

CURRICULUM VITAE

VERONIQUE LE ROUX, Ph.D.

Associate Scientist with Tenure
Woods Hole Oceanographic Institution, G&G Dept.

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Appointments

2022 – Present	Chair of Joint Committee for Marine Geology and Geophysics, MIT-WHOI Joint Program
2022 – Present	Nominated Member of Ocean Exploration Advisory Board, NOAA, US Department of Commerce. https://oeab.noaa.gov/board-members/
2021 – Present	Associate Scientist with Tenure, Woods Hole Oceanographic Institution (USA) https://www.whoi.edu/profile/vleroux/
2013 – Present	Joint Program Faculty, Massachusetts Institute of Technology https://mit.whoi.edu/academics/faculty-staff/
2020 – 2021	Awarded Visiting Scholar at SCIENCE 2020, Copenhagen University, Department of Geosciences and Natural Resource Management, Section for Geology (DK)
2017 – 2021	Associate Scientist, Woods Hole Oceanographic Institution (USA)
2013 – 2017	Assistant Scientist, Woods Hole Oceanographic Institution (USA)

Postdoctoral appointments

2011 – 2013	Post-doctoral Scholar, Woods Hole Oceanographic Institution (USA).
2009 – 2011	Post-doctoral Fellow, Rice University (USA).

PhD student appointments

2005 – 2008	Teaching Assistant, University of Montpellier (France)
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Academic Preparation

2009	Ph.D. Macquarie University (AU)
2008	Ph.D. Montpellier University (FR)
2005	Master degree (II) Earth Sciences, Montpellier University (FR)
2004	Master degree (I), Earth & Planetary Sciences, University of Nantes (FR)
2003	Bachelor degree, Earth & Planetary Sciences, University of Nantes (FR)

Research Interests

Physical and geochemical evolution of the Earth's upper mantle and crust; Volatile budgets in mantle and crustal materials (H₂O, CO₂, halogens); Material transfer in subduction zones; Melt-rock and fluid-rock reactions; Arc and ridge magmatism; Novel developments in Earth Sciences by micro-CT

Peer-reviewed publications

Total citations **2360**

https://scholar.google.com/citations?hl=en&user=QfOO7jcAAAAJ&view_op=list_works&sortby=pubdate

*Equal 1st authorship; \$Undergraduate advisee; #Graduate advisee; ##Postdoctoral advisee

