

Curriculum Vitae

Matthew P. Loocke
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Research Interests:

Electron microbeam analysis and its application to the earth sciences. Analytical methods for chemical and physical characterization of materials. The geology, chemistry, and physics related to the formation of the Earth's lithosphere. Evolution of the ocean basins from rifting to subduction. Processes relating to partial melting of the mantle and the petrogenesis of basaltic magmas. The petrogenesis of the fore-arc lower crust and mantle. The role of melt generation and impregnation in the formation of oceanic lithosphere. The petrology and structure of the oceanic lower crust and upper mantle exposed on the seafloor. The processes governing the obduction of ophiolite packages onto continental lithosphere. The role of disequilibrium processes in the generation of magmas and plutonic bodies in both the lithosphere and crust. The isotopic composition and evolution of Pb, Os, Sr, and Nd in the upper mantle and oceanic lithosphere.

Skills:

Igneous Petrology, Mineralogy, Geochemistry, Elemental Analysis, TIMS, Electron Microscopy, Electron Probe Microanalysis, Environmental Sciences, Laser Ablation-Inductively Coupled Plasma-Mass Spectroscopy (LA-ICP-MS), ICP-OES, FTIR, XRF Analysis, XRD analysis, AAS analysis, Xray CT analysis, Laboratory Management, LIMS

Professional History:

Aug, 2022 - Present	Assistant Professor of Research – Department of Geology & Geophysics, Louisiana State University, Baton Rouge, LA
Dec, 2020 – Jul, 2022	EPMA Lab Manager, Research Associate – Department of Geology & Geophysics, Louisiana State University, Baton Rouge, LA
Aug, 2020 – Dec, 2020	Interim EPMA Lab Manager, Transient – Research Project, Department of Geology & Geophysics, Louisiana State University, Baton Rouge, LA
Sep, 2016 – Aug 2020	Lab Manager and Research Engineering Scientist, University of Texas at Arlington Shimadzu Center for Environmental, Forensics and Material Science, Arlington, TX, USA
Sep, 2013 – Sep 2016	Postgraduate Researcher, Cardiff University School of Earth and Ocean Sciences, Cardiff, UK
Jun, 2013 – Sep, 2013	Research Assistant, University of Houston, TX, USA
Aug, 2011 – May, 2013	Graduate Research Assistant, Advisor- Jonathan E. Snow, University of Houston, TX, USA
May, 2009 – Jul, 2011	Undergraduate Research Assistant, Advisor- Jonathan E. Snow, University of Houston, TX, USA
Jan, 2009 – Apr, 2009	Undergraduate Research Assistant, Advisor- Tom Lapen, University of Houston, TX, USA

Education:

Ph.D.	<i>(Sept. 2016)</i>	Geology & Solid Earth Processes, Cardiff University, Cardiff, UK.
M.Sc.	<i>(May 2013)</i>	Geology, University of Houston, TX, USA.
B.S.	<i>(Dec. 2011)</i>	Geology with Honors, University of Houston, TX, USA .
H.S. Dipl.	<i>(May 2007)</i>	High School Diploma, with Honors, Katy High School, Katy, TX, USA.

Awards:

2013 Cardiff University Overseas Research Scholarship
2012 Outstanding Student Paper Award- Tectonophysics Section, 2012 AGU Fall Meeting
2012 Robert E. Sheriff Lecture Best Advanced Graduate Poster, Houston, TX, USA
2011 Best Oral Presentation, Dept. of Earth and Atmospheric Sciences Student Research Day, Univ. of Houston
2011 Outstanding Senior Honors Thesis Award, University of Houston
2009 Robert E. Sheriff Lecture Best New Graduate Poster, Houston, TX, USA
2009 Undergraduate Research Day, University of Houston, TX, USA
2005 Boy Scouts of America, Eagle Scout Recipient

Cruise and Field Experience:

