



Dr. Véronique Le Roux
Woods Hole Oceanographic Institution

SPECIALTY

Geology; Mantle Geochemistry; Igneous Petrology; Experimental Petrology; Micro-CT

APPOINTMENTS

2017 – Pres.	Associate Scientist , Woods Hole Oceanographic Institution (USA)
2013 – Pres.	Joint Program Faculty , Massachusetts Institute of Technology/Woods Hole Oceanographic Institution (USA)
2013 – 2017	Assistant Scientist , WHOI (USA)
2012 – 2013	Post-doctoral Investigator , WHOI (USA)
2011 – 2012	Post-doctoral Scholar , WHOI (USA). Sponsors: G. Gaetani, N. Shimizu, H. Dick
2011 – 2012	Complementary Research Investigator , Rice University (USA)
2009 – 2011	Post-doctoral Fellow , Rice University (USA). Advisor: C.-T. Lee
2005 – 2008	Teaching Assistant , University of Montpellier (France)

EDUCATION

2005 – 2008 **Ph.D. Montpellier University (FR) and Ph.D. Macquarie University (AU)**
Research project: 'Melt-rock reaction and melt-assisted deformation in the Lherz peridotite, with implications for the structural, chemical and isotopic evolution of the lithospheric mantle'.
Supervisors: J.-L. Bodinier, A. Vauchez. and S. Y. O'Reilly.

2004 – 2005 **2nd year Master degree Earth Sciences, Montpellier University (FR)**
Research project: 'Refertilization process in the Lherz Massif' Supervisor: J.-L. Bodinier. *Best grade for 6-month research project*

2003 – 2004 **1st year Master degree, Earth & Planetary Sciences, University of Nantes (FR)**
Research project: 'Spectrometry of the Mars surface' Supervisor: C. Sotin. *Ranked 1st*

2000 – 2003 **Bachelor degree, Earth & Planetary Sciences, University of Nantes (FR)**
Ranked 3rd

PUBLICATIONS

Total citations: **965** (Google scholar); #Student advisee; ##Postdoc advisee; * Equal contribution

Submitted

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., New constraints on mantle carbon from Mid-Atlantic Ridge popping rocks.



Miller W.G.R., MacLennan J., Shorttle O., Gaetani G.A., **Le Roux V.**, Klein F., Earth's primordial mantle carbon budget.

Published

#*Codillo E., ***Le Roux V.**, Marschall H., 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.**, 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., 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-Uribe 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

CONFERENCES AND SEMINARS

presenting author; #student advisee; ##postdoc advisee

2018

68. **Le Roux V.**, Arc-like magmas generated by mélange-peridotite interaction in the mantle wedge, Boston College, USA. *Invited*.

67. Nielsen S.G., Horner, T.J., **Le Roux V.**, Kurz M.D., Blusztajn J.S., Barium isotope evidence for global sediment recycling in the upper mantle. GSA meeting, Indianapolis, USA.

66. **Le Roux V.**, Arc-like magmas generated by mélange-peridotite interaction in the mantle wedge, Aarhus University, Denmark. *Invited*.

65. Bernhard J.M., **Le Roux V.**, Martin J.B., Curtis J., Panieri G., Fake news? Benthic foraminifera record gas hydrate methane emissions, FORAMS, Edinburgh, UK.

64. Bernhard J.M., Fisher L., Reilly M., DeHart H.M., Bucklin A., **Le Roux V.**, Visscher P.T., Can freshwater foraminifera impact stromatolite fabric? FORAMS, Edinburgh, UK.

63. #Codillo E.A., **Le Roux V.**, Marschall H.R., Generation of arc-like magmas by mélange-peridotite interaction in the mantle wedge. Goldschmidt, Boston, USA.

62. Nielsen S.G., Horner T., Pryer H., Blusztajn J., Shu Y., Kurz M.D., **Le Roux V.**, Barium isotope evidence for global sediment recycling in the upper mantle. Goldschmidt, Boston, USA.

61. **Le Roux V.**, Arc-like magmas generated by mélange-peridotite interaction in the mantle wedge, California Institute of Technology, USA. *Invited*.

