

DARA L. LACZNIAK

Planetary Geologist and Geoscience Educator

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Faculty Profile

CUNY Queens College
School of Earth and Environmental Sciences
65-30 Kissena Blvd
Flushing, NY 11367

EDUCATION

Ph.D. in Planetary Science

Purdue University – West Lafayette, IN

2023

Advisor: Dr. Michelle Thompson

B.S. in Geology (*magna cum laude*)

University of Nevada Las Vegas (UNLV) – Las Vegas, NV

2016

Advisor: Dr. Arya Udry

PROFESSIONAL APPOINTMENTS

Doctoral Lecturer

School of Earth and Environmental Sciences

CUNY Queens College, New York, NY

2023 – Present

Graduate Research Assistant

Department of Earth, Atmospheric, and Planetary Sciences

Purdue University, West Lafayette, IN

2018 – 2023

NASA DEVELOP Intern

NASA Earth Science Applied Sciences

Jet Propulsion Laboratory, Pasadena, CA

Jan 2018 – Mar 2018

NASA SUPPR Intern (formerly PGGURP)

Department of Geology and Geophysics

Louisiana State University, Baton Rouge, LA

May 2017 – Sept 2017

Research Assistant

Department of Geoscience

University of Nevada Las Vegas, Las Vegas, NV

Oct 2016 – Dec 2017

Undergraduate Research Assistant

Department of Geosciences

University of Nevada Las Vegas, Las Vegas, NV

May 2016 – Dec 2016,

Jan 2015 – Oct 2015

PEER-REVIEWED JOURNAL PUBLICATIONS

Laczniak, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Morris, R.V., Keller, L P.
(2023) Investigating the role of incident ion flux in solar wind space weathering of carbon-

rich asteroidal regolith via H⁺ and He⁺ irradiation of the Murchison meteorite. *Icarus (In Review)*.

- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Clemett, S.J., Morris, R.V., Keller, L.P. (2021) Characterizing the spectral, microstructural, and chemical effects of solar wind irradiation on the Murchison carbonaceous chondrite through coordinated analyses. *Icarus* 364, 114479. doi:10.1016/j.icarus.2021.114479
- Wang, X., Zhao, Y.S., Hood, D.R. Karunatillake, S., **Lacznia**, D.L., Schmidt, M.E., Vithanage, M. (2021) Multiphase volatilization of halogens at the soil-atmosphere interface on Mars. *Journal of Geophysical Research: Planets*, 126, e2021JE006929. doi: 10.1029/2021JE006929
- Rahib, R.R., Udry, A., Howarth, G.H., Gross, J., Paquet, M., Combs, L.M., **Lacznia**, D.L., Day, J.M.D. (2019) Mantle source to near-surface emplacement of enriched and intermediate poikilitic shergottites in Mars. *Geochimica et Cosmochimica Acta* 266, 463-496. doi: 10.1016/j.gca.2019.07.034

PUBLISHED ABSTRACTS

- Lacznia**, D.L., Thompson, M.S. (2023) Space weathering effects revealed through in situ ion irradiation and heating of the Murchison meteorite in the transmission electron microscope. *54th Lunar and Planetary Science Conference*, Abstract 1176.
- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Morris, R.V., Keller, L.P. (2022) Unraveling solar wind space weathering of carbon-rich asteroids: Low-flux vs. high-flux ion irradiation of Murchison. *85th Annual Meeting of the Meteoritical Society*, Abstract 6476.
- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Morris, R.V., Keller, L.P. (2022) Understanding the role of ion flux in solar wind space weathering: Low flux H⁺ and He⁺ irradiation of the Murchison meteorite. *53rd Lunar and Planetary Science Conference*, Abstract 1749.
- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Clemett, S.J., Morris, R.V., Keller, L.P. (2021) Investigating space weathering of carbonaceous asteroids through low-flux and high-flux H⁺ and He⁺ irradiation of the Murchison meteorite. *84th Annual Meeting of the Meteoritical Society*, Abstract 6086.
- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Clemett, S.J., Morris, R.V., Keller, L.P. (2021) Investigating space weathering effects on carbonaceous asteroids using high-flux and low-flux ion irradiation of the Murchison meteorite. *Microscopy and Microanalysis*, 27(S1), 2538-2541. doi:10.1017/S143192762100903X
- Lacznia**, D.L., Thompson, M.S., Christoffersen, R., Dukes, C.A., Clemett, S.J., Morris, R.V., Keller, L.P. (2021) Understanding space weathering of carbonaceous asteroids through H⁺ and He⁺ ion irradiation of the Murchison meteorite. *52nd Lunar and Planetary Science Conference*, Abstract 2361.
- Lacznia**, D.L., Thompson, M.S., Dukes, C.A., Morris, R.V., Clemett, S.J., Keller, L.P., and Christoffersen, R. (2020) Investigating space weathering effects using coordinated analysis of a H⁺- and He⁺-irradiated carbonaceous chondrite. *Microscopy and Microanalysis*, 26(S2), 2598-2601. doi:10.1017/S143192762002214X
- Lacznia**, D.L., Thompson, M.S., Dukes, C.A., Morris, R.V., Clemett, S.J., Keller, L.P., and Christoffersen, R. (2020) Preparing for C-complex asteroid sample return: Investigating space