Jan. 2014	Field Geologist	Oman Ophiolite Field Season OM14: Mapping of ophiolite upper crust
Oct. 2011	Shipboard Scientist	R/V Yokosuka/Shinkai 6500 (YK11-08): Submersible dive exploration of the terminal phase of back-arc spreading
Jan. 2011	Field Geologist	Santa Elena Peninsula, Costa Rica: Investigation of mineral and textural evidence for melt-rock interaction in the Santa Elena Peninsula
Jan. 2010	Field Assistant	Santa Elena Peninsula, Costa Rica: Examination of an incomplete ophiolite: mantle rocks of the Santa Elena Peninsula
May 2009	Shipboard Scientist	R/V Yokosuka/Shinkai 6500 (YK09-05): Exploration of a back-arc oceanic core complex, Godzilla Megamullion

Professional Societies and Panels: The Geological Society of London Fellow (since 2013), Microscopy Society of America (since 2015), Microanalysis Society (since 2015), The Mineralogical Society of Great Britain and Ireland (since 2014), Association of Environmental Geologists (2012), Japanese Geophysical Union (since 2009), President of The Geosociety at The University of Houston (2009), American Geophysical Union (since 2009), Mineralogical Society of America (since 2008), Geological Society of America (since 2009), and Houston Geological Society (since 2008).

Publications:

- Tian, H., Fan, M., Victor, V., Chamberlain, K., Waite, L., Stern, R.J. and Loocke, M., 2022. Rapid early Permian tectonic reorganization of Laurentia's plate margins: Evidence from volcanic tuffs in the Permian Basin, USA. *Gondwana Research*, 111, p.76-94.
- Hughes, H.S.R., McDonald, I., Loocke, M., Butler, I.B., Upton, B. and Faithfull, J.W., 2017. Paradoxical co-existing base metal sulphides in the mantle: the multi-event record preserved in Loch Roag peridotite xenoliths, North Atlantic Craton, *Lithos*, 276: p. 103-121.
- Hughes, H.S.R., McDonald, I., Faithfull, J.W., Upton, B.G., Loocke, M., 2016. Cobalt and precious metals in sulphides of peridotite xenoliths and inferences concerning their distribution according to geodynamic environment: A case study from the Scottish lithospheric mantle, *Lithos* 240-243: p. 202-227.
- Loocke, M., Snow, J.E., Ohara, Y., 2013. Melt stagnation in peridotites from the Godzilla Megamullion Oceanic Core Complex, Parece Vela Basin, Philippine Sea, *Lithos* 182-183: p. 1-10.
- Loocke, M., Lissenberg, C.J. and C.J. MacLeod, *In Review*. The paradox of the axial melt lens at fast-spreading midocean ridges, *submitted to Geochemistry, Geophysics, Geosystems*.
- Loocke, M. and C.J. Lissenberg, *In Review*. QACD: A method for the quantitative assessment of compositional distribution in geologic materials, *Computers in Geosciences*.
- Loocke, M., Lissenberg, C.J., and C.J. MacLeod *in prep*. An evolved melt lens in the Northern Ibra Valley, Southern Oman Ophiolite, *to be submitted to Geochemistry, Geophysics, Geosystems*.
- Loocke, M., Snow, J.E., Ishizuka, O., Dick, H.J.B., *in prep*. Arc foundations and the initiation of subduction in the IzuBonin forearc, *to be submitted to Earth and Planetary Science Letters*.
- Loocke, M., Ussery, I., Todd, E., *in prep*. Characterizing the nature of the sub-continental lithospheric mantle beneath Prindle Volcano, Yukon-Tanana Upland, Alaska, *to be submitted to Geochemistry, Geophysics, Geosystems*.
- Loocke, M., Luna, C., Lissenberg, C.J., MacLeod, C.J., *in prep*. Lateral variations in the upper gabbroic crust of the Southern Oman Ophiolite, *to be submitted to Lithos*.
- Santana, L.C.V., McLeod, C., Shaulis, B., Loocke, M., Al Gabory, R., *In Review*. Transcrustal magmatic processes as revealed by multiple amphibole crystal cargoes at the Quillacas volcanic center, Bolivia. *Submitted to Contributions to Mineralogy and Petrology*.