2017

60. Jones. M., Soule, S.A., Liao, Y., **Le Roux, V.**, Brodsky, H., Constraining pre-eruptive volatile contents and degassing histories in submarine lavas. American Geophysical Union (AGU), Fall Meeting, New Orleans, USA.

59. #Hough T.J., **Le Roux V.**, Kurz, M.D., Timing of pyroxenite formation in supra-subduction Josephine Ophiolite, Oregon. American Geophysical Union (AGU), Fall Meeting, New Orleans, USA.



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58. Bernhard J. M., Fisher L., Reilly M., Bucklin A., Questel J. M., **Le Roux V.**, Visscher P. T., Can Freshwater foraminifera impact stromatolite fabric? GSA, Washington, USA
57. #Urann B. M., **Le Roux V.**, #Hammond K., Marschall H. R., Lee C.-T.A., Monteleone B., The fluorine and chlorine budget of the Earth's peridotite mantle. Goldschmidt, Paris, France.
56. **Le Roux V.**, #Codillo E. A., Marschall H. R. Arc-like magmas and pyroxenites generated by mélange-peridotite interaction in the mantle wedge. Goldschmidt, Paris, France.
55. Gaetani G.A., **Le Roux V.**, Klein F., Moore L.R., Bodnar R.J., MacLennan J. X-ray microtomography-based reconstruction of total CO₂ in olivine-hosted melt inclusions. Goldschmidt, Paris, France.
54. Gaetani G.A., Bucholz C.E., Le Roux V., Klein F., Wallace P.J., Sims K.W.W., Ghiorso M.S., Determining magma ascent rates from diffusive D/H fractionation in olivine-hosted melt inclusions. Goldschmidt, Paris, France.
53. #Codillo E. A., **V. Le Roux**, H. R. Marschall, Experimental hybridization of mantle wedge by mélange rocks, and the generation of arc magmas. Goldschmidt, Paris, France.
52. Jones M., Soule S., Kurz M., Wanless D., Brodsky H., Schwartz D., **Le Roux V.**, Klein F., Mittelstaedt E., Curtice J., Fornari D., Formation and distribution of popping rocks from the Mid-Atlantic Ridge near 14N. IAVCEI, Portland, USA.
51. Jones M. R., Soule S.A., Gonnermann H., Clague D., **Le Roux V.**, Degassing and Vesiculation during the 2011 eruption of Axial Volcano, Juan de Fuca Ridge. AGU Chapman Conference on Submarine Volcanism: New Approaches and Research Frontiers, Hobart, Tasmania, Australia.
50. #Rogers L. S., Giuffrida B., **Le Roux V.**, Mensinger A. F., Visualization of the Oyster Toadfish (*Opsanus tau*) Anterior Lateral Line via Micro-CT. SICB conference, New Orleans, USA.

2016

49. Jones M., Soule S.A, Kurz M.D., Wanless V.D., **Le Roux V.**, Klein F., Mittelstaedt E. L., Curtice J., Popping rocks from the Mid-Atlantic Ridge: Insights into mantle volatile concentrations and degassing dynamics. American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
48. Gaetani G., Wallace P., Sims K., **Le Roux V.**, Klein F., Bucholz C., Ghiorso M., Determination of magma ascent rates from d/h fractionation in olivine-hosted melt inclusions. American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
47. Gaetani G., #Doiron N., **Le Roux V.**, Klein F., MacLennan J., Neave D. Disequilibrium vapor bubble formation in olivine-hosted melt inclusions: how much CO₂ is really in there? American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
46. ##Cruz-Uribe A., Marschall H., Gaetani G., **Le Roux V.**, Generation of alkaline magmas in subduction zones by melting of mélange diapirs. American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
45. #Codillo E., Arcilla C., **Le Roux V.**, Did The Palawan Ophiolite And Paly Ultramafic Massif Come From The Same Oceanic Lithosphere? Asia Oceania Geosciences Society, Beijing, (China).