- #Anderson O. E., Jackson M. G., ##Pamukçu A., Rose-Koga E. F., **Le Roux V.**, Klein F., Koga K., Gaetani g., Price A. A. Extreme H₂O degassing in deeply erupted submarine glasses inferred from Samoan melt inclusions: The EM2 mantle source is damp, not dry. *Submitted*.
- Shu Y., Nielsen S.G., **Le Roux V.**, Horner T., Ostrander C.M., Santiago Ramos D., Blusztajn J., Auro M., Leat P.T. Mélange dehydration and melting beneath South Sandwich Island arc. *Submitted*.
- #Codillo E., **Le Roux V.**, Mélange melting predominant in cold and mature arcs. *In review*.
- #Codillo E., **Le Roux V.**, Klein B., Behn M.D., Marschall H., Bebout G., The ascent of subduction zone mélanges: experimental constraints on mélange rock densities and solidus temperatures. *Accepted, EPSL*
- Bernhard J.M., Fisher L., Murphy Q., \$Sen L., Yeh H., Louyakis A., Goma F., Reilly M., Batta-Lona P., Bucklin A., **Le Roux V.**, Visscher P.T. Transition from stromatolite to thrombolite fabric: Role for reticulopodial protists in lake microbialites of a Proterozoic ecosystem analog?. *In revision*.
- Gruber B., Chin E.J., **Le Roux V.**, (2023) Evolution of microstructural heterogeneity in the deep arc lithosphere during delamination. *Journal of Geophysical Research* e2022JB025661
- Shu Y., Nielsen S.G., **Le Roux V.**, Wörner G., Blusztajn J., Auro M., Sources of dehydration fluids underneath the Kamchatka arc. (2022) *Nature Communications* <https://doi.org/10.1038/s41467-022-32211-5>
- #Urann B.M., **Le Roux V.**, Jagoutz O., Müntener O., Behn M. D., Chin E. J. High water content of arc magmas recorded in cumulates from subduction zone lower crust. (2022) *Nature Geoscience*, <https://doi.org/10.1038/s41561-022-00947-w>.
- Shu Y., Nielsen S.G., **Le Roux V.**, Blustajn J., Guo S., Huang F., Thallium isotope compositions of subduction-zone fluids: Insights from ultra-high pressure eclogites and veins in the Dabie terrane, eastern China. (2022) *Chemical Geology*. <https://doi.org/10.1016/j.chemgeo.2022.120843>
- Le Roux V.**, #Urann B.M, Brunelli D., Bonatti E., Cipriani A., Demouchy S., Monteleone B. (2021) Post-melting hydrogen enrichment in the oceanic lithosphere. *Science Advances*. 7 (24), eabf6071
- Jones M. R., Soule A., Liao Y., Brodsky H., **Le Roux V.**, Klein F. (2020) Quantitative vesicle analyses and total CO₂ reconstruction in mid-ocean ridge basalts. *Journal of Volcanology and Geothermal Research*. doi.org/10.1016/j.jvolgeores.2020.107109.
- *Klein F., ***Le Roux V.** (2020), Quantifying the Volume Increase and Chemical Exchange During Serpentinization. *Geology*. doi.org/10.1130/G47289.1
- Invited*. #Urann. B.M., **Le Roux V.**, John T., Beaudoin G.M., Barnes J.D. (2020), The distribution and abundance of halogens in eclogites: an in situ SIMS perspective of the Raspas Complex (Ecuador). *American Mineralogist* 105 (3): 307–318, doi 10.2138/am-2020-6994.
- Shinevar W.J., Mark H.F., Clerc F., Codillo E.A., Gong J., Olive J.-A., Brown S.M., Smalls P.T., Liao Y., **Le Roux V.**, Behn M.D. (2019), Causes of oceanic crustal thickness oscillations along a 74-Myr Mid-Atlantic Ridge flow line. *Geochemistry Geophysics Geosystems* (G³). doi.org/10.1029/2019GC008711
- Le Roux V.**, Liang Y. (2019), Ophiolitic pyroxenites record boninite percolation in subduction zone mantle. *Minerals* 9, 565; doi:10.3390/min9090565
- Miller W.G.R., MacLennan J., Shorttle O., Gaetani G.A., **Le Roux V.**, Klein F. (2019), Estimating the carbon content of the deep mantle with Icelandic melt inclusions. *Earth and Planetary Science Letters* 523, 115699
- Jones M. R., Wanless V. D., Soule S. A., Kurz M. D., Mittelstaedt E., Fornari D. J., Curtice J., Klein F., **Le Roux V.**, Brodsky H., Péron S., Schwartz D.M. (2019), New constraints on mantle carbon from Mid-Atlantic Ridge popping rocks. *Earth and Planetary Science Letters* 511, 67-75
- *\$Codillo E., ***Le Roux V.**, Marschall H., (2018) Arc-like magmas generated by mélange-peridotite interaction in the mantle wedge. *Nature Communications* 9, 2864
- Nielsen S. G., Horner T. J., Pryer H. V., Blusztajn J., Shu Y., Kurz M. D. and **Le Roux V.**, (2018) Barium isotope evidence for pervasive sediment recycling in the upper mantle. *Science Advances*, 4, no. 7, doi: 10.1126/sciadv.aas8675

