CURRICULUM VITAE ET STUDIORUM

MAURIZIO PETRELLI (PhD)

PERSONAL DATA

name: Maurizio Petrelli

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current position: Associate Professor, SSD: petrology, University of Perugia

RESUME

Maurizio Petrelli works as an Associate Professor in Petrology and Volcanology at the Department of Physics and Geology, University of Perugia (UNIPG). He focuses the research on the petrological and geochemical characterization of volcano products with emphasis on dynamics and time scales of pre-eruptive events. To do that, He combines classical petrological and geochemical methods with Machine Learning based approaches. Since 2002, He has carried out intense laboratory work mainly focused on the development of the Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) analytical facility @UNIPG. Maurizio Petrelli serves American Mineralogist and Artificial Intelligence in Geosciences as Associate Editor. Currently, He leads the research group @UNIPG, Department of Physics and Geology, for the application of Machine Learning techniques in Earth Sciences, and He is part of the Ph.D. board in Earth System and Global Changes. Also, Maurizio Petrelli acts as scientific manager of the LA-ICP-MS laboratory @UNIPG. Recently, He achieved the habilitation as Full (I Fascia) professor by the "Ministero dell'Istruzione Ministero dell'Università e della Ricerca (MIUR)." Over the past five years, Maurizio Petrelli has published more than 50 articles in high-ranking international scientific journals (current h-index of 28), and He has secured approximately 1M€ in competitive funding. Additionally, recognized researchers have invited Maurizio Petrelli to speak about machine learning, petrology, and volcanology at international conferences and prestigious academic institutions.

PUBLICATION METRICS: NUMBER OF PUBLICATIONS, H-INDEX

123, 28 – SCOPUS (https://goo.gl/su2PJ9)

EDUCATION AND HABILITATIONS

May 2021 – **Habilitation to the role of Full Professor in Italy** – Italian "Ministero dell'Istruzione dell'Università e della Ricerca (MIUR)"

April 2017 – **Habilitation to the role of Associate Professor in Italy**– Italian "Ministero dell'Istruzione dell'Università e della Ricerca (MIUR)"

February 2006 – **Ph.D. Degree in Earth Sciences** – University of Perugia, Italy
Thesis: "Transition to chaos and implications for time-scales of magma hybridization during mixing processes in magma chambers". *Supervisor:* Prof. G. Poli

July 2001 – **Master Degree in Geology** – University of Perugia, Italy – 110/110 cum laude
Thesis: "Determination of travertine provenance from ancient buildings using self-organizing maps and fuzzy logic". *Supervisor:* Prof. G. Poli

PROFESSIONAL APPOINTMENTS

Dec 2021 – Now — University of Perugia: **Associate Professor**
Scientific Activities: Geochemical and Petrological investigations to infer pre-eruptive dynamics and the processes leading to magma storage and transfer in volcanic plumbing systems, with implications to volcanic hazard assessment and the economy of critical raw materials. Unveiling potentials and limitations of Machine Learning techniques in geochemical and petrological applications. LA-ICP-MS Laboratory leader. He has developed and directed the LA-ICP-MS lab since 2002.

Dec 2018 – 2021 — University of Perugia: **Researcher, tenure track (3 years)**
Scientific Activities: Petrological, volcanological and geochemical characterization of magmatic systems with emphasis on time-scales estimates of magmatic processes. Application of Machine Learning techniques to

petrological and volcanological studies. LA-ICP-MS Laboratory leader.

Aug 2015 – 2023 Istituto Nazionale di Fisica Nucleare (INFN): **Scientific Association**
Scientific Activities: Petrological and geochemical study of meteorite samples to unravel their origin and evolution.

Aug 2014 – Dec 2018 University of Perugia: **Researcher, fixed term (3 + 2 years)**
Scientific Activities: Unravel the petrologic evolution and process time scales of volcanic plumbing systems by combining numerical simulations, experimental petrology, and geochemical investigations on natural samples. During this period, he started exploring the application of Machine Learning techniques in petrology and geochemistry. LA-ICP-MS Laboratory leader.

Nov 2010 – Aug 2013 Out from the Academia: a personal choice to better take care of his three daughters: two just-born twins-daughters named Anna and Caterina (April 2009), and Agata who was the 'elder' (Nov 2005). During this period, he self-trained in Python programming and worked as an 'entrepreneur' in the field of web development and marketing.