2015

44. **Le Roux V.**, Nielsen S. G., ##Sun C., Yao L., Timing of melt migration and pyroxenite formation in the mantle. American Geophysical Union (AGU), Fall Meeting, San Francisco, USA. *Invited.*



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- 43. Miller K., Zhu W., Montesi L., Gaetani G., **Le Roux V.**, Xiao X., Lithologic melt partitioning and transport properties of partially molten harzburgite. American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
- 42. Gaetani G., McLennan J., Klein F., **Le Roux V.**, Reconstructing magma storage depths from olivine-hosted melt inclusions: Do vapor bubbles matter? American Geophysical Union (AGU), Fall Meeting, San Francisco, USA.
- 41. **Le Roux V.**, Mantle pyroxenites: from Asthenosphere to Lithosphere. Massachusetts Institute of Technology, USA. *Invited.*
- 40. **Le Roux V.**, Mantle pyroxenites: from Asthenosphere to Lithosphere. Wood Hole Oceanographic Institution, USA
- 39. **Le Roux V.**, Monteleone B., #Hammond K., Shimizu N., F and Cl in peridotite minerals: analytical development, partitioning, and applications to fluid cycling in the Earth's mantle. Goldschmidt Conference, Prague, Czech Republic. *Invited.*
- 38. **Le Roux V.**, Monteleone B., #Hammond K., Shimizu N., F and Cl in peridotite minerals: analytical development, partitioning, and applications to fluid cycling in the Earth's mantle. Gordon Conference, Mt Holyoke, USA.
- 37. **Le Roux V.**, Nielsen S.G., ##Sun C., Yao L., Timing of frozen melt fronts preserved in the lithospheric mantle. Gordon Conference, Mt Holyoke, USA.

2014

- 36. **Le Roux V.**, Fluid cycling in the Earth's mantle: perspectives from field, geochemical and experimental data. Ecole Normale Supérieure de Lyon, France. *Invited.*
- 35. **Le Roux V.**, Tracking water in a dry mantle. Geochemistry and Geophysics seminar. Woods Hole Oceanographic Institution, USA.

2013

- 34. Miller K., Zhu W., Montesi L. G., **Le Roux V.**, Gaetani G. A., Evidence for melt partitioning between olivine and orthopyroxene in partially molten harzburgite. American Geophysical Union, Fall Meeting, San Francisco, USA.
- 33. **Le Roux V.**, Gaetani G. A., #Slaugenwhite J., Miller K., Fluid escape in subduction zones: new constraints from 3-D microtomography data. American Geophysical Union, Fall Meeting, San Francisco, USA.
- 32. Tommasi A., Baptiste V., Frets E., Higgin K., Soustelle V., **Le Roux V.**, David M., Vauchez A., Garrido C., Bodinier J-L. Keynote: Heterogeneity and Anisotropy in the Lithospheric Mantle. Goldschmidt Conference, Florence, Italy.
- 31. Kurz M., **Le Roux V.**, Warren J., Curtice J. M., Nielsen S. G. Helium isotopic and concentration variations in a clinopyroxenite vein, and some implications for mantle evolution. Goldschmidt Conference, Florence, Italy.
- 30. **Le Roux V.**, Gaetani G., #Slaugenwhite J., Miller K., 3D fluid distribution in subducted slabs: new constraints on H₂O cycling. Goldschmidt Conference, Florence, Italy.
- 29. **Le Roux V.**, Melting, erupting, recycling: where and how to probe the Earth's mantle. Bayerisches Geoinstitut, Germany. *Invited.*

2012

- 28. **Le Roux V.**, Dick H., Shimizu N. Scaling and nature of melting processes in the mantle wedge: a record from the Josephine peridotite. Goldschmidt Conference, Montreal, Canada.



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27. Lee C.-T.A., Luffi P., **Le Roux V.**, Dasgupta R., Chin E., Erdman M., Bouchet R., Yin Q.Z., Yang W., Ingram L., DePaolo D. Copper, Sulfur and Redox. International Geological Congress, Brisbane, Australia.
26. **Le Roux V.**, Sulfides in orogenic peridotites, Internal workshop. Woods Hole Oceanographic Institution, USA.
25. **Le Roux V.**, Processus et traceurs des hétérogénéités du manteau terrestre. Unité Mixte de Recherche Domaines Océaniques, Brest, France. *Invited*.