Technical Reports:

- Ohara, Y., Snow, J.E., Ishii, T., Dick, H.J.B., Michibayashi, K., Yamashita, H., Nelson, W., Sanfilippo, A., Loocke, M., Sondo, Y., Umegaki, T., Minamizawa, S., 2011, *tentative*: R/V Yokosuka YK11-08: Tectonics of a dying backarc basin as revealed by a dive study of the Godzilla Megamullion, Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan.
- Ohara, Y., Snow, J.E., Ishii, T., Dick, H.J.B., Michibayashi, K., Harigane, Y., Yamashita, H., Nakata, D.S., Loocke, M., Greenberg, E., Shinkai, Y., Komori, N., Iwamoto, H., 2009, Composition and structure of an Oceanic Core Complex: A dive study of Godzilla, Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan.

Conference and Workshop Abstracts:

- Henry, D., Mogk, D.W., Mueller, P., Dutrow, B., Loocke, M.P. and Tuttle, L. (2022). Detrital tourmaline in the Archean Jardine metasedimentary sequence of the Western Beartooth Mountains, Mt-WY, USA: Evidence for highly-evolved rocks exposed at the Earth's surface at 2.9-3.6 Ga. *Geological Society of America Abstracts with Programs*, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-378123>.
- Shrestha, K., Brown, K. and Loocke, M.P. (2022). Distal exposures of the Miocene Peach Spring tuff in the Marble and Ship Mountains of Southern California. *Geological Society of America Abstracts with Programs*, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-380818>.
- Shannon, C., Brown, K., McGarvie, D. and Loocke, M.P. (2022). Magma mixing in the 874 AD Hrafninnuhraun rhyolite eruption, Tofajökull volcano, Iceland. *Geological Society of America Abstracts with Programs*, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-381002>.
- Velazquez Santana, L., McLeod, C., Shaulis, B., Loocke, M.P. and Al Gbory, R. (2022). Transcrustal magmatic processes revealed through an integrated study of amphibole crystal cargoes at the Quillacas volcanic center, Bolivia. *Geological Society of America Abstracts with Programs*, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-380402>.
- Wolfe, C., Brown, K. and Loocke, M.P. (2022). Megacrystic potassium feldspar magmatism in the Southern Mojave Desert, California. *Geological Society of America Abstracts with Programs*, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-380460>.
- Brum, J., McLeod, C.L., Shaulis, B. and Loocke, M.P. (2022). 40 Years of Studying Allan Hills (ALHA) 81005: What Else Could We Possibly Learn? *Plenty! LPI*, (2678), p.2756.
- Gawronska, A.J., McLeod, C.L., Loocke, M.P. and Shaulis, B. (2022). The Petrogenetic Histories of Lunar Magmatic Systems as Told by Apollo Basalt Crystal Cargoes. *LPI*, (2678), p.125.
- Ireland, S.M., McLeod, C.L., Gawronska, A.J., Loocke, M.P. and Shaulis, B.J. (2022). Petrogenesis of Lunar Basaltic Meteorite Dominion (DOM) Range 18666. *LPI*, (2678), p.2909.
- Lissenberg, J., Loocke, M.P., Cooper, G.F. and MacLeod, C.J. (2021). Magma reservoir evolution at fast-spreading mid-ocean ridges. *Goldschmidt2021 • Virtual • 4-9 July*.
- Brum, J.T., McLeod, C.L., Shaulis, B., Duley, M. and Loocke, M. (2020). Investigating the History of Allan Hills (ALHA) 81005: What a Meteorite's Components Can Tell Us About It's Past. *LPI*, (2326), p.2919.
- Carr, D., Loocke, M.P., Snow, J.E., Gazel, E. and Shaulis, B. (2019). Beyond Plagioclase-Peridotite: Unravelling the melt-rock interaction history of the Santa Elena Ophiolite, NW Costa Rica. *AGUFM*, 2019, pp.T41J-0283.
- Loocke, M.P., Ussery, I., Todd, E. and Shaulis, B. (2019). Characterizing the nature of the sub-continental lithospheric mantle beneath Prindle Volcano, Yukon-Tanana Upland, Alaska. *AGUFM*, 2019, pp.T33C-08.
- Brum, J., McLeod, C., Gawronska, A., Shaulis, B., Duley, M., Edelmann, R. and Loocke, M. (2019). Early Lunar Chronology: Insights from Allan Hills (ALHA) 81005 Meteorite. *LPI*, (2132), p.2012.
- Loocke, M., Snow, J.E. (2018), Arc foundations: a lower crustal record of subduction initiation in the Izu-Bonin forearc, Abstract T51E-0202 presented at 2018 AGU Fall Meeting, Washington D.C.
- Carr, D., Loocke, M., Snow, J.E., Gazel, E. (2018), A multi-stage history of refertilization and melt-impregnation in peridotites from the Santa Elena Ophiolite, NW Costa Rica, Abstract T23E-0422 presented at 2018 AGU Fall Meeting, Washington D.C.
- Luna, C., Loocke, M., Lissenberg, C.J., MacLeod, C.J. (2018), Variability in the foliated gabbros of the Northern Ibra Valley, Southern Oman Ophiolite, Abstract V13E-0170 presented at 2018 AGU Fall Meeting, Washington D.C.
- Loocke, M., Lissenberg, C.J., MacLeod, C.J. (2017), QACD: A method for the quantitative assessment of compositional distribution in geologic materials, Abstract V43C-0544 presented at 2017 AGU Fall Meeting, New Orleans, LA.
- Carr, D., Loocke, M., Snow, J.E., Gazel, E. (2017), Characterizing the nature of melt-rock reaction in peridotites from the Santa Elena Ophiolite, NW, Costa Rica, Abstract V43D-0560 presented at 2017 AGU Fall Meeting, New Orleans, LA.
- Garcia, S.E., Loocke, M., Snow, J.E. (2017), Petrology of forearc basalt-related isotropic gabbros from the Bonin Ridge, Izu-Bonin forearc, Abstract V51D-0386 presented at 2017 AGU Fall Meeting, New Orleans, LA.