- Jones M., Soule S.A., Gonnermann H., **Le Roux V.**, Clague D. (2018) Degassing-based constraints on ascent and emplacement dynamics during the 2011 eruption of Axial Seamount. Earth and Planetary Science Letters, doi.org/10.1016/j.epsl.2018.04.044
- ##**Cruz-Urbe A., Marschall H., Gaetani G., **Le Roux V.** (2018) Generation of alkaline magmas in subduction zones by melting of mélange diapirs. Geology 46 (4): 343-346
- #**Urann B.M., **Le Roux V.**, **\$**Hammond K., Marschall H., Lee C.-T., Monteleone B. (2017) Fluorine and chlorine in mantle minerals and the halogen budget of the Earth's mantle. Contributions to Mineralogy and Petrology doi 10.1007/s00410-017-1368-7
- Le Roux V.**, Nielsen S.G., **##**Sun C., Yao L. (2016) Dating layered websterite formation in the lithospheric mantle. Earth and Planetary Science Letters 454 pp. 103–112
- Miller K.J., Zhu W., Montesi L., Gaetani G., **Le Roux V.**, Xiao X., (2016) Experimental evidence for melt partitioning between olivine and orthopyroxene in partially molten harzburgite. JGR Solid Earth 121 doi:10.1002/2016JB013122
- Le Roux V.**, Dasgupta R., Lee C.-T.A. (2015) Recommended mineral-melt partition coefficients for FRTEs (Cu), Ga and Ge during mantle melting. American Mineralogist 100 pp. 2533–2544
- Le Roux V.**, Dick H., Shimizu N. (2014) Tracking flux melting and melt percolation in supra-subduction peridotites (Josephine Ophiolite, USA). Contributions to Mineralogy and Petrology 168 pp. 1–22
- Lee C.-T. A., Luffi P., Chin E. J., Bouchet R., Dasgupta R., Morton D.M., **Le Roux V.**, Yin Q.-Z., Jin D. (2012) Copper systematics in arc magmas and implications for crust-mantle differentiation Science 336 pp. 64–68
- Le Roux V.**, Dasgupta R., Lee C.-T. A. (2011) Mineralogical heterogeneities in the Earth's mantle: constraints from Mn, Co, Ni and Zn partitioning during partial melting. Earth and Planetary Science Letters 307 pp. 395–408
- Lee, C.-T. A., Luffi, P., **Le Roux, V.**, Dasgupta, R., Albarède F., Leeman W.P. (2010) The redox state of arc mantle using Zn/Fe systematics. Nature 468 pp. 681–685
- Le Roux V.**, Lee C.-T. A., Turner S.J. (2010) Zn/Fe systematics in mafic and ultramafic systems: implications for detecting major element heterogeneities in the Earth's mantle Geochimica et Cosmochimica Acta 74 pp. 2776–2796
- Le Roux V.**, Bodinier J.-L., Alard O., O'Reilly S.Y., Griffin W.L. (2009) Isotopic decoupling during porous melt flow: A case-study in the Lherz peridotite. Earth and Planetary Science Letters 279 pp. 76–85
- Le Roux V.**, Tommasi A., Vauchez A. (2008) Feedback between melt percolation and deformation in an exhumed lithosphere-asthenosphere boundary. Earth and Planetary Science Letters 274 pp. 401–413
- Le Roux V.**, Bodinier J.-L., Tommasi A., Alard O., Dautria J.-M., Vauchez A., Riches A.J.V. (2007) The Lherz spinel lherzolite: refertilized rather than pristine mantle, Earth and Planetary Science Letters 259 pp. 599–612

Research Grants

\$ Principal Investigator

2023-2025 NASA Development of methods allowing measurement of seven metal stable isotope ratios in material returned from primitive asteroids (Nielsen, Le Roux, Burton) \$516,009

2023-2026 National Science Foundation, Marine Geology and Geophysics, Strength of the Oceanic Lower Crust: New Experimental and Microstructural Constraints (Goddard, Cross, Le Roux) \$641,214