2011

24. Dasgupta R., Mallik A., **Le Roux V.**, Lee C.-T.A. Constraining pyroxenite component in OIB source through melt-rock reaction experiments in pyroxenite-peridotite system and partitioning of first-row transition elements during mantle melting. Chapman Conference, Galapagos.
23. **Le Roux V.**, Dasgupta R., Lee C.-T.A. Mineralogical Heterogeneities in the Earth's Mantle: Constraints from Mn, Co, Ni and Zn Partitioning during Partial Melting. Goldschmidt, Prague, Czech Republic.
22. Lee C.-T.A., Chin E., Bouchet R., Luffi P., Dasgupta R., Morton D., **Le Roux V.**, Yin Q.-Z., Albarède F., Blichert-Toft J., Copper systematics in arc magmas and implications for the origin of continents, the Pb-paradox and copper porphyry deposits. Goldschmidt, Prague, Czech Republic.
21. **Le Roux V.**, A broad reminder of what the Earth's mantle (might) be made of. Wood Hole Oceanographic Institution, USA. *Invited*.

2010

20. Lee C.-T. A., Chin, E. J., Dasgupta, R., Luffi, P. I., **Le Roux, V.** Copper systematics during mantle melting and crustal differentiation in arcs: implications for S and Pb budgets of the continental crust American Geophysical Union, Fall Meeting, San Francisco, USA.
19. Lee C.-T.A., Luffi P., **Le Roux V.**, Dasgupta R. Conservative tracers of oxygen fugacity in basalts and their mantle source regions. Goldschmidt Conference, Knoxville, USA.
18. **Le Roux V.** Major element heterogeneities in the Earth's mantle: perspectives from mantle outcrops and transition metal systematic of basalts. Wood Hole Oceanographic Institution, USA. *Invited*.
17. **Le Roux V.**, Dasgupta R., Lee C.-T.A. First series transition metals as tracers of mineralogical heterogeneities in the Earth's mantle. Goldschmidt Conference, Knoxville, USA. *Invited*.
16. **Le Roux V.** Major elements heterogeneities in the Earth's mantle: perspectives from mantle outcrops and transition metal systematic of basalts. University of New Mexico, USA. *Invited*.
15. **Le Roux V.** Péridotites et basaltes, témoins des hétérogénéités en éléments majeurs dans le manteau terrestre. Ecole Normale Supérieure de Lyon, France. *Invited*.
14. **Le Roux V.** Péridotites et basaltes, témoins des hétérogénéités en éléments majeurs dans le manteau terrestre. Geosciences Montpellier, France. *Invited*.

2009

13. Bodinier J.-L., Tommasi A., Soustelle V., **Le Roux V.**, Vauchez A.R., Garrido C.J. Moving (transient) lithosphere-asthenosphere boundaries: Coupling between partial melting, melt transport, and deformation. American Geophysical Union, Fall Meeting, San Francisco, USA.
12. **Le Roux V.**, Lee C.-T. A. Transitional elements as tracers for mantle heterogeneities; Zn, Fe, and Mn systematics in mafic and ultramafic systems. Goldschmidt Conference, Davos, Switzerland.



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11. **Le Roux V.**, Major and trace element heterogeneities in the Earth's mantle, Rice University, USA.

10. **Le Roux V.**, Lee C.-T.A., Bodinier J.-L. Major elements heterogeneities in the Earth's mantle: perspectives from mantle outcrops and transition metal systematic of basalts. American Geophysical Union, Fall Meeting, San Francisco, USA. *Invited*.

2008

9. **Le Roux V.**, Bodinier J.-L., Vauchez A., Tommasi A., Alard O., O'Reilly S. Y. Melt-rock interactions in the Lherz peridotite; Implications for structural, chemical and isotopic evolution of the lithospheric mantle. Orogenic Lherzolite Conference, Mount Shasta, USA.

8. **Bodinier J.-L.**, **Le Roux V.**, Soustelle V., Chanefo I., Tommasi A., Garrido C., Alard O. Chemical variations in tectonically-emplaced mantle rocks : superimposed effects of partial melting, melt redistribution and igneous refertilization. Orogenic Lherzolite Conference, Mount Shasta, USA.

7. **Tommasi A.**, **Le Roux V.**, Soustelle V., Bodinier J.-L., Vauchez A., Garrido, C. Lithosphere-aesthenosphere interactions: Coupling between partial melting, melt transport, and deformation. International geological congress, Oslo, Norway.