- weathering effects using coordinated analysis of a H⁺- and He⁺-irradiated carbonaceous chondrite. *51st Lunar and Planetary Science Conference*, Abstract 2667.
- Lacznia**, D.L., Thompson, M.S., Dukes, C.A., Morris, R.V., Clemett, S.J., Keller, L.P., and Christoffersen, R. (2019) Coordinated analysis of an ion irradiated carbonaceous chondrite. *82nd Annual Meeting of the Meteoritical Society*, Abstract 6434.
- Lacznia**, D.L., Thompson, M.S., Dukes, C.A., Morris, R.V., Clemett, S.J., Keller, L.P., and Christoffersen, R. (2019) Coordinated analysis of an ion irradiated carbonaceous chondrite suggests complex space weathering effects. *50th Lunar and Planetary Science Conference*, Abstract 1972.
- Rahib, R.R., Udry, A., Howarth, G.H., Gross, J., Paquet, M., Combs, L.M., **Lacznia**, D. L., and Day, J. M. D. (2019) Formation and emplacement of martian poikilitic shergottites. *82nd Annual Meeting of the Meteoritical Society*, Abstract 6205.
- Rahib, R. R., Udry, A., Howarth, G. H., Gross, J., Paquet, M., Combs, L.M., **Lacznia**, D.L., and Day, J.M.D. (2019) Petrogenesis of enriched and intermediate poikilitic shergottites: From magmatic source to emplacement. *50th Lunar and Planetary Science Conference*, Abstract 1428
- Thompson, M.S., **Lacznia**, D.L., Loeffler, M.J., Dukes, C.A., Clemett, S.J., Morris, R.V., Glotch, T.D., Christoffersen, R., and Keller, L.P. (2021) Understanding the space weathering of returned samples through coordinated analysis of experimental analogs. *Goldschmidt*, Abstract 8096.
- Thompson, M.S., Haenecour, P., Howe, J.Y., **Lacznia**, D.L., Zega, T.J., Keller, L.P., Christoffersen, R. (2019) Simulating space weathering in the transmission electron microscope via dynamic in situ heating and helium irradiation of olivine. *50th Lunar and Planetary Science Conference*, Abstract 1425.
- Thompson, M.S., **Lacznia**, D.L., Morris, R.V., Clemett, S.J., Loeffler, M.J., Dukes, C.A., Trang, D., Keller, L.P., Christoffersen, R., and Agresti, D.G. (2019) The effects of space weathering on the organic and inorganic components of a carbonaceous chondrite: Implications for returned samples from Hayabusa2 and OSIRIS-REx. *Asteroid Science in the Age of Hayabusa2 and OSIRIS-REx Workshop*, Abstract 2103.
- Wang, X., **Lacznia**, D., Zhao, Y.S., Karunatillake, S. (2019) Laboratory and in situ characterization of halogen volatility in martian soil. *50th Lunar and Planetary Science Conference*, Abstract 3002.
- Lacznia**, D., Karunatillake, S., Zhao, Y.S., Hood, D.R., and Susko, D. (2018) Halogen signatures in Gale, Gusev, and Meridiani soils: Evidence for surface-atmosphere interactions. *49th Lunar and Planetary Science Conference*, Abstract 1822.
- Lacznia** D., Combs L., Rahib R., and Udry A. (2016) Textural analysis of enriched poikilitic shergottites, *Geological Society of America*, v. 48, n. 7, p. 227.

OTHER CONFERENCE PRESENTATIONS

Southern Nevada Association of Environmental and Engineering Geologists Meeting (Poster)

2016

Human-induced seismicity in Oklahoma: An illustration of the relationship between seismicity and injection wells and analysis of infrastructure risk. ” Received 1st Place Student Poster Award.

UNLV Undergraduate Research Symposium (Poster) 2015
Evaluating naturally occurring asbestos in desert pavements from Las Vegas and Ivanpah Valleys. Received 2nd Place Poster Award.

