

George L. Guice

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EMPLOYMENT

Upcoming (Dec. '22)	Postdoctoral Fellow, American Museum of Natural History
Mar. 2022–present	Postdoctoral researcher, Johns Hopkins University
Jul. 2019–Mar. 2022	Peter Buck Postdoctoral Fellow, Smithsonian National Museum of Natural History
Sep. 2018–Sep. 2019	Freelance scientific editor, Stallard Scientific Editing
Oct. 2015–May 2019	Postgraduate field and laboratory demonstrator, Cardiff University

EDUCATION

2019 PhD, Cardiff University (UK)

Thesis title: Origin and geodynamic significance of Archean ultramafic-mafic complexes in the Kaapvaal and North Atlantic cratons. Available [here](#).

Dissertation advisors: Dr Iain McDonald; Dr Hannah Hughes; Prof. Carl Anhaeusser.

2015 MSc Mining Geology, Camborne School of Mines, University of Exeter (UK).

Dissertation title: The characteristics and genesis of the Sotkavaara Intrusion, northern Finland, including PGE mineralisation.

Award: Merit. Dissertation advisors: Dr Tuomo Törmänen; Dr Jens Andersen.

2014 BSc Geology (major), with Physical Geography, University of Keele (UK).

Award: First class, with honours

PUBLICATIONS

Book chapters (in revision):

10. Goodenough, K., [Guice, G. L.](#), Bird, A., Dempsey, E., Hughes, H., Johnson, T. Geology of Scotland (5th edition): The Archean and Paleoproterozoic rocks of Scotland. *Geological Society of London*.

Published papers:

9. [Guice G. L.](#), Magalhães, J. R., Pinheiro, M. A. P., Ferreira, R. C. R., Meira, V. T., Melo-Silva, P., Ackerson, M. (2022) Spinel-group mineral chemistry as a record of magmatic and metamorphic processes: evidence from the highly altered Morro do Onça ultramafic suite, São Francisco Craton (Brazil). *Contributions to Mineralogy & Petrology*. 177. Available [here](#).
8. [Guice, G. L.](#), Mioceovich, S. R., Hughes, H. S. R., McDonald, I., Goodenough, K. G., Ackerson, M. R., MacDonald, J. M., Faithfull, J. W. (2022) Origin of ultramafic–mafic bodies on the Isles of Lewis and Harris (Scotland, UK): constraints on the Archean–Paleoproterozoic evolution of the Lewisian Gneiss Complex, North Atlantic Craton. *Precambrian Research*. 369. Available [here](#).

7. Pinheiro, M. A. P., Guice, G. L., Magalhães, J. R. (2021) Archean–Ediacaran evolution of the Campos Gerais Domain — a reworked margin of the São Francisco paleocontinent (SE Brazil): Constraints from metamafic–ultramafic rocks. *Geoscience Frontiers, Special Issue: Archean–Paleoproterozoic Crustal Evolution of South America*. Available [here](#).
6. Guice, G. L., Ackerson, M. R., Holder, R. M., George, F. R., Browning-Hanson, J., Burgess, J. L., Foustoukos, D. I., Becker, N. A., Nelson, W., Viète, D. R. (2021) Suprasubduction ophiolite fragments in the central Appalachian orogen: evidence for the mantle and Moho in the Baltimore Mafic Complex (Maryland, USA). *Geosphere*. 17, 1-21. Available [here](#).
5. Guice, G. L., McDonald, I., Hughes, H. S. R., MacDonald, J. M., Faithful, J. W. (2020) The origin(s) and geodynamic significance of Archean ultramafic-mafic bodies in the mainland Lewisian Gneiss Complex, North Atlantic Craton. *Journal of the Geological Society*. 177(4), 700-717. Available [here](#).
4. Guice, G. L., McDonald, I., Hughes, H. S. R., Anhaeusser, C. R. (2019) An Evaluation of Element Mobility in the Modderfontein Ultramafic Complex, Johannesburg: Origin as an Archean Ophiolite Fragment or Greenstone Belt Remnant. *Lithos*. 332-333, 99-119. Available [here](#).
3. Guice, G. L., McDonald, I., Hughes, H. S. R., Schlatter, D. M., Goodenough, K. M., MacDonald, J. M., Faithfull, J. W. (2018) Assessing the validity of negative high field strength-element anomalies as a proxy for Archean subduction: evidence from the Ben Strome Complex, NW Scotland. *MDPI Geosciences Special Issue: Geology of the Early Earth*. 8(9), 338. Available [here](#).
2. Guice, G. L., McDonald, I., Hughes, S. R., MacDonald, J. M., Blenkinsop, T. G., Goodenough, K. M., Faithfull, J. W., Gooday, R. J. (2018) Re-evaluating ambiguous age relationships in Archean cratons: Implications for the origin of ultramafic-mafic complexes in the Lewisian Gneiss Complex. *Precambrian Research*. 311, 136-156. Available [here](#).
1. Guice, G. L., Törmänen, T., Karykowski, B. T., et al. (2017) Precious metal mineralisation in the Sotkavaara Intrusion, northern Finland: Peak Pt, Pd, Au and Cu offsets in a small intrusion with poorly-developed magmatic layering. *Ore Geology Reviews*. 89, 701-718. Available [here](#).