2007

6. **Bodinier J.-L.**, **Le Roux V.**, Soustelle V., Tommasi A. and Garrido C. Chemical variations in tectonically-emplaced mantle rocks: superimposed effects of partial melting, melt redistribution and igneous refertilization. European Mantle Workshop, Ferrara, Italy.

5. **Le Roux V.**, Bodinier J.-L., Alard O., Wieland P. and O'Reilly S.Y. Rejuvenation of the lithospheric mantle (Lherz Massif, France). European Mantle Workshop, Ferrara, Italy.

4. **Le Roux V.**, Bodinier J.-L., Alard O., Wieland P. and O'Reilly S.Y. Insights into refertilization process in lithospheric mantle from structural and geochemical studies in the Lherz Massif (France). Goldschmidt Conference, Cologne, Germany.

2006

3. **Alard O.**, Riches A.J.V., **Le Roux V.** and Bodinier J.-L. How primitive is the "primitive" upper mantle: Revisiting the lherzolite-harzburgite relationships of the Lherz massif. International Conference on Continental Volcanism, Guangzhou, China.

2. **Le Roux V.**, Bodinier J.-L., Alard O., Tommasi A., Dautria J.-M., Vauchez A. and Lorand J.-P. The spinel lherzolite at Lherz: a result of mantle refertilization? EGU Meeting, Wien, Austria.

2005

1. **Bodinier J.-L.**, **Le Roux V.**, Lenoir X., Alard O., Garrido C., Tommasi A., Dautria J.-M., Vauchez A., Lorand J.-P. and Gervilla F. Partial melting in Ronda versus refertilization in Lherz: two contrasting effects of lithospheric thermal erosion documented in orogenic peridotites, Peridotite Workshop, Lanzo, Italy.

STUDENT AND POSTDOC MENTORING

Postdoctoral advisees

2017–present: Emily Cooperdock (sponsored by WHOI scholarship)

2017–present: Ayla Pamukcu (sponsored by NSF grant)

2016 – 2017: Ayla Pamukcu (guest collaborator from Princeton U./Brown U.)



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2015–2016: Chenguang Sun (sponsored by WHOI scholarship; now postdoctoral fellow at Rice University)

2015: Alicia Cruz-Urbe (sponsored by H. Marschall and G. Gaetani; now Assistant professor at University of Maine)

PhD student advisees

2017–present: Emmanuel Codillo (MIT/WHOI Joint Program)

2015–present: Benjamin Urann (MIT/WHOI Joint Program)

2013. Ning Zhao (MIT/WHOI Joint Program) – Geodynamics Class project, Spring

Undergraduate/Master student advisees

2017–2018: Taylor Hough — Brown University (USA) — Summer Student Fellow (3 months) and Master's thesis

2016: Nadine Doiron — UMass Amherst — NENIMF summer student (3 months; co-advisor)

2015–2016: Emmanuel Codillo — University of Philippines — Guest student Master thesis (9 months)

2015. Emma Soucy — Northeastern University (USA) — Co-op internship program (6 months)

2015. Keiji Hammond — Northeastern University (USA) — Co-op internship program (6 months)

2015. Mariene Basiga — San Jose State University (USA) — Summer Student Fellow Program student (3 months)

2014. Mariene Basiga — San Jose State University (USA) - Partnership Education Program student (minority program; 3 months)

2013. Jeremy Slangenwhite — University of Houston (USA) — Guest student (1 month; co-adviser)

Short-term Guest students

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)

FUNDING RECORD

Raised through competitive grants since 2012: **\$2.40 Millions**

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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), \$428,632

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



SYNERGISTIC ACTIVITIES

Journal Reviewer:

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

Proposal Reviewer:

2010–present: National Science Foundation, EAR-Petrology and Geochemistry, CSEDI
2014: Panel member, CSEDI, National Science Foundation
2013: ETH Zurich Research Commission (review of postdoctoral applications)

Institution and departmental service (WHOI):

2016–present: MIT/WHOI Joint committee for Marine Geology&Geophysics (PhD program)
2016–present: NENIMF ion microprobe steering committee
2018. WHOI Inter-disciplinary award proposal review committee
2017. WHOI search committee for Vice-President of Academic Program and Dean
2017. WHOI search committee for Geochemistry/Petrology position
2016. Geology and Geophysics Department Chair transition committee
2016. WHOI search committee for Geophysics position