Nov 2005 – Nov 2009 University of Perugia: **Post Doc Fellow**
Scientific Activities: Study of trace elements mobility in igneous systems and implications on time scales of magma storage and transfer in volcanic plumbing systems. LA-ICP-MS Laboratory main developer.

Dec 2003 – Jan 2004 ENEA: **Contract Researcher:** XIX Italian Antarctic Expedition
Scientific Activities: Study of the magma mixing process in the Northern Foothills and Dry Valleys (Victoria Land) areas.

Nov 2001 – Nov 2005 University of Perugia: **PhD student**
Ph.D. Project: "Transition to chaos and implications for time-scales of magma hybridization during mixing processes in magma chambers". LA-ICP-MS Laboratory main developer. *Supervisor:* Prof. G. Poli

RECENT FUNDINGS ACHIEVEMENTS

2024 - 2025

Project title: "VOLC-LAPSE: Exploring uncharted realms of volcanic eruptions using experimental petrology and ground deformation data"

Funding Scheme: MUR – PNRR – Return (Multi-risk science for resilient communities under a changing climate) extended partnership – Spoke 3 – Earthquake and volcanoes – Cascade Funding

Role: **Co-Principal Investigator** – Budget: 350.000 €

2024 - 2025

Project title: "AI-VISIO-LAB: Prototyping an Immersive Platform for Scientific Big Data Processing and Visualization in Astrophysics and Planetary Geology"

Funding Scheme: MUR – PNRR – ICSC (National Research Center for High-Performance Computing, Big Data, and Quantum Computing) – Spoke 3 – Astrophysics and Cosmos Observation

Role: **Principal Investigator** – Budget: ~200.000 €

2024 - 2025

Project title: "Civil Safety and Security for Society"

Funding Scheme: University of Perugia, base research funding

Role: **WP leader** – Total Budget: 450.000 € - WP Budget: 120.000 €

2024 - 2026

Project title: COMET - Consolidating the radiocarbon calibration over the 12-40 ka interval using paired 14C and 40Ar/39Ar dating of Mediterranean tephra

Funding Scheme: MUR-PRIN

Role: **Unit Leader** – Total Budget: 229.824 € - Unit Budget: ~100.000 €

2024 - 2026

Project title: Volcanoes for Cryosphere and Atmosphere (VolCA) - Volcano plumbing systems and eruptions in northern Victoria Land: implications for ice cover and atmospheric circulation

Funding Scheme: MUR-PNRA

Role: **Unit Leader** – Total Budget: ~300.000 € - Unit Budget: ~100.000 €

2023 - 2024

Project title: "Study of Multi-Hazard Scenarios for Natural Disasters in Central-Southern Italy and Sicily: Understanding the Past and Present to Protect the

Future"

Funding Scheme: University of Perugia, base research funding

Role: **Principal Investigator** – Budget: ~95.000 €

DEVELOPMENT OF ANALYTICAL FACILITIES

Nov 2002 – Now

University of Perugia: **Development of the LA-ICP-MS Laboratory**

Laboratory Activities: Development of the Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) laboratory. In 2001, he started the development of the LA-ICP-MS laboratory at the Department of Geology, University of Perugia. Since 2002, he has led the development of the LA-ICP-MS facility at the University of Perugia with activities that include the maintenance of the instrumentations, the development of analytical protocols, the analysis of natural and experimental samples, and the support of external users during the analysis. Currently, the LA-ICP-MS lab in Perugia hosts two LA-ICP-MS systems and it is actively involved in several scientific projects.