- Valencia, D., Basu, A.R., Loocke, M. (2017), Enrichment Of Volcanogenic Trace Elements, Co, Cr, Cu, Ni, Mo And Zr In A Continuous Subsurface Eagle Ford Core In South Texas And Origin Of The Oceanic Anoxic Event II At The Cenomanian-Turonian (C/T) Boundary, Abstract EP13A-1585 presented at 2017 AGU Fall Meeting, New Orleans, LA.
- Reo, G., Frank, M.R., Loocke, M., Macey, C.J. (2017), Platinum and Palladium Exsolution Textures in Quenched Sulfide Melts, Abstract V43B-0528 presented at 2017 AGU Fall Meeting, New Orleans, LA.
- MacLeod, C.J., Loocke, M., Lissenberg, C.J. (2016), A holistic model for the role of the axial melt lens at fastspreading mid-ocean ridges, Abstract presented at 2016 AGU Fall Meeting, San Francisco, CA.
- Loocke, M., Lissenberg, C.J., MacLeod, C.J. (2015), The axial melt lens as a processor of evolved melts at fastspreading mid-ocean ridges, Abstract presented at 2015 AGU Fall Meeting, San Francisco, CA.
- Hughes, H.S.R., Upton, B., Faithfull, J.W., McDonald, I., Downes, H., Loocke, M. (2015), An overview of the mantle xenoliths from Loch Roag, Northwest Scotland (the margin of the North Atlantic Craton), 2nd European Mantle Workshop, Wroclaw, Poland, 25-28 August 2015.
- Bowell, R., Brough, C., Lissenberg, C.J., Loocke, M., Fleming, M., Cook, W. (2015), The development of bespoke, versatile automated SEM technology; a next generation for process mineralogy?, Abstract to be presented at the PeruMin 32nd Mining Convention Technology & Research Meeting.
- Loocke, M., Lissenberg, C.J., MacLeod, C.J. (2014), An evolved axial melt lens in the Northern Ibra Valley, Southern Oman Ophiolite, Abstract presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 14-19 Dec.
- Lissenberg, C.J., Loocke, M., MacLeod, C.J. (2014), The paradox of the axial melt lens: Petrology and geochemistry of the upper plutonics at Hess Deep, Abstract presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 14-19 Dec.
- Loocke, M., Snow, J.E., Ishizuka, O. (2013), Contrasting MORB-Boninite melt reaction trends in IBM forearc moho transition zone, Abstract V31A-2668 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.
- Loocke, M., Snow, J.E., Ohara, Y. (2013), Temporal variations of melt stagnation in peridotites from the Godzilla Megamullion, Godzilla Megamullion Drilling Workshop, Odawara, Japan, 26-27 May.
- Loocke, M., Snow, J.E., Ishizuka, O. (2013), A tale of two magmas: Contrasting MORB-Boninite reaction trends in IBM forearc moho transition zone, Abstract S-CG10-05 presented at 2013 Japanese Geophysical Union Annual Meeting, Chiba, Japan, 19-24 May.
- Loocke, M., Snow, J.E., Ishizuka, O. (2012), Contrasting MORB-Boninite reaction trends in IBM forearc mantle, Bonin Ridge, Abstract T51D-2619 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 2-7 Dec.