RESEARCH EXPERIENCE

Analytical and laboratory experience:

Electron Microprobe (EMPA). Advanced operating proficiency. Utilized for major element spot analysis, major element mapping, high resolution imaging, and linescans.

Scanning electron microscopy (SEM). Advanced operating proficiency. Utilized for high resolution imaging and major element spot analyses.

Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Moderate operating proficiency. Utilized for *in-situ* trace element mapping and spot analyses.

Solution-based ICP-optical emission spectrometry (ICP-OES). Moderate operating proficiency. Utilized for major element analyses of powdered rock samples.

X-ray fluorescence (XRF) and portable XRF. Moderate operating proficiency. Utilized for major element analyses of powdered rock samples and *in-situ* analyses.

Other rock preparation and laboratory experience. Polished thin section and polished 1" round block preparation; rock cutting and powdering; optical microscopy; zircon extraction, for U-Pb geochronology.

Field experience:

Year(s)	Duration	Location(s)	Project	Activities	Role
2022, 2021, 2020, 2019	4 weeks	Quebec, Canada; SC, NC, VA, MD PA, USA	Appalachian–Caledonian ophiolites: understanding the formation and temporal evolution of subduction zones	Field observations & sampling	Lead
2021	1 week	California, USA	High pressure/low temperature metamorphic rocks: eclogites & blueschists of the Franciscan Complex	Field observations & sampling	Support
2019	1 month	Minas Gerais, Brazil	Magmatic and metamorphic evolution of the São Francisco Craton: Insights from ultramafic rocks	Geologic mapping; structural assessment; field observations; sampling	Lead
2018, 2017, 2016	4 months	Scotland, UK	Origin & geodynamic significance of Archean ultramafic–mafic bodies in the Lewisian Gneiss Complex (PhD project)	Geologic mapping, structural surveys, field observations & sampling	Lead
2017, 2015, 2013	2 months	Mount Etna, Sicily	Long-term volcano monitoring: ground deformation	GPS measurements; levelling; field observations	Field assistant
2016	1 month	Johannesburg, South Africa	Origin of geodynamic significance of Archean ultramafic–mafic bodies in the Kaapvaal Craton (PhD project)	Geologic mapping & logging, field observations & sampling	Lead
2015	3 weeks	Lapland, Finland	Origin of platinum-group element mineralization in the Sotkavaara Intrusion	Drillcore logging and fieldwork	Student research

TEACHING, COMMUNICATION & OUTREACH EXPERIENCE**Research talks (excluding conferences):**

2022: "Unravelling the emergence and evolution of plate tectonics on Earth". *Johns Hopkins University, Earth & Planetary Sciences Research Day 2022*.

