

Laura Gardner

She/Her

PhD Candidate in the Department of Earth and Planetary Sciences, Northwestern University

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Research

I use spectroscopy to analyze the composition and alteration of minerals and proteins within geological and biological materials. Currently, I am exploring how Raman spectroscopy may contribute to additive manufacturing activities on the Moon. I am also using Raman to estimate collagen preservation in medieval human bones.

Education

Northwestern University
Evanston, Illinois
2019 - Present
Ph.D. Candidate, Earth and
Planetary Sciences
Mineral Physics Lab
Advised by Dr. Steven Jacobsen

University of KwaZulu-Natal
Pietermaritzburg, South Africa
January 2008 - June 2008
Study abroad

University of California Los Angeles
Los Angeles, California
2004 - 2008
B.S. in Environmental Science,
Minor in Geography and
Environmental Studies

Technical & Professional Skills

- Raman spectroscopy
- Fourier transform infrared spectroscopy
- Synchrotron single-crystal X-ray diffraction
- Synchrotron computed microtomography
- Energy-dispersive X-ray spectroscopy
- Familiarity with Python
- Field experience in rangeland ecology
- Training small groups
- Digital & print marketing

Meeting Abstracts & Presentations

Lunar and Planetary Science Conference, 2025

Gardner, L.L., Abbot, T.M., Koube, K., Svaldi, V., Nguyen, T., Cabra, A., Wang, X., Bell, A.S., Edmunson, J.E., Jacobsen, S.D. (2025) Micro-Raman for Offworld Construction (μ ROC). Speaker, in-person meeting.
Abbott, T., Gardner, L.L., Koube, K., Svaldi, V., Nguyen, T., Edmunson, J., Dravid, V.P., and Jacobsen, S.D. (2025) Crystallographic texture and microstructure of laser 3D-printed lunar regolith simulant using EBSD. In-person meeting.

AGU24, 2024

Kendall, M., Clark, A.N., Jacobsen, S.D., Gardner, L., Sarafian, A.R., Townsend, J.P., Davis, J.-P., Seagle, C.T. (2024) Volatile retention + incorporation during pebble accretion: a combined shock and spectroscopy study. Poster.

COMPRES, 2022

Gardner, L., Jacobsen, S.D., Rivers, M.L., Zhang, D., Shirey, S.B., Pearson, D.G. (2022) Exploring Earth's Deep Water Cycle using Sublithospheric Diamonds. Speaker, virtual meeting.

Goldschmidt, 2022

Gardner, L., Jacobsen, S.D., Rivers, M.L., Zhang, D., Shirey, S.B., Pearson, D.G. (2022) Exploring Earth's Deep Water Cycle using Sublithospheric Diamonds. Speaker, virtual meeting.

COMPRES, 2021

Gardner, L., Rivers, M.L., Shirey, S.B., Pearson, D.G., Jacobsen, S.D. (2021) High-resolution imaging of polyphase microinclusions in diamond using pink beam tomography at GSECARS. Speaker, virtual meeting.

Publications

- Gardner, L.L., Abramovich, W., Romanov, M., Flohr, S., Kierdorf, U., Kierdorf, H., Almer, J.D., Jacobsen, S.D., Gonzalez, G.B., Park, J.-S., and Stock, S.R. (2025) Assessment of diagenesis in archaeological human second metacarpal bones using the intensity of the small angle X-ray scattering D-period peak. *Journal of the Royal Society, Interface*, 22, 20240826.
- Ni, P., Shirey, S., Walter, M., Czas, J., Novella, D., Nestola, F., Kueter, N., Smith, E., Stachel, T., Pearson, D., Steele, A., Gardner, L.L., Jacobsen, S.D., Harte, B., Harris, J.W., and Shahar, A. (In review) Onset of slab mantle melting recorded by ferropericlasite inclusions in diamonds. *Science Advances*.
- Wang, F., Bausch, H.J., Gardner, L.L., Zhang, D., Armstrong, K., Bell, A.S., Zhao, J., Alp, E.E., and Jacobsen, S.D. (2025) Thermoelastic Properties of Iron-Rich Ringwoodite and the Deep Mantle Aerotherm of Mars. *Geophysical Research Letters*, 52, e2024GL109666.

Teaching, Advising, & Community Involvement

- IJAS Region 6 Science Fair general session judge, 2024
- Teaching Assistant, Northwestern
 - Earth 101 - Earth Science for the 21st Century, spring 2024 and 2025
 - Earth 301 - Petrology: Evolution of Crustal and Mantle Rocks, spring 2023
 - Earth 300 - Earth and Planetary Materials, winter 2021 and 2022
- Guest Lecturer, Northwestern
 - Earth 101 - spring 2024 and 2025
 - Earth 300 - winter 2022
 - NU-GeoPaths - 3-week geoscience internship for high school students, summer 2023 and 2024
- Assistant Chair for Ayers, a Northwestern residential college, 2022-2023

Recent Recognition

Northwestern University

- Marion Sloss Award for Outstanding Graduate Teaching Assistant, FY2023

Employment Highlights

Lookie Lou, LLC, Glenview, Illinois: eCommerce website
2013 - 2016

Owner and Operator

Seesmart, Inc., Simi Valley, California: LED lighting manufacturer
2009 - 2013

Director of Marketing and Branding - October 2009 - September 2013

Executive & Marketing Assistant - February 2009 - October 2009