PROGRAMMING SKILLS

Proficient in Python programming. He is the author of two books on the topic, both with Springer: “Introduction to Python in Earth Science Data Analysis: From Descriptive Statistics to Machine Learning” (2021; https://doi.org/10.1007/978-3-030-78055-5) and “Machine Learning for Earth Sciences: Using Python to Solve Geological Problems” (2023; https://doi.org/10.1007/978-3-031-35114-3)

TEACHING ACTIVITY

2023– now

University of Perugia, Bachelor’s degree in Geological Sciences. Teaching course in “Petrography” – 9 ETCS

2019 – now

University of Perugia, Master’s degree in Geological Sciences and Technologies. Teaching course in “Introduction to experimental petro-volcanology” – 6 ETCS

2019 – now	University of Perugia, Master's degree in Geological Sciences and Technologies. Teaching course in "Mathematical methods in Earth Sciences " – 6 ETCS
2016 – now	University of Perugia, PhD's level International Short Course on "Application of Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) to Earth Sciences" – 3 ETCS
2022 – now	University of Perugia, PhD's level International Short Course on "Machine Learning for Data Analysis, and Image Classification in the Earth Sciences" – 3 ETCS
May 2023	Department of Petrology & Geochemistry, Eötvös University Budapest (ELTE), Short course in "Machine Learning in Earth Sciences" – 18 hours
Feb 2023	Leibniz Universität Hannover Institut für Mineralogie, Short course in "Machine Learning in Earth Sciences" – 18 hours
May 2022	Institute of Research in Volcanology and Risk Assessment, University of the Azores, Short course in "Introduction to Python Programming in Earth Sciences" – 18 hours
Feb 2020	Leibniz Universität Hannover Institut für Mineralogie, Short course in "Introduction to Python Programming in Earth Sciences" – 18 hours
Dec 2018	Department of Petrology & Geochemistry, Eötvös University Budapest (ELTE), Short course in "Introduction to Python Programming in Earth Sciences" – 18 hours

2017 – 2019 University of Perugia, Master's degree in Geological Sciences and Technologies. Teaching course in "Data analysis and data interpretation in geological sciences" – 6 ETCS

2015 – 2016 University of Perugia, Master's degree in Geological Sciences and Technologies. Teaching course in "Igneous Petrology" – 6 ETCS

RELEVANT SCIENTIFIC TALKS AND SEMINARS

2024 – Invited Talk at Goldschmidt2024 (On-site, Chicago). Session: "25 years of GEOROC and PetDB: the past, present and future of research with global geochemical databases". Talk title: "Modern Igneous Petrology Needs More, High-Quality, Data: A Tribute to GEOROC and PetDB"

2024 – Scientific Talk at EGU2024 (On-site, Wien). Session: "Old and new methods in solid Earth sciences, from geochronology to machine learning, from Archean to present". Talk title: "Machine Learning in Igneous Petrology and Volcanology: State-of-the-Art and Perspectives"

2024 – Invited Talk at the Machine Learning in Solid Earth Geoscience Conference organized by the Center for NonLinear Studies at Los Alamos National Laboratory (On-site, Santa Fe). Talk title: "Machine Learning in Petrology and Volcanology"

2023 – Invited Scientific Seminars and Lectures at the China University of Geosciences and Zhejiang University (On-site, Beijing and Hangzhou). Seminar title: "Machine Learning Applications in Petrology and Volcanology: State-of-the-Art and Perspectives"

2019 – Keynote Scientific Talk at Joint SIMP, SGI, and SOGEI Congress (On-site, Parma). Session: "New Developments and Challenges in Volcanology: Insights from Experimental, Analytical and Field Studies". Talk title: "Volcanic plumbing system dynamics: unraveling rates and timescales of magma transfer, storage, and eruption"

AWARDS

2016 - Microsoft Azure Research Award (CRM:0518576), Microsoft Corporation.

2006 – *PhD Thesis Award:* Società Italiana di Mineralogia e Petrografia (SIMP).

2002 – *Master Thesis Award:* Associazione "per un sorriso Monica De Carlo" – ONLUS.