HONORS AND AWARDS

Post-Doctoral:

Smithsonian Institution Fellowship Program, Peter Buck 2023
 Postdoctoral Fellowship (*declined*)

Graduate:

High Resolution Electron Microscopy School Scholarship 2023
 Semi-Finalist, Presidential Management Fellows Program 2023
 Future Investigators in NASA Earth and Space Science and Technology (FINESST) Fellowship 2021 – 2024
 EAPS Outstanding Graduate Student Award 2022
 Microanalysis Society Castaing Award (*for best student paper and presentation*) 2022
 Purdue Graduate Student Government Travel Award 2022
 EAPS Graduate Student Conference Support Award 2022
 Purdue Three Minute Thesis Finalist 2020, 2021
 Purdue Service-Learning Grant 2018, 2019, 2021
 Microanalysis Society Joseph Goldstein Scholar Award 2021
 Zonta International Amelia Earhart Fellowship 2021
 Meteoritical Society's Wiley Award (*for an outstanding oral presentation by a graduate student*) 2021
 Meteoritical Society's NASA US Students Award 2021
 Microscopy and Microanalysis Student Scholar Award 2020
 Purdue Research Foundation Research Grant 2020 – 2021
 Lunar and Planetary Institute Career Development Award 2020
 Meteoritical Society's Gordon A. McKay Award (*for best oral presentation by a graduate student*) 2019
 Indiana Space Grant Consortium Graduate Fellowship 2019 – 2020
 Meteoritical Society's Japan Aerospace Exploration Agency and Institute of Space and Astronautical Science Student Travel Award 2019
 Honorable Mention in the National Science Foundation Graduate Research Fellowship Program 2019
 Gerald H. Krockover Graduate Fellowship Award in K-12 Outreach 2019, 2020
 Women in Science Program Travel Award 2019
 Frederick N. Andrews Fellowship 2018 – 2020

Undergraduate:

UNLV Undergraduate Academic Achievement Award 2016
 1st Place AEG Southern NV Section Student Night Poster Session 2016
 NSF EPSCoR Undergraduate Research Opportunity Program 2015

UNLV Douglas Orr Memorial Scholarship	2015
2 nd Place UNLV Undergraduate Research Poster Session	2015
UNLV Anne Fenton Wyman Scholarship	2014 – 2016
UNLV Brenda French Scholarship	2014 – 2015
Nevada Millennium Scholarship	2013 – 2016
UNLV Dean's Honor List	2013 – 2016
Colorado College Dean's Honor List	2012 – 2013

TEACHING EXPERIENCE

Foundations in College Teaching Certificate, <i>Purdue University</i>	Fall 2021
Instructor of Record for The Planets (EAPS 105), <i>Purdue University</i>	Summer 2021
Guest Lecturer for Earth Materials I (EAPS 243), <i>Purdue University</i>	Spring 2019
Undergraduate Geomorphology Teaching Assistant, <i>UNLV</i>	Spring 2016

LEADERSHIP, SERVICE, AND OUTREACH

Purdue University:

College of Science Women in Science Program Graduate Leadership Team	2021 – 2023
First-Year Graduate Student Mentorship Program	2020 – 2023
Space Day Ambassador	2021 – 2022
Dwornik Judge for Lunar and Planetary Science Conference	2022, 2023
Big Read Volunteer	2021
Passport Day STEM Instructional Materials Designer	2020
Outreach Coordinator for Graduate Student Association	2018 – 2020
Undergraduate Research Conference Judge (College of Science)	2020
Secretary for Graduate Student Association	2018 – 2019

University of Nevada Las Vegas:

Student Athlete Tutor (Spring term)	2017
Geosymposium Planning Committee	2016

Community:

Indiana Geoscientist High School Pen Pal Program	2020 – Present
Letters to a Pre-Scientist Program	2020 – Present
Lafayette Roller Derby Fundraising, Donations, and Promotions Committee (9 mos)	2022 – 2023
Boys & Girls Club Space Science After-School Program (9 mos)	2021 – 2022
Session Chair at the Meteoritical Society Meeting	2021, 2022
Session Moderator at the Lunar and Planetary Science Conference	2021
Region III Liaison of Microscopy Society of America Student Council	2021 – 2022
Social Chair of Microscopy Society of America Student Council	2020 – 2021
Manuscript Reviewer for <i>Icarus</i>	2020
Campfire Theatre Festival Script Reader	2019

Las Vegas Science and Technology Festival Volunteer	2016, 2017
Camp Counselor at Camp Bravo – Theater Arts Summer Camp	2013 – 2016
Volunteer at Las Vegas USGS-Water Resources Division	2014

SCIENCE COMMUNICATION EXPERIENCE

GSA Planetary Science Division Twitter Takeover	2021
Purdue Three Minute Thesis Finalist	2020, 2021
Pioneers of Microscopy articles in Microscopy Today (Jul, Sept)	2021
2 nd Annual Indiana Science Communication Day	2020

PROFESSIONAL DEVELOPMENT

Safer Space Training, CUNY Queens College	2023
Creating a Powerful DEI Syllabus Workshop, CUNY Queens College	2023
Planetary ReaCH Culturally Inclusive Planetary Engagement Workshop	2023
Arizona State University High Resolution Electron Microscopy School	2023
QPR Suicide Prevention Training	2021
LGBTQ Safe Zone Certification, Purdue University	2021
Unlearning Racism in Geoscience (URGE) Program	2021
Psyche science team mentorship program	