hills Volcanic District”.

PUBLICATIONS

- 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 CO₂ and Rn from a multi-parametric approach: the case of the Nisyros caldera (Aegean Arc, Greece). Sci Rep 10.

TEACHING EXPERIENCE

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

- 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;
 - CO₂ flux accumulation chamber;
 - Vertical tube CO-CO₂ gas mixing furnace;
 - Piston-cylinder apparatus;
 - Internally heated pressure vessel.