2021-2024 National Science Foundation, Marine Geology and Geophysics (Cruise proposal), *Collaborative Research: Magmatic and Mechanical Extension of the Challenger Deep Forearc Segment: Insights into Subduction Initiation* (Stern, Le Roux, Chin, Dygert) \$119,974

\$2020: Independent Research And Development Awards, *Effect of alteration on the volatile contents of mantle rocks* (Le Roux) \$82,869

\$2019-2022: National Science Foundation, Geophysics program/Petrology and Geochemistry program, *Collaborative Research: Voyage to the bottom of Arcs: interplay between water, deformation, and lower crustal stability* (Le Roux, Chin, Behn), \$790,939

\$2019-2022: National Science Foundation, Geoprisms program, *Collaborative Research: Melange-peridotite Interactions in the Source of Arc Magmas* (Le Roux & Behn), \$546,403

\$2019-2021: National Science Foundation, Petrology and Geochemistry Program, *Halogen budget of subducted eclogites: the in-situ perspective* (Le Roux), \$363,064

\$2018-2020: The Andrew W. Mellon Foundation Award for Innovative Research, *Magma Pulses in the Abyss* (Le Roux), \$64,078

2017-2019: National Science Foundation, Antarctic Earth Sciences, *Collaborative Research: Determining Magma Storage Depths and Ascent Rates for the Erebus Volcanic Province, Antarctica Using Diffusive Water Loss from Olivine-hosted Melt Inclusion* (Gaetani, Le Roux, Sims, Wallace), \$499,907

\$2016-2019: Ocean Exploration Institute, *What is the transport mechanism of sediments in subduction zones?* (Le Roux), \$74,984

\$2016-2019: National Science Foundation, Petrology and Geochemistry Program, *Quantifying the Volume Changes During Serpentinization of Peridotite using Hydrothermal Laboratory Experiments and X-ray Microtomography* (Klein & Le Roux), \$350,000

2016-2018: National Science Foundation, Marine Geology and Geophysics Program. *Collaborative Research: Does Calcification By Paleooceanographically Relevant Benthic Foraminifera Provide A Record Of Localized Methane Seepage?* (Bernhard, Martin, Le Roux), \$218,355

2016-2019: National Science Foundation, Geobiology and Low-Temperature Geochemistry Program. *Collaborative Research: Alteration of microbially-produced carbonate rock by unicellular predators to better understand early Earth's dominant ecosystem* (Visscher, Bernhard, Le Roux), \$255,000

\$2017: Independent Research And Development Awards Developing in-situ trace element analysis capabilities in silicates at WHOI, \$74,758

\$2015-2017: National Science Foundation, Petrology and Geochemistry Program, *F and Cl in peridotite minerals: analytical development and applications to fluid cycling in the Earth's mantle* (Le Roux, Monteleone, Shimizu), \$298,072

2015-2017: Ocean Exploration Institute, *A chronometer for magmatic processes at mid-ocean ridges* (Gaetani & Le Roux), \$59,032

\$2015: Independent Research And Development Awards *Micro-tomography at WHOI: Test Scans and 3-D Data Processing of Geological and Biological Samples* (Le Roux) \$58,297

\$2014-2016: Andrew W. Mellon Foundation Award for Innovative Research, *Connecting Mineral physics and Geochemistry* (Le Roux), \$59,744

\$2013-2015: Deep Ocean Exploration Institute, *Innovative tracers of hydrous melting in the Earth's mantle* (Le Roux & Shimizu), \$71,433

\$2012-2014: National Science Foundation, Petrology and Geochemistry Program, *Widespread pyroxenite layering in the mantle*, (Le Roux & Tivey), \$259,097

\$2011-2013: Deep Ocean Exploration Institute, *A new experimental approach to constraining H₂O cycling in subduction zones*, (Le Roux & Gaetani), \$67,590

\$2011-2012: Deep Ocean Exploration Institute Scholarship (Le Roux), WHOI, \$62,000