2021: "Using ultramafic rocks to reconstruct complex geological evolution: case studies from Maryland (USA) and Scotland (UK)". *American Museum of Natural History webinar*.

2021: "Suprasubduction zone (SSZ) ophiolite fragments in Maryland: Evidence for mantle and Moho in the Baltimore Mafic Complex". *USGS webinar*.

2021: "Using ultramafic rocks to reconstruct complex geological evolution: case studies from Maryland (USA) and Scotland (UK)". *George Mason University webinar*.

2020: "Suprasubduction zone ophiolite fragments in the central Appalachian Orogen: evidence for mantle and Moho in the Baltimore Mafic Complex, Maryland". *University of Maryland*. Available [here](#).

2020: "How did Earth operate 3 billion years ago? Insights from rural Scotland and urban Johannesburg". *Senate of Scientists Lightning Talks, National Museum of Natural History, Smithsonian Institution*.

2020: "Are High Field Strength Element anomalies a good proxy for Archean subduction?". *Carnegie Earth & Planets Laboratory*. Full lecture available [here](#).

2019: "Are High Field Strength Element anomalies a good proxy for Archean subduction? Evidence from the Ben Strome Complex, NW Scotland". *University of Campinas & University of Ouro Preto, Brazil*

Undergraduate and public lectures:

2021: National Museum of Natural History Article Club. Lecture, followed by Q&A with volunteers.

2021: "Playing golf on ancient ocean crust: geology of the Baltimore Mafic Complex". Lecture to the Natural History Society of Maryland & Baltimore Mineralogical Society.

2020 & 2021: "How did Earth operate during the Archean?" Lecture to Year 4 undergraduates, UNICAMP.

2019: "The evolution of the 3.2 Ga Lewisian Gneiss Complex: a mineralogical perspective". Mineralogical Society of the District of Columbia, Washington D.C.

2019: "The Lewisian Gneiss Complex: 150 years of research and counting". Lecture to Year 4 undergraduate students. University of Campinas (UNICAMP).

2017: "An introduction to igneous rocks" Lecture to year 1 undergraduates, Cardiff University.

Field courses (as graduate student demonstrator):

2016, 2017, 2018: The Geology of Pembrokeshire, one-week residential fieldtrip, Yr 1 students

2017, 2018: The Geology of Arran/mapping training, one-week residential fieldtrip, Yr 2 students

2015-2019: The Geology of South Wales, including mapping training. More than 20 individual fieldtrips to sites in south Wales

Laboratory courses (as graduate student demonstrator):

2015, 2016: BSc Intro to Earth System Science

2017, 2018: BSc Geological Resources

2015: BSc Geographical Information Systems

2017, 2018: BSc Metamorphic Petrology

2015, 2016: BSc Formation of the British Isles

2016, 2017, 2018: BSc Applied Mineralogy

2016: BSc Earth Materials

Student supervision:

2022: High school intern, 4-week project, Johns Hopkins University.

2019-present: Graduate student, Johns Hopkins University.

2019-present: Undergraduate/masters student, University of Campinas.

2018: Undergraduate/masters student, Cardiff University.

GRANTS, AWARDS, FELLOWSHIPS AND BURSARIES

2022: American Museum of Natural History Kalbfleisch Postdoctoral Fellowship. 2-yr award.

2022: Clough Memorial Award, Edinburgh Geological Society.

2019: Peter Buck Postdoctoral Fellowship, Smithsonian Institution. 2-year award.

2018: Granulites & granulites conference poster prize.

2018: Nominated for an Enriching Student Life Award (graduate tutor/demonstrator), Cardiff University.

2018: *Lithos* Outstanding Contribution in Reviewing Award.

2017: Geochemistry Group Travel Bursary. £150 (GBP)

2017: Geological Society, Timothy Jefferson Field Research Fund. £1500 (GBP)

2016: SRK consulting, student oral presentation award, NAC+2016 conference.

