# *CURRICULUM VITAE*
# Maxwell Alexander Lechte

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## EDUCATION

2015-2019 PhD, Earth Sciences, University of Melbourne
2012-2014 MSc (Distinction), Earth Sciences, University of Melbourne
2009-2011 BSc, Geology, University of Melbourne

## PROFESSIONAL EXPERIENCE

**2018-Present – Precambrian Geology Research Assistant**
*School of Earth Sciences, University of Melbourne*
Advisors: Malcolm Wallace, Ashleigh van Smeerdijk Hood. Research into Precambrian carbonate sedimentology; thin section preparation; petrographic analysis (transmitted light microscopy); geochemical analysis (electron microprobe, SEM, laser ablation Agilent 7700x ICP-MS); maintenance of thin section and sedimentology laboratories. Research project co-supervision (Stephanie McColl, graduated M.Sc. student).

**Summer 2017 – Visiting Researcher**
*Department of Geology and Geophysics, Yale University*
Advisors: Ashleigh van Smeerdijk Hood, Noah Planavsky. Research at the Yale Metal Geochemistry Center; clean laboratory protocol and sample preparation; total rock acid digest; trace element geochemical analysis (Thermo-Finnigan Element XR magnetic sector ICP-MS); metal isotope analysis (Thermo Finnigan Neptune-Plus multi-collector ICP-MS).

**2013-2018 – Teaching Assistant**
*School of Earth Sciences, University of Melbourne*
Practical lab demonstrating, assignment marking, lecturing and course design.
Courses taught:

*Sedimentary Geology* (2015-2018)
*Understanding Planet Earth* (2015-2018)
*Introduction to Life, Earth & the Universe* (2015-2016)
*Dangerous Earth* (2016)

Field trip demonstrating, planning and organisation, logistics, remote locality safety, field based teaching. Level 2 First Aid and 4WD Driving certified.
Field trips taught:

*Geology of Southeast Australia* (Otways, VIC; 2013-2017)
*Tectonics & Geodynamics* (Cape Conran, VIC; 2018)
*Sedimentary Geology* (Black Rock, VIC; 2017-2018)
*Understanding Planet Earth* (Phillip Island, VIC; 2015-2018)
*Field Mapping & Sedimentary Geology* (Buchan, VIC; 2017)
*Advanced Field Geology* (Flinders Ranges, SA; 2013-2014)

Course supervision; content creation, lecturing and teaching.
Courses taught:

*Geology for Engineers* (2016)
*Introduction to Adobe Illustrator Workshop* (2016)

**Other relevant employment history:**

*Summer 2015 – Consultant, Rio Tinto Iron Ore, Tom Price WA, Australia*
Iron ore geochemical and petrographic analysis, reflected light and scanning electron microscopy, electron microprobe analysis.

*2013-2014 – Technical Assistant, OZ Minerals, Melbourne VIC, Australia*
Geological map cataloguing, literature review research, data analysis.

*Summer 2014 – Geologist, Panoramic Resources, Kambalda WA, Australia*
Underground nickel mine face mapping; geological interpretation; core logging; sampling and geochemical analysis; specific gravity measurements; grade calculations; data analysis.

## HONOURS, SCHOLARSHIPS AND AWARDS

2018 Albert Shimmins Award (Faculty of Science, Uni. Melb.)
2017 Research Training Program Scholarship (Australian Federal Government)
2015 Australian Postgraduate Award
2015 Dean's Honour List (Faculty of Science, Uni. Melb.)
2014 P.W. Crohn Scholarship (School of Earth Sciences, Uni. Melb.)
2014 P.J. Adams Research Award (School of Earth Sciences, Uni. Melb.)
2013 VUEESC Sedimentology & Environmental Sciences Prize
2012 C.M. Tattam Scholarship (School of Earth Sciences, Uni. Melb.)

## RESEARCH GRANTS

2018 George Lansell Memorial Scholarship, Melbourne School of Engineering (AUD $10,000)
2017 International Association of Sedimentologists Postgraduate Research Grant (EUR €1,000)
2016 Science Abroad Travel Grant, Faculty of Science (AUD $1,500)
2016 International Geological Congress GeoHost Grant (ZAR R40,000)
2016 Geological Society of Australia Victoria Division Research Grant (AUD $1,500)

## PUBLICATIONS

**Peer-reviewed articles:**

2018 Busigny, V., Planavsky, N.J., Goldbaum, E., **Lechte, M.A.**, Feng, L. & Lyons, T.W., (2018) Origin of the Neoproterozoic Fulu iron formation, South China: Insights from iron isotopes and rare earth element patterns. *Geochimica et Cosmochimica Acta*, 242, p.123-142, doi: 10.1016/j.gca.2018.09.006.

2018 **Lechte, M.A.**, Wallace, M.W., van Smeerdijk Hood, A. & Planavsky, N. (2018) Cryogenian iron formations in the glaciogenic Kingston Peak Formation, California. *Precambrian Research*, 310, p.443-462, doi: 10.1016/j.precamres.2018.04.003.

2018 **Lechte, M.A.**, Wallace, M.W. & Hoffmann, K.H. (2018) Glacio-marine iron formation deposition in a c. 700 Ma glaciated margin: insights from the Chuos Formation, Namibia. *Geological Society, London, Special Publications*, SP475-2, doi: 10.1144/SP475.2.

2016 **Lechte, M.** & Wallace, M. (2016) Sub–ice shelf ironstone deposition during the Neoproterozoic Sturtian glaciation. *Geology*, 44(11), p.891-894, doi: 10.1130/G38495.1.

2015 **Lechte, M.A.** & Wallace, M.W. (2015) Sedimentary and tectonic history of the Holowilena Ironstone, a Neoproterozoic iron formation in South Australia. *Sedimentary Geology*, 329, p.211-224, doi: 10.1016/j.sedgeo.2015.09.014.