\$2007-2009: International Macquarie University Research excellence Scholarship (MQRES), Macquarie University, AUD \$19,231/year

\$2006-2008: 'Aide à la mobilité internationale' (Research funds for international collaborations), Ministère délégué à l'enseignement supérieur et à la recherche, 5100 €

Formal presentations

94 lead or contributed presentations at international conferences and institution seminars since 2005

Invited talks

2023. University of Texas at Austin, USA
2022. Curtin University, Perth, Australia
2022. ISTO, Orleans, France
2021. Goldschmidt Conference, Lyon, France
2020. Centre de Recherches Pétrographiques et Géochimiques, France
2020. Copenhagen University, Denmark
2019. European Institute for Marine Studies, Geosciences Ocean, Brest, France
2019. Laboratoire Magmas et Volcans, Clermont-Ferrand, France
2019. Geosciences Environnement Toulouse, France
2019. Geosciences Montpellier, France
2019. Water in the mantle workshop, Lamont Doherty Earth Observatory, USA
2018. Boston College, USA
2018. Aarhus University, Denmark
2018. California Institute of Technology, USA
2015. American Geophysical Union, Fall Meeting, San Francisco, USA
2015. Massachusetts Institute of Technology, USA
2015. Goldschmidt Conference, Prague, Czech Republic
2014. Ecole Normale Supérieure de Lyon, France
2013. Bayerisches Geoinstitut, Germany
2012. Unité Mixte de Recherche Domaines Océaniques, Brest, France
2010. University of New Mexico, USA
2010. Wood Hole Oceanographic Institution, USA
2010. Goldschmidt Conference, Knoxville, USA
2010. Geosciences Montpellier, France
2010. Ecole Normale Supérieure de Lyon, France
2009. American Geophysical Union, Fall Meeting, San Francisco, USA

Supervision and mentoring

Postdoctoral collaborators

2023 : Subhajit Ghosh (main advisor Cross)
2023 : Molly Anderson (NSF fellow, main advisor Barry)
2022 : Rellie Goddard (main advisor Cross)
2021 : Benjamin Urann
2017 – 2019: Emily Cooperdock (WHOI scholar)
2016 – 2019: Ayla Pamukcu
2015 – 2016: Chenguang Sun (WHOI scholar)
2015 : Alicia Cruz-Urbe (main advisor Marschall)

PhD student advisees

2023 – present: Namitha Kumar (MIT/WHOI Joint Program)
2017 – 2022: Emmanuel Codillo (MIT/WHOI Joint Program)
2015 – 2020: Benjamin Urann (MIT/WHOI Joint Program)
2013. Ning Zhao (MIT/WHOI Joint Program; main advisor Keigwin) – Geodynamics Class project, Spring

Undergraduate/Master student advisees

2022: Namitha Kumar – U. of Michigan — Summer Student Fellow Program student (3 mo)
2020: Leena Sen - San Jose State U. (USA) — Summer Student Fellow Program student (3 mo; main adviser Bernhard)
2020: Hugo Lestrelin — Ecole Normale Supérieure Paris (France) — Guest Student Fellow (1 mo due to covid-19; planned for 6 months)
2019: Alexandra Nordyke — Bennington College (USA) — Summer Student Fellow (3 mo; main advisor Gaetani)
2017 – 2018: Taylor Hough — Brown U. (USA) — Summer Student Fellow and Master's thesis
2016: Nadine Doiron — UMass Amherst — NENIMF summer student (3 mo; main advisor Gaetani)
2015 – 2016: Emmanuel Codillo — U. of Philippines — Guest student (9 mo)
2015: Emma Soucy — Northeastern U. (USA) — Co-op internship program (6 mo)
2015: Keiji Hammond — Northeastern U. (USA) — Co-op internship program (6 mo)
2015: Mariene Basiga — San Jose State U. (USA) — Summer Student Fellow Program student (3 mo)
2014: Mariene Basiga — San Jose State U. (USA) — Partnership Education Program student (minority program; 3 mo)
2013: Jeremy Slangenwhite — U. of Houston (USA) — Guest student (1 month)