2016: Highly Siderophile Element geochemistry conference travel bursary £100 (GBP)

2016: Society of Economic Geologists Graduate Student Fellowship \$5000 (USD)

2016: Mineralogical Society student travel bursary £375 (GBP)

2014: Warwickshire Geology Conservation Group postgraduate award £2500 (GBP)

PROFESSIONAL ACTIVITIES

Media:

Washington Post, May 2021. "Rocks near Baltimore are ancient fragments of planet's mantle." Link [here](#).

Baltimore Sun, May 2021. "What on earth? Fragments of ancient ocean floor...". Link [here](#).

National Geographic, April 2021. "Rare chunks of Earth's mantle found exposed in Maryland". Link [here](#)

Community service:

2021–present: Associate Editor, Mineralogic Magazine, Cambridge University Press.

2021–present: Unlearning Racism in Geoscience (URGE) pod member. Smithsonian's National Museum of Natural History. For more information: <https://urgeoscience.org/>.

2018: Lewisian Gneiss Complex fieldtrip leader and fieldguide co-author. Granulites conference.

2018: Session chair. Granulites & granulites conference.

2018: Geological Society representative, Voice of the Future event, Houses of Parliament, UK.

2016–2018: Applied Mineralogy Group (Mineralogical Society of Great Britain and Ireland) student committee member and *Applied Mineralogist* lead editor.

2015–2019: STEM (Science, Technology, Engineering and Math) ambassador, South Wales (UK). Involved several primary school, secondary and college visits to engage young people in earth science.

Active society memberships:

2019–present: Geological Society of America

2015–present: Mineralogical Society of Great Britain and Ireland

Training and specialist courses attended:

2021: Phase Equilibrium Modelling E-Workshop: approaches and pitfalls. 5-day course.

2017: Three-day geochemical exploration/ lithogeochemistry course run by Denis Schlatter.

RECENT CONFERENCES PAPERS

Guice, G., and George, F. (2022) Re-evaluating the utility of spinel-group mineral chemistry as a geotectonic indicator. *GSA Connects, Denver, Colorado*.

Guice, G., Holder, R., Viète, D. (2022). A Paleoproterozoic record of modern-style subduction initiation? Evidence from the 1.9 Ga Pembine Ophiolite, Wisconsin (USA). *GSA Connects, Denver, Colorado*.

Viète, D., Becker, N., Guice, G., Crowley, J. (2022). Subduction initiation in the Iapetus Ocean: when, where and how? *GSA Connects, Denver, Colorado*.

Becker, N., George, F., Guice, G., Viète, D. (2022) Evidence of subduction initiation recorded in the Dadeville Complex of Alabama. GSA Northeastern Section Meeting.

Cottrell, E., Lascu, I., Andrys, J., Ackerson, M. R., Corrigan, C. M., Farfan, G. A., Guice, G. L. et al. (2021) Unlearning racism in a federal setting. *AGU Fall Meeting, New Orleans, USA*.

- Guice, G. L., Magalhães, J. R., Pinheiro, M. A. P., Ramos, R. C. R., Meira, V. T., Melo-Silva, P., Ackerson, M. R. (2021) Spinel-group mineral chemistry as a record of magmatic and metamorphic processes: evidence from the Morro do Onça komatiites, Minas Gerais (Brazil). *GSA 2021, Portland, USA*. (Talk)
- Guice, G. L., Ackerson, M. R., Andrew, B. J., Cole, S. R., Corrigan, C. M., Cottrell, E., Farfan, G. A., et al. (2021). Advancing diversity, equity, accessibility, and inclusion at the Smithsonian's National Museum of Natural History: unique opportunities and challenges. *GSA 2021, Portland, USA*. (Poster)
- Viete, D. R., Holder, R. M., Guice, G. L., George, F. R. (2021) Metamorphic scales illuminate past tectonic processes. *GSA, 2021, Portland, USA*.