COMMUNITY INVOLVEMENT SINCE 2015

2023 – Now	Artificial Intelligence in Geosciences (Elsevier), **Associate Editor**
2020 – Now	American Mineralogist (Min. Soc. of America), **Associate Editor**
2015 – 2019	American Mineralogist, **Guest Associate Editor** for the special collection "Dynamics of Magmatic Processes".
Dec 2023	**Organizer** of a thematic session at the AGU Fall Meeting in San Francisco (USA): "Data-Driven Science Applied to Magmatic and Volcanic Systems".
Jul 2022	**Organizer** of a thematic session at the Goldschmidt 2022 in Honolulu (USA): "From source to surface: Characterizing magma generation and ascent processes from the rock record".
Jun 2020	**Organizer** of a thematic session at the Goldschmidt 2020 in Virtual mode: "Constraining Petrological and Geochemical Variations in Magmas to Capture the Evolution of Volcanoes over Space and Time".
May 2020	**Organizer** of a thematic session at the EGU General Assembly in Virtual mode: "The Dynamics of Magmatic Plumbing System".
Apr 2019	**Organizer** of a thematic session at the EGU General Assembly in Vienna (Austria): "Rates, timescales and mechanisms of magmatic and volcanic processes: from mantle source to emplacement or eruption".
Dec 2018	**Organizer** of a thematic session at the AGU Fall Meeting in Washington DC (USA): "Origin and Timescales of Magmatic Systems: Discussing Ages, Rates, Transport, and Storage Processes of Magmas from the Source to

Emplacement or Eruption".

Dec 2017 **Organizer** of a thematic session at the AGU Fall Meeting in New Orleans (USA): "Processes of Magma Crystallization from Depth to Surface".

Nov 2016 **Organizer** of a thematic session at the Cities on Volcanoes 9 in Puerto Varas (Chile): "Mind the Gap! Techniques to overcome multi-scale issues in geological and geomorphic processes".

Apr 2016 **Organizer** of a thematic session at the 2016 European Geosciences Union General Assembly in Vienna (Austria): " Mind the Gap! Techniques to overcome multi-scale issues in geological and geomorphic processes".

Aug 2015 **Organizer** of a thematic session at the 2015 Goldschmidt conference in Prague (Czech Republic): "Dynamics of Magmatic Processes: From Magma Mixing to Crystal Residence Time".

COOPERATION PARTNERS (R: long-standing research activities, P: current development of large-projects)

- Leibniz Universität Hannover (DE), Institut für Mineralogie: *Prof. Francois Holts* (R, P)
- University of Geneva (CH), Department of Earth Sciences: *Prof. Luca Caricchi* (R)
- Eötvös LoràND University of Budapest (HU), Department of Petrology and Geology: *Prof. Szabolcs Harangi* (R, P), *Dr. Réka Lukács* (R,P)
- Massey University (AU) School of Agriculture and Environment: *Prof. Georg Zellmer* (R)
- The University of Queensland (AU), School of the Environment: *Prof. Teresa Ubide* (R)
- KU Leuven (BE), Faculty of Science: *Prof. Olivier Namur* (P)
- University of Orleans, Institut des Sciences de la Terre: *Prof. Fabrice Gaillard* (P), *Prof. Kennet Koga* (P), *Dr. Giada Iacono Marziano* (P)
- Sorbonne Université (FR), Earth Science Institute Cnrs: *Dr. Balcone-Boissard Hèléne* (P)
- University of Pisa (IT), Department of Earth Sciences: *Prof. Sergio Rocchi* (R)
- National Institute of Geophysics and Volcanology (IT): *Dr. Chiara Montagna* (R), *Dr. Claudia D'Oriano* (R), *Dr. Ilenia Arienzo* (R), *Dr. Alessio Di Roberto* (R), *Dr. Paola del Carlo* (R), *Dr. Giuseppe Re* (R), *Dr. Laura*

Spina (R), *Dr. Giuseppe La Spina* (R)

- University of Camerino, Department of Earth Sciences (IT): *Dr. Fabio Arzilli* (R)
- University of Naples Federico II, Department of Earth Sciences (IT): *Prof. Massimo D'Antonio* (R), *Prof. Daniele Morgavi* (R), *Prof. Paola Petrosino* (R)
- University of Milano-Bicocca, Department of Earth and Environmental Sciences: *Prof. Alessandro Fabbrizio* (R)
- University of Parma (IT), Department of Chemical Sciences, Life Sciences, and Environmental Sustainability: *Prof. Sabrina Nazzareni* (R)
- University of Trieste, Department of Mathematics, Informatics and Geosciences: *Prof Davide Lenaz* (R)
- University of Perugia (IT), Department of Physics and Geology: *Prof. Diego Perugini* (R), *Prof. Francesco Frondini* (R)

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https://orcid.org/0000-0001-6956-4742