Other Guest or Short-term students

2019–2020: Collaboration with PhD student Olivia Anderson (UCSB, USA); **Feb. 2018:** Guest Ph.D. students Stamatis Flemetakis and Dominik Lorocho (U. of Muenster, Germany); **Dec. 2017:** Guest undergraduate student Megan Reilly (Northeastern U.); **May 2017:** Guest Ph.D. student Manon Bickert (IPGP, France)

Synergistic Activities

Journal Reviewer:

American Mineralogist; American Journal of Science; Chemical Geology; Communications Earth & Environment; Contributions to Mineralogy and Petrology; Earth and Planetary Science Letters; Earth Science Reviews; Elements; Geochimica et Cosmochimica Acta; Geochemical Perspectives Letters; Geochemical Society of America Special Papers; Geochemistry Geophysics Geosystems (G³); Geology; Geophysics Research Letters; Journal of Geophysics Research-Solid Earth; Journal of Petrology; Lithos; Mineralogy and Petrology; Nature Communications; Nature Geoscience; Nature Scientific Reports; Science Advances; Tectonophysics

Panels and committees (International)

2023 – Present Reviewer for Swiss National Science Foundation
2023 Goldschmidt session co-convenor
2022 – Present Ocean Exploration Advisory Board, National Oceanic and Atmospheric Administration (NOAA), US Department of Commerce
<https://oeab.noaa.gov/board-members/>
2022 AGU session Chair (Research, Exploration, and Challenges in the Hadal Zone and Deep Ocean Trenches)
2021 – Present Reviewer for National Research and Development Agency (ANID) of the Ministry of Science, Technology, Knowledge and Innovation of Chile (FONDECYT National Projects Competition)
2018 – Present Reviewer for Deutsche Forschungsgemeinschaft, German Research Foundation
2010 – Present Reviewer for National Science Foundation (USA): NSF-EAR Petrology and Geochemistry, Frontier Research in Earth Sciences (FRES), Collaborative studies of the Earth Interior (CSEDI); NSF Tectonics; NSF Polar Programs
2020 Panel member, National Science Foundation, USA (*Remote*)

- 2018** Goldschmidt session co-convener (Igneous Processes throughout the Arc Crustal Column and Oceanic Mantle)
- 2015** Goldschmidt session co-convener (How chalcophile are the chalcophile elements?)
- 2015** AGU session co-convener (Endogenous mantle melting: petrology and geophysics)
- 2015** AGU session co-convener (The Ophiolite-Subduction Connection: Using peridotites as analogs for subduction zone mantle)
- 2015** AGU session co-convener (Melt and Liquids in Earth and Planetary Interiors)
- 2014** Panel member, National Science Foundation
- 2013** Reviewer for ETH Zurich Research Commission
- 2013** Geodynamics program co-organizer (WHOI). Theme: ‘Simulating the Earth in the lab’
<http://www.whoi.edu/main/2013-geodynamics-program>
- 2013** AGU session co-convener (Deformation Processes: Microstructure, Rheology, and the Effects of Fluids)
- 2009–2011** Reading group organizer: Petrology/Geochemistry (Rice University; 2009–2010); Subduction Zones (WHOI; 2011)
- 2010** Goldschmidt session co-convener (New and Old Paradigms on the Origin and Evolution of Continental Lithosphere)

Institution and departmental service (WHOI):