## PRESENTATIONS

**Recent abstracts presented** (*student advisee):

2019 **Lechte, M.**, Halverson, G., Wallace, M., Hood, A., Gibson, T., Milikin, A., Maloney, K., & Murphy, J. Ironstones of the Katherine Group, Yukon: marine ironcycling in the early Neoproterozoic. *GAC-MAC*, Quebec, Canada.

2018 **Lechte, M.**, Wallace, M., Hood, A., Planavsky, N., Li, W., Jiang, G., *McColl, S. & Asael, D. Glacial Oxygen Delivery in the Neoproterozoic: Fe Isotope Evidence. *Goldschmidt*, Boston, USA.

2017 **Lechte, M.**, Wallace, M. & Hood, A. Did glacial fluids help ventilate the oceans in the Neoproterozoic? Insights from glacially-associated iron formations. *Geobiology Society Conference*, Banff, Alberta, Canada.

2017 **Lechte, M.**, Wallace, M. & Hood, A. Neoproterozoic glaciomarine ironstones as geochemical proxies for Cryogenian oceans. *Goldschmidt*, Paris, France.

2016 **Lechte, M.A.** & Wallace, M.W. Origin of Neoproterozoic iron formations in Australia and Namibia. *International Geological Congress*, Cape Town, South Africa.

2016 **Lechte, M.A.** & Wallace, M.W. A sub-ice shelf setting for Neoproterozoic iron formations within the Sturtian glacial sequence? Insights from Australia and Namibia. *William Smith Meeting: Glaciated Margins, The Sedimentary and Geophysical Archive*, Geological Society of London, United Kingdom.

2015 **Lechte, M.A.** & Wallace, M.W. Holowilena Ironstone: A Neoproterozoic iron formation in South Australia. *Victorian Universities Earth and Environmental Sciences Conference*, University of Melbourne, Australia.

**Invited lectures, colloquia and seminars**

2017 Geological Society of Australia, Victoria Division, Melbourne, Australia.
2017 Department of Geology & Geophysics, Yale University, New Haven, USA.

## RELATED ACTIVITIES AND EXPERIENCE

**Reviewer:**
Geochimica et Cosmochimica Acta, Geobiology, Ore Geology Reviews, Environmental Earth Science; Geobiology; Precambrian Research

**Professional societies:**
Geobiology Society; Geological Association of Canada; European Association of Geochemistry; International Association of Sedimentologists; Geological Society of Victoria

**Short courses and workshops:**

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| 2018 | Cryogenian Subcommission field trip, northern Flinders Ranges, Australia |
| 2014 | *Science Communication*, University of Melbourne |
| 2014 | *Advanced Geophysics*, Monash University |
| 2013 | *Applied Structural Geology*, University of Western Australia |
| 2013 | *Advanced Structural Mapping* (Bermagui, VIC), Monash University |
| 2013 | *Mineral Exploration Under Cover* (Arkaroola, SA), Adelaide University |
| 2013 | *Coastal Environmental Geomorphology* (Gippsland, VIC), La Trobe University |
| 2013 | *Basin Analysis*, University of Melbourne |
| 2013 | *Interpretation of Satellite Images*, La Trobe University |
| 2013 | *Geoscience Information Systems*, University of Melbourne |

**Tutoring:**

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| 2016-2018 | Tutor and Mentor, Murrup Barak Institute for Indigenous Development |
| 2015-2016 | Tutor, Trinity College, University of Melbourne |
| 2009-2011 | Tutor, Tutoring for Excellence, Melbourne, VIC |

***Leadership and volunteering:***

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| 2019 | Session Co-Chair: Precambrian Sedimentology, GAC-MAC, Quebec, Canada |
| 2015-2018 | Science Experience Summer School, Melbourne, Australia |
| 2015-2018 | Science Expo, University of Melbourne |
| 2015 | Organisation Committee, VUEESC, Melbourne, Australia |
| 2014 | Global Leaders in Science Program Leader |
| 2014 | Treasurer, Earth Science Postgraduate Group, University of Melbourne |
| 2013 | Committee Member, Session Chair: Sedimentology, VUEESC, Melbourne |
| 2012 | Volunteer Science Teacher, Sun City School, Tanzania |
| 2007-2012 | Volunteer, Lorne Surf Life Saving Club |

***Certifications and Training:***

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| 2018 | DELF (Diploma in French Language) Level B1 Independent Certificate |
| 2018 | Provide First Aid (HLTAID003) Certificate |
| 2016 | KTA 4WD Driving Course Stage 1 & 2 |

***Technical experience:***
Geochemical analyses: Electron Microprobe (Cameca SX50) and laser ablation ICP-MS (Agilent 7700X quadrupole ICP-MS) analyses and data reduction and interpretation (rare earth elements) using Iolite Software; X-ray Fluorescence (SPECTRO Xepos Energy Dispersive XRF) and mass spectrometry (Thermo Finnegan Scientific Element XR ICP-MS) analyses. Fe isotope analysis: ion-exchange chromatography and mass spectrometry (Thermo Fisher Scientific Neptune Plus Multi-Collector ICP-MS). Thin-section preparation; transmitted, reflected and scanning electron microscopy; ioGAS Software data analysis.

***Field experience:***
Wernecke Mountains, Yukon (3 weeks); Flinders Ranges, South Australia (14 weeks); Death Valley and Kingston Range Wilderness, California (4 weeks); Kunene, Namibia (3 weeks); Griqualand, South Africa (2 weeks); Nevada (1 week); Islay, Scotland (1 week).

## REFERENCES

*PhD Supervisor*:
**Prof. Malcolm W. Wallace**
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