LIST OF BOOKS

1) **Petrelli M.** (2023). Machine Learning for Earth Sciences. *Springer*. DOI: 10.1007/978-3-031-35114-3
2) **Petrelli M.** (2021). Introduction to Python in Earth Science Data Analysis. *Springer*. DOI: 10.1007/978-3-030-78055-5

LIST OF PUBLICATIONS

Please refer to my Scopus record for quantitative metrics (https://goo.gl/su2PJ9)

1) **Petrelli M.** (2024). Machine Learning in Petrology: State-of-the-Art and Future Perspectives. *Journal of Petrology*, DOI: 10.1093/petrology/egae036
2) Ágreda-López M., Parodi V., Musu A., Jorgenson C., Carfì A., Mastrogiovanni F., Caricchi L., Perugini D., **Petrelli M.** (2024). Enhancing machine learning thermobarometry for clinopyroxene-bearing magmas. Computers & Geosciences, DOI: 10.1016/j.cageo.2024.105707
3) Lukács R., Guillong M., Szepesi J., Szymanowski D., Portnyagin M., Józsa S., Bachmann O., **Petrelli M.**, Müller S., Schiller D., Fodor L., Chelle-Michou C., Harangi S. (2024). Mid-Miocene silicic explosive

volcanism of the Tokaj Mts., eastern-central Europe: Eruption chronology, geochemical fingerprints and petrogenesis. *Gondwana Research*, DOI: 10.1016/j.gr.2024.01.004

4) Vetere F., Merseburger S., Pisello A., Perugini D., Viti C., **Petrelli M.**, Musu A., Almeev R., Caricchi L., Iezzi G., Cassetta M., Holtz F. (2024). The role of deformation on the early crystallization and rheology of basaltic liquids. *Earth and Planetary Science Letters*, DOI: 10.1016/j.epsl.2024.118934

5) Rocchi., Tomassini A., Masotta M., **Petrelli M.**, Ágreda López M., Rocchi S. (2024). Textures and Chemistry of Crystal Cargo of the Pleiades Volcanic Field, Antarctica: Potential Influence of Ice Load in Modulating the Plumbing System. *Journal of Petrology*, DOI: 10.1093/petrology/egae027

6) Pelullo C., Arienzo I., D'Antonio M., Giaccio B., Iovine R.S., Leicher N., Palladino D.M., **Petrelli M.**, Petrosino P., Russo Ermolli E., Sottili G., Totaro F., Zanchetta G. (2024). Explosive volcanic activity in Central-Southern Italy during Middle Pleistocene: A tale from tephra layers of the Acerno basin. *Quaternary Science Advances*, DOI: 10.1016/j.qsa.2024.100186

7) Petroccia A., Carosi R., Montomoli C., Iaccarino S., Forshaw J.B., **Petrelli M.** (2024). Transtension or transpression? Tectono-metamorphic constraints on the formation of the Monte Grighini dome (Sardinia, Italy) and implications for the Southern European Variscan belt. *International Journal of Earth Sciences*, DOI: 10.1007/s00531-024-02410-0

8) Mohanty S., Papadopoulos A., **Petrelli M.**, Papadopoulou L., Sengupta D. (2023). Geochemical Studies of Detrital Zircon Grains from the River Banks and Beach Placers of Coastal Odisha, India. *Minerals*, DOI: 10.3390/min13020192

9) Bonechi B., Fabbrizio A., Perinelli C., Gaeta M., **Petrelli M.** (2023). Experimental investigation of trace element partitioning between amphibole and alkali basaltic melt: Toward a more general partitioning model with implications for amphibole fractionation at deep crustal levels. *American Mineralogist*, DOI: 10.2138/am-2022-8536

10) Capriotti S., Medeghini L., Mignardi S., **Petrelli M.**, Botticelli M. (2023). The blue road: Provenance study of azurite samples from historical locations through the analysis of minor and trace elements. *Heliyon*, DOI: 10.1016/j.heliyon.2023.e19099

11) Di Roberto A., Re G., Scateni B., **Petrelli M.**, Tesi T., Capotondi L., Morigi C., Galli G., Colizza E., Melis R., Torricella F., Giordano P., Giglio F., Gallerani A., Gariboldi K. (2023). Cryptotephras in the marine sediment record of the Edisto Inlet, Ross Sea: Implications for the volcanology and tephrochronology of northern Victoria Land, Antarctica. *Quaternary Science Advances*, DOI: 10.1016/j.qsa.2023.100079