- Loocke, M., Snow, J.E., Ishizuka, O. (2012), Contrasting MORB-Boninite reaction trends in IBM forearc mantle, Bonin Ridge, Ultra-deep drilling into arc crust workshop, Kona, HI, 17-21 Sept.
- Loocke, M., Snow, J.E., Ohara, Y. (2011), Death of a back-arc magmatic system: Temporal variations of meltstagnation in peridotites from the Godzilla Megamullion, Abstract T23A-2371 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 4-9 Dec.
- Snow, J.E., Ohara, Y., Harigane, Y., Hellebrand, E., Von der Handt, A., Loocke, M., Dick, H.J.B. (2011), Evolution of Melt Generation During Spreading Extinction at Godzilla Mullion., Abstract T23A-2372 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 4-9 Dec.
- Ohara, Y., Snow, J.E., Michibayashi, K., Dick, H.J.B., Harigane, Y., Tani, K., Yamashita, H., Ishizuka, O., Loocke, M., Ishii, T., Okino, K. (2011), Geology of a dying backarc spreading segment: results of high-density samplings of Godzilla Megamullion, Abstract T31D-07 presented by Y. Ohara at 2011 Fall Meeting, AGU, San Francisco, Calif., 4-9 Dec.
- Ohara, Y., Snow, J.E., Michibayashi, K., Dick, H.J.B., Harigane, Y., Tani, K., Yamashita, H., Ishizuka, O., Loocke, M., Ishii, T., Okino, K. (2011), A Shinkai diving expedition to Godzilla Megamullion: geology of a dying backarc spreading segment, Abstract O-10 presented by Y. Ohara at 2011 Interridge workshop of "Ocean Mantle Dynamics: From Spreading Center to Subduction Zone", Atmosphere and Ocean Research Institute, The University of Tokyo (AORI), Japan, 4 -6 Oct.
- Loocke, M., Snow, J.E., Ohara, Y. (2010), Systematics of melt stagnation in peridotites from the Godzilla Megamullion, Abstract T23A-2227 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Loocke, M., Snow, J. E., Ohara, Y. (2010) Godzilla Mullion: Plagioclase systematic of a back-arc core complex. Japanese Geophysical union Annual Meeting. Abstract S-IT038.
- Loocke, M., Snow, J. E., Ohara, Y. (2010) Godzilla Mullion: Plagioclase systematic of a back-arc core complex. American Geophysical Union Chapman Conference on Detachment Faults in Oceanic lithosphere, abstract II47, Agros, Cpyrus, 8-16 May.

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- Loocke, M., Snow, J. E., Ohara, Y. (2009) Systematics of plagioclase impregnation in peridotites from Godzilla Mullion. *Eos Trans. AGU, Fall Meet. Abstract T21A-1776.*
- Snow, J. E., Ohara, Y., Harigane, Y., Michibayashi, K., Hellebrand, E., Von der Handt, A., Loocke, M., Ishii, T. (2009) Secular evolution of partial melting and melt stagnation during the formation of Godzilla Mullion, Philippine Sea. *Eos Trans. AGU, Fall Meet. Abstract T33D-07*
- Loocke, M., Snow, J.E., Ohara, Y. (2009) Seismology and Petrology of Godzilla Mullion. R.E. Sheriff Lecture Graduate Research Poster Contest.
- Loocke, M., Snow, J.E., Ohara, Y. (2009) Godzilla Mullion in the Western Pacific: death of a seafloor volcanic system. Univ. Houston Undergrad. Research Day.