2016–2017: WHOI women's committee

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:

2018–present: Thesis committee, MIT/WHOI Joint Program student Meghan Jones

2017: General examination committee, MIT/WHOI Joint Program student Gabriela Serrato

2017: General examination committee, MIT/WHOI Joint Program student William Shinevar

2017: General examination committee, MIT/WHOI Joint Program student Meghan Jones

2017: Chair of the PhD defense, MIT/WHOI Joint Program student Emily Sarafian

Service to Field:

2018. Goldschmidt session co-convener (Igneous Processes throughout the Arc Crustal Column and Oceanic Mantle. Barbara Ratschbacher, Brenhin Keller, Kyle Samperton, Katie Ardill, Yildirim Dilek, Véronique Le Roux, Ali Polat, Christy Till)

2015. Goldschmidt session co-convener (How chalcophile are the chalcophile elements? (F. Jenner, V. Le Roux)

2015. AGU session co-convener (Endogenous mantle melting: petrology and geophysics. P. Asimow, R. Dasgupta, R. Katz, V. Le Roux)

2015. AGU session co-convener (The Ophiolite-Subduction Connection: Using peridotites as analogs for subduction zone mantle. M. Jean, J. Shervais, J. Pearce, V. Le Roux)



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2015. AGU session co-convenor (Melt and Liquids in Earth and Planetary Interiors. Y. Kono, K. Hirose, V. Le Roux, L. Elkins-Tanton)
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-convenor (Deformation Processes: Microstructure, Rheology, and the Effects of Fluids. L. Hansen, H. Jung, V. Le Roux, K. Michibayashi, J. Warren, and J. Zhang)
2009–2011. Reading group organizer: Petrology/Geochemistry (Rice University; 2009–2010); Subduction Zones (WHOI; 2011)
2010. Goldschmidt session co-convenor (New and Old Paradigms on the Origin and Evolution of Continental Lithosphere. C.-T. Lee, S. Aulbach, V. Le Roux)

ANALYTICAL AND TECHNICAL SKILLS

Regular user:

Optical microscope; Petrology and microstructures
EPMA; CAMECA SX 100. CAMECA SX 50, JEOL JXA-733 Superprobe
Experimental Petrology: Piston cylinder, 1-atm furnace
SIMS; Cameca IMS 1280
ICPMS and LA-ICPMS; VG Plasmaquad II Turbo, Agilent 7500 ICPMS, ThermoFinnigan Element II Sector ICP-MS
X-RAY MICROTOMOGRAPHY; Table top micro-CT Skyscan 1272
3D Microtomography modeling: Avizo software by Visualization Science Group; Skyscan reconstruction, analysis and visualization software (CtAn; CtVox; CTVol; NRecon' Dataviewer).

Occasional user:

X-RAY MICROTOMOGRAPHY; Advanced Photo Source (synchrotron) at Argonne National Laboratory
EBSD-SEM; JEOL JEM-5600 SEM. Manual and automatic indexing
EBSD data processing, HKL Channel 5 Oxford Instruments
TIMS; Thermo Finnigan TRITON
MC-ICPMS; Nu Plasma high resolution multi-collector ICPMS

FIELD EXPERIENCE

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)

At sea.

2017. SCARF Research Cruise AR23-02. R/V Neil Armstrong (Ponta Delgada-Woods Hole)



TEACHING

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

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

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

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

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

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

2009–2010: Occasional lectures at Rice University—geochemistry and thermodynamics (graduate level)

2005–2008: Regular Teaching Assistant at Montpellier University (64 hours of teaching/2 classes/ per year).

- Igneous petrology (undergraduate level). Microscopic and macroscopic mineral recognition. Occasional lectures. Field trips to local volcanic and plutonic features.

- Metamorphic petrology (undergraduate level) field and laboratory classes

- Sedimentary petrology (undergraduate level) Occasional lectures. Field trips to local sedimentary outcrops.

- Geochemical modeling and chromatography (graduate level) Occasional lectures.

OUTREACH

Host for volunteer High school students

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)

School outreach

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. ‘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

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

General public outreach

2018: Interview for ‘Who is WHOI’ short documentary about WHOI

2015–2017: 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



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AWARDS

- 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 (Limited working proficiency); Spanish (Elementary proficiency)