- 2023 – Present** Organizer of bi-monthly department gatherings/seminars
- 2023 – Present** Mentoring committee member for Assistant Scientist Y. Liao
- 2022 – Present** Chair of MIT-WHOI Joint Committee for Marine Geology & Geophysics (PhD program oversight)
- 2022** Chair of Ad-hoc promotion committee; MC&G Department
- 2020 – Present** Mentoring committee member for Assistant Scientist A. Cross
- 2016 – Present** NENIMF ion microprobe steering committee
- 2016 – 2022** Member of MIT-WHOI Joint Committee for Marine Geology & Geophysics (PhD program oversight)
- 2021** Merit review committee (employee performance in G&G department)
- 2021** Search committee for Deep Submergence Faculty position
- 2019** Substitute for Education Coordinator of MIT/WHOI PhD program (2 months)
- 2018** WHOI Inter-disciplinary award proposal review committee
- 2017** Search committee for Vice-President of Academic Program and Dean
- 2017** Search committee for Geochemistry and Petrology Faculty position
- 2016 – 2017** WHOI women’s committee
- 2016** Geology and Geophysics Department Chair transition committee
- 2016** Search committee for Geophysics Faculty position
- 2016** WHOI Catalyst program, proposal review panel
- 2016** Visioning committee for Vice-President of academic programs and Dean
- 2015 – 2016** Department representative, Summer Student Fellowship committee

Thesis committees (excluding own students):

- 2022** Chair of General examination committee, MIT/WHOI PhD student Lily Sandborn
- 2022** Chair of General examination committee, MIT/WHOI PhD student Megan Gillen
- 2020 – Present** PhD Thesis committee, MIT student Cassandra Seltzer
- 2020** Thesis proposal committee, MIT student Cassandra Seltzer
- 2020** General examination committee, MIT student Cassandra Seltzer
- 2019 – Present** PhD Thesis committee, MIT/WHOI PhD student Fiona Clerc
- 2019** Thesis proposal committee, MIT/WHOI PhD student Fiona Clerc
- 2019** Chair of General examination committee, MIT/WHOI PhD student Fiona Clerc
- 2017 – 2019** PhD Thesis committee, MIT/WHOI PhD student Meghan Jones

2017	Thesis proposal committee, MIT/WHOI PhD student Meghan Jones
2017	General examination committee, MIT/WHOI PhD student Meghan Jones
2017	General examination committee, MIT/WHOI PhD student Gabriela Serrato
2017	General examination committee, MIT/WHOI PhD student William Shinevar
2017	Chair of PhD defense, MIT/WHOI PhD student Emily Sarafian

Analytical and technical skills

EPMA: CAMECA SX 100. CAMECA SX 50, JEOL JXA-733 Superprobe; SIMS: Cameca IMS 1280 and 3f; HIGH P-T EXPERIMENTS: Piston cylinder, 1-atm furnace; ICPMS and LA-ICPMS: VG Plasmaquad II Turbo, Agilent 7500 ICPMS, ThermoFinnigan Element II Sector ICP-MS ; X-RAY MICROTOMOGRAPHY: Skyscan 1272 micro-CT; Synchrotron; 3D Microtomography modeling: Avizo software; Skyscan reconstruction, analysis and visualization software (CtAn; CtVox; CTVol; NRecon; Dataviewer).

Field experience

Scientific cruises

2024. Collaborative Research: Magmatic and Mechanical Extension of the Challenger Deep Forearc Segment: Insights into Subduction Initiation. *Ship TBD* (Guam, US-Guam, US)

2017. SCARF Research Cruise AR23-02; Geophysics measurements of seafloor bathymetric, magnetic and gravimetric properties across the Atlantic Ocean. *R/V Neil Armstrong* (Ponta Delgada, PT-Woods Hole, US)

Fieldwork on land

Introduction to field mapping in sedimentary terrains (France)

Volcanism and Metamorphism (Central Massif, France)

Alpine Ophiolite (Corse, France)

Peridotite Massifs of the Pyrenees (France)

Regular field trips over 3 years; Regular field trips with undergraduate students (5–6 times/year) — Volcanism in South of France

Conference field trip: Volcanism of Mount Shasta and Shear zones in Josephine Peridotite (USA)

Mantle xenoliths in cinder cones (Colorado Plateau, USA)

Volcanism in the Azores (Portugal)

Peridotites and pyroxenites in the Josephine Ophiolite (USA)

Pyroxenites in the Pyrenean Massifs (France)

Teaching and Outreach

2023. Mariana Trench Studies. A cross-institution, multi-lecturers, 1 semester remote class, that focuses on the petrological, tectonic, geochemical, and hydrothermal processes occurring in the Mariana trench, linked to our 2024 cruise. Open to undergraduates, graduates, and postdocs.