12) Musu A., Corsaro R.A., Higgins O., Jorgenson C., **Petrelli M.**, Caricchi L. (2023). The magmatic evolution of South-East Crater (Mt. Etna) during the February–April 2021 sequence of lava fountains from a mineral chemistry perspective. *Bulletin of Volcanology*, DOI: 10.1007/s00445-023-01643-2

13) Razum I., Ilijanić N., **Petrelli M.**, Pawlowsky-Glahn V., Miko S., Moska P., Giaccio B. (2023). Statistically coherent approach involving log-ratio transformation of geochemical data enabled tephra correlations of two late Pleistocene tephra from the eastern Adriatic shelf. *Quaternary Geochronology*, DOI: 10.1016/j.quageo.2022.101416

14) Carvalho B.B., Bartoli O., Cesare B., Satish-Kumar M., **Petrelli M.**, Kawakami T., Hokada T., Gilio M. (2023). Revealing the link between A-type granites and hottest melts from residual metasedimentary crust. *Geology*, DOI: 10.1130/G51097.1

15) Gianola O., Costa B., Ferri F., Gilio M., **Petrelli M.**, Murri M., Barbaro A., Alvaro M., Rodríguez-Vargas A., Poli S., Cesare B. (2023). Melt Inclusions in Arclogitic Xenoliths Constrain the Genesis of the Lower Continental Arc Crust beneath the Northern Volcanic Zone, Colombia. *Journal of Petrology*, DOI: 10.1093/petrology/egad038

16) Romero J.E., Morgado E., Pisello A., Boschetty F., **Petrelli M.**, Cáceres F., Alam M.A., Polacci M., Palma J.L., Arzilli F., Vera F., Gutiérrez R., Morgavi D. (2023). Pre-eruptive Conditions of the 3 March 2015 Lava Fountain of Villarrica Volcano (Southern Andes). *Bulletin of Volcanology*, DOI: 10.1007/s00445-022-01621-0

17) **Petrelli M.**, Ágreda López M., Pisello A., Perugini D. (2023). Pre-eruptive dynamics at the Campi Flegrei Caldera: from evidence of magma mixing to timescales estimates. *Earth, Planets and Space*, DOI: 10.1186/s40623-023-01765-z

18) Wieser P.E., **Petrelli M.**, Lubbers J., Wieser E., Özaydın S., Kent A.J.R., Till C.B. (2022). Thermobar: An open-source Python3 tool for thermobarometry and hygrometry. *Volcanica*, DOI: 10.30909/vol.05.02.349384

19) Marchesini B., Carminati E., Aldega L., Mirabella F., **Petrelli M.**, Caracausi A., Barchi M.R. (2022). Chemical interaction driven by deep fluids in the damage zone of a seismogenic carbonate fault. *Journal of Structural Geology*, DOI: 10.1016/j.jsg.2022.104668

20) Genge M.C., Zattin M., Witt C., Derycke A., Gautheron C., Mazzoli S., **Petrelli M.**, Cogné N., Bosch D., Bruguier O., Marquez M. (2022). Denudation of the Cordillera and intraplate belt in central Patagonia inferred by detrital multi-dating of foreland basin deposits. *Sedimentary Geology*, DOI: 10.1016/j.sedgeo.2022.106237

21) Nazzareni S., Morgavi D., **Petrelli M.**, Bartoli O., Perugini D. (2022). Magmatic Processes at Euganean Hills (Veneto Volcanic Province, Italy): Clinopyroxene Investigation to Unravel Magmatic Interactions. *Geosciences (Switzerland)*, DOI: 10.3390/geosciences12030108

22) Rooyakkers S.M., Stix J., Berlo K., Morgavi D., **Petrelli M.**, Rusiecka M.K., Barker S.J., Charlier B.L.A., Neave D.A., Vetere F.P., Perugini D. (2022). Rifting and recharge as triggers of the mixed basalt–rhyolite Halarauður ignimbrite eruption (Krafla, Iceland). *Contributions to Mineralogy and Petrology*, DOI: 10.1007/s00410-021-01881-7

