

George L. Guice

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RELEVANT EMPLOYMENT

- Jul. 2019–present** Peter Buck Postdoctoral Fellow, Smithsonian’s 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](#).
Advisors: Iain McDonald (Cardiff University), Hannah Hughes (Camborne School of Mines); Carl Anhaeusser (University of the Witwatersrand).
- 2015 MSc Mining Geology**, Camborne School of Mines, University of Exeter (UK). Merit
Dissertation title: The characteristics and genesis of the Sotkavaara Intrusion, northern Finland, including PGE mineralisation.
Advisors: Tuomo Törmänen (Geol. Survey of Finland); Jens Andersen (Camborne School of Mines)
- 2014 BSc Geology (major)**, with Physical Geography, University of Keele (UK). First class, with honours
- 2011 11 GCSEs and 3 A-levels**, Kineton High School (UK)

INVITED RESEARCH TALKS

- 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 webinar*. 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, Brazil; and University of Ouro Preto, Brazil

PUBLICATIONS

In Press:

7. Piacentini Pinheiro, M. A., [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](#).

Articles published in peer-reviewed journals:

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 – geodynamic constraints from cratons*. 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., Johanson, B., Lahaye, Y. (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 METHODS)

Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Moderate operating proficiency. Trace element mineral chemical analysis of glasses fused for bulk-rock analysis; in-situ trace element analysis of silicate minerals. Cardiff University (2017-2018) and Johns Hopkins University (2020).

Electron Microprobe (EMPA). Advanced operating proficiency. Utilised for quantitative major element mineral chemistry, chemical mapping and linescans at the Smithsonian Institution (2019-2021).

Scanning electron microscopy (SEM). Advanced operating proficiency. Utilised for: major element mineral chemistry, chemical mapping and back scattered electron imaging at Camborne School of Mines (2015), the Geological Survey of Finland (2015), Cardiff University (2015–2019) and Smithsonian Institution (2019–2020).

X-ray fluorescence (XRF). Moderate operating proficiency. Utilised for major and minor element bulk-rock geochemistry at the Carnegie Institution of Washington D.C. (2019–2020).

Portable XRF (p.XRF). Basic operating proficiency. Used for major element analysis, Cardiff University (2019).

RESEARCH EXPERIENCE (FIELDWORK)

- 2020: Two days studying/sampling the State Line Complex (PA, USA), including chromitite deposits.
- 2019: Four weeks of detailed fieldwork (mapping, logging, structural assessments and sampling) studying Archean ultramafic, mafic and felsic lithologies in the São Francisco Craton, Brazil.
- 2019: Two weeks of fieldwork studying/sampling the Baltimore Mafic Complex (MD, USA).
- 2016–2018: Fifteen weeks independent fieldwork studying Archean ultramafic-mafic rocks in remote parts of NW Scotland and the Outer Hebrides. Includes: mapping of the 7 km² Ben Strome Complex; detailed mapping of smaller complexes; and reconnaissance surveys in new areas.
- 2017: Three days fieldwork logging the Stac Fada Member (proposed impact ejecta), NW Scotland.
- 2017: Three weeks (voluntary) fieldwork on Mount Etna (Sicily), assisting Dr John Murray, Open University.
- 2016: Four weeks fieldwork studying fragments of an Archean greenstone belt in the Johannesburg Dome (South Africa), including detailed mapping, logging of key transects and sampling.
- 2016: One-week fieldtrip to the Outer Hebrides, led by Dr Kathryn Goodenough and Dr Hannah Hughes.
- 2016: One-week of field and mine visits, SEG student chapter fieldtrip, Finland.
- 2015: One-week (voluntary) fieldwork on Mount Etna (Sicily), assisting Dr John Murray, Open University.
- 2015: Three-week of drillcore logging and fieldwork, studying the origin of platinum-group element (PGE) mineralization the Sotkavaara Intrusion (Finland).
- 2015: Two-week fieldtrip (including mine visits), Ontario, Canada, as part of MSc Mining Geology course.
- 2014–2015: Ten days fieldwork (including mine visits) in Cornwall (UK), as part of MSc Mining Geology course.
- 2014: Two-week fieldtrip studying Italian volcanoes, as part of BSc Geology course.
- 2013: Two-week (voluntary) fieldwork on Mount Etna (Sicily), assisting Dr John Murray, Open University.
- 2013: Two-week fieldtrip to SE Spain, as part of BSc Geology course.
- 2013: Four weeks independent mapping of Carrock Fell and the surrounding area (15 km²), Lake District (UK).

TEACHING & SUPERVISION EXPERIENCE

Undergraduate and public lectures:

- 2020: How did Earth operate during the Archean? Online lecture to Year 4 undergraduate students. *University of Campinas*.
- 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*.
- 2017: “An introduction to igneous rocks and magma chamber processes” Lecture to year 1 undergraduate students. *Pembrokeshire fieldtrip, Cardiff University*.