2023. Speaker for the Proposal Club. A course on how to write and design proposals, geared for postdocs

2022. Speaker for the Proposal Club. A course on how to write and design proposals, geared for postdocs

2022. Press releases in collaboration with WHOI and MIT media departments
<https://www.whoi.edu/press-room/news-release/arc-volcanoes-are-wetter-than-previously-thought-with-scientific-and-economic-implications/> ; <https://news.mit.edu/2022/magma-tectonic-collision-zones-wetter-0526>

2021. *Remote.* Speaker for the Proposal Club. A course on how to write and design proposals, geared for postdocs

2021. *Remote.* Guest teacher for Geol 311 Igneous Petrology at Western Colorado University (undergraduate)

2018–2019: reading seminar Geochemistry/Petrology

2018. 3-D models hands-on activities for visually impaired-students (7th to 12th grade), WHOI, MA

2018. ‘Inside the Earth’ presentation and hands-on activities — pre-K class, Woods Hole Daycare Co-op, MA

2018: Interview for ‘Who is WHOI’ short documentary about WHOI. <https://vimeo.com/292046329>

2018. ‘Forams’ hands-on activities for visually impaired-students (7th to 12th grade) — “The Very Big and the Very Small” Perkins School for the Blind, MA

2017. Summer Student Fellow Program Lecturer (undergraduate) – *Travel inside the deep Earth*

2016. 12.703 MIT/WHOI Presenting Scientific Research (graduate)

2016. ‘Inside the Earth’ presentation and hands-on activities — pre-K class, VNA child care center, MA

2015–2018: Member of the *Partnership program* between WHOI scientists and Trustees, which encourages dialogue that enhances the understanding of Trustees and Members about WHOI science and culture

2015. 12.703 MIT/WHOI Presenting Scientific Research (graduate)

2015. Summer Student Fellow program Lecturer (undergraduate) – *Geology going 3-D: new prospects for Earth Sciences*

2015. Maria Barrera – Falmouth Academy (USA), volunteer internship (2 months)

2015. Natasha Garland– Falmouth Academy (USA), volunteer internship (2 months)

2014. Chris Connolly – Falmouth High School (USA) — School-to-Careers internship program (3 months)

2014. Summer Student Fellow program Lecturer (undergraduate) – *Travel inside the deep Earth*

2013. 12.753 MIT/WHOI Geodynamics Class (graduate) – *Experiments: simulating the Earth in the Lab*

2009–2010: Lectures at Rice University – geochemistry and thermodynamics (graduate)

2005–2008: Teaching Assistant (‘Monitorat’) at Montpellier University (64 hours of teaching/2 classes/ per year/ 3 years; igneous, metamorphic and sedimentary petrology).

Awards and Recognition

2020 Visiting researcher, ‘SCIENCE 2020’ award, Copenhagen University, Department of Geosciences and Natural Resource Management, Section for Geology (Copenhagen, DK)

2020 Professor qualification (France)

2011 Deep Ocean Exploration Institute Scholarship, WHOI

2007 Bourse Lavoisier Cotutelle (Salary funds, European scholarship for international collaborations)

2007 International Macquarie University Research excellence Scholarship (MQRES), Macquarie University

2004 Master degree French scholarship for highly ranked students

Languages

French (Native proficiency); English (Full professional proficiency); Danish (Intermediate working proficiency)