23) Lenaz D., Velicogna M., **Petrelli M.**, Schmitz B. (2022). The Österplana Fossil Meteorites and… What Else? Terrestrial Cr-Spinels and Zircons in the Ordovician Limestones of the Thorsberg Quarry (Sweden). *Geosciences (Switzerland)*, DOI: 10.3390/geosciences12020054

24) Monaco L., Leicher N., Palladino D.M., Arienzo I., Marra F., **Petrelli M.**, Nomade S., Pereira A., Sottili G., Conticelli S., D'Antonio M., Fabbrizio A., Jicha B.R., Mannella G., Petrosino P., Regattieri E., Tzedakis P.C., Wagner B., Zanchetta G., Giaccio B. (2022). The Fucino 250–170 ka tephra record: New insights on peri-Tyrrhenian explosive volcanism, central mediterranean tephrochronology, and timing of the MIS 8-6 climate variability. *Quaternary Science Reviews*, DOI: 10.1016/j.quascirev.2022.107797

25) Morgavi D., Laumonier M., **Petrelli M.**, Dingwell D.B. (2022). Decrypting Magma Mixing in Igneous Systems. *Reviews in Mineralogy and Geochemistry*, DOI: 10.2138/rmg.2022.87.13

26) Landi P., D'Oriano C., **Petrelli M.**, Nazzari M., Andronico D. (2022). Inferences on the magmatic plumbing system at Stromboli volcano (Italy) from trace element geochemistry of matrix glasses and minerals in different types of explosive eruptions. *Contributions to Mineralogy and Petrology*, DOI: 10.1007/s00410-022-01962-1

27) González-García D., **Petrelli M.**, Perugini D., Giordano D., Vasseur J., Paredes-Mariño J., Marti J., Dingwell D.B. (2022). Pre-Eruptive Conditions and Dynamics Recorded in Banded Pumices from the El Abrigo Caldera-Forming Eruption (Tenerife, Canary Islands). *Journal of Petrology*, DOI: 10.1093/petrology/egac009

28) Ricci L., **Petrelli M.**, Frondini F., Zucchini A., Comodi P., Bisciotti A., Vescovi D., Trippella O. (2022). The Achievements of the RockStar Group (Perugia) on Astrophysical Modelling and Pallasite Geochemistry. *Universe*, DOI: 10.3390/universe8030156

29) Jorgenson C., Higgins O., **Petrelli M.**, Bégué F., Caricchi L. (2022). A Machine Learning-Based Approach to Clinopyroxene Thermobarometry: Model Optimization and Distribution for Use in Earth Sciences. *Journal of Geophysical Research: Solid Earth*, DOI: 10.1029/2021JB022904

30) Gençoğlu Korkmaz G., Kurt H., Asan K., **Petrelli M.**, Leybourne M. (2022). The role of peridotite and pyroxenite melts in the origin of the Karapınar basalts, Cappadocia Volcanic Province, Central Anatolia. *Journal of Geosciences (Czech Republic)*, DOI: 10.3190/jgeosci.362

31) Bamber E.C., La Spina G., Arzilli F., de' Michieli Vitturi M., Polacci M., Hartley M.E., **Petrelli M.**, Fellowes J., Burton M. (2022). Basaltic Plinian eruptions at Las Sierras-Masaya volcano driven by cool storage of crystal-rich magmas. *Communications Earth and Environment*, DOI: 10.1038/s43247-022-00585-5

32) Venier M., Ziberna L., Princivalle F., **Petrelli M.**, Lughi V., Logvinova A., Sobolev N.V., Turco G., Lenaz D. (2022). Trace Elements in Chromian Spinels from Four Siberian Kimberlites. *Minerals*, DOI: 10.3390/min12111439

33) Di Roberto A., Scateni B., Di Vincenzo G., **Petrelli M.**, Fisauli G., Barker S.J., Del Carlo P., Colleoni F., Kulhanek D.K., McKay R., De Santis L., The I. (2021). Tephrochronology and Provenance of an Early Pleistocene (Calabrian) Tephra From IODP Expedition 374 Site U1524, Ross Sea (Antarctica). *Geochemistry, Geophysics, Geosystems*, DOI: 10.1029/2021GC009739

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Perugia, 24/08/2020

Sincerely

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