Field courses (as postgraduate field demonstrator, Cardiff University):

- 2016, 2017, 2018: Residential field course to Pembrokeshire (1 week) for Year 1 students.
- 2016, 2017: One-week residential field course to Arran for Year 2 students. Includes mapping training.
- 2016–2018: Over 20 one-day fieldtrips to field sites in South Wales, including mapping training.

Laboratory/practical courses (as postgraduate laboratory demonstrator, Cardiff University):

2015: Year 1 (BSc) Introduction to Earth System Science

2015: Year 1 (BSc) Geographical information systems

2016: Year 1 (BSc) Formation of the British Isles

2016: Year 1 (BSc) Earth Materials

2017, 2019: Year 2 (BSc) Geological Resources

2017, 2018: Year 2 (BSc) Metamorphic Petrology

2016, 2017, 2018: Year 3 (BSc) Applied Mineralogy

Student supervision: Naomi Becker, PhD, Johns Hopkins University (2019–present); Leonardo de Laurentis, BSc, University of Campinas (2019–present); Ellis Krishan, MEd, Cardiff University (2018).

OUTREACH AND EQUALITY, DIVERSITY & INCLUSION

2021: Unlearning Racism in Geoscience (URGE), 16-week course: Department of Mineral Sciences, National Museum of Natural History pod. More information available here: <https://urgeo.org/>.

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

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.

AWARDS AND HONOURS

2019: Peter Buck Postdoctoral Fellowship, 2-year award, Smithsonian National Museum of Natural History.

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.

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

BURSARIES AWARDED

2017: Geochemistry Group Travel Bursary (GBP£150)

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

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

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

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

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

PROFESSIONAL ACTIVITIES AND SOCIETY MEMBERSHIP

Ongoing: Geological Society of America, Member.

Ongoing: Mineralogical Society of Great Britain and Ireland, Member

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

2018: Session chair. Granulites & granulites conference.

2016–2018: Applied Mineralogy Group (Min. Soc. of Great Britain and Ireland) student committee member.

2016–2018: *Applied Mineralogist* (Mineralogical Society of Great Britain and Ireland) lead editor.

CONFERENCES

Conference papers (first author only):

- 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. (2020). The Baltimore Mafic Complex, Maryland: ophiolite fragments in the southern Appalachian Orogen. *GSA Connect Conference*. TALK.
- Guice, G. L., McDonald, I., Hughes, H. S. R., MacDonald, J. M., Goodenough, K. M., Faithfull, J. W. (2018) Ultramafic-mafic complexes in the Lewisian Gneiss Complex: a record of petrogenetically distinct phases of Archean magmatism. *Granulites and granulites, Ullapool (UK)*, POSTER.
- Guice, G. L., McDonald, I., Hughes, H. S. R., MacDonald, J. M., Schlatter, D. M., Goodenough, K. M., Faithfull, J. W. (2018) Assessing the origin of Nb anomalies in the Ben Strome Complex: implications for Archean geodynamic interpretations. *Granulites and granulites, Ullapool (UK)*, TALK.
- Guice, G. L., McDonald, I., Hughes, H. S. R., Schlatter, D. M. (2017) A lithochemical assessment of element mobility in Archean cratons: implications for Nb-Ta anomalies and PGE mobility. *Goldschmidt*, TALK.
- Guice, G. L., Törmänen, T., Johanson, B., Lahaye, Y. (2016) Offset-type PGE mineralisation in the Sotkavaara Intrusion, northern Finland: an association with zones of low-Cr clinopyroxenite. *MDSG Meeting, Bristol (UK)*, POSTER.
- Guice, G. L., McDonald, I., Hughes, H. S. R., Anhaeusser, C. R. (2016) Using PGE to characterise ultramafic-mafic complexes in Archean cratons. *Highly Siderophile Element geochemistry, Durham (UK)*, TALK.
- Guice, G. L., Hughes, H. S. R., McDonald, I. (2016) Geochemical distinctions between ultramafic-mafic bodies in the Lewisian Complex. *North Atlantic Craton conference, Edinburgh (UK)*, TALK.

Other conferences attended:

- 2020: Goldschmidt (virtual) conference.
- 2018: Earth dynamics and the development of plate tectonics. *Royal Society, London (UK)*.
- 2017: Bryan Lovell Meeting, Mining for the Future. *Geological Society, London (UK)*.

SPECIALIST TRAINING AND OTHER QUALIFICATIONS

- 2019-2020: Expertise using iPad & fieldmove software, which are utilized for geological mapping & fieldwork.
- 2018: 3-day training course for solution-based ICP-OES and ICP-MS systems at Cardiff University.
- 2017: Three-day geochemical exploration/ lithochemical course run by Denis Schlatter.
- 2016: Two-day Leapfrog software course at SRK consulting, Cardiff (UK).
- 2016-2019: Expertise using toughbook and associated Arc-GIS/sigma mobile geological mapping software.
- 2013-2020: Arc-GIS, R, CorelDraw and Inkscape.
- 2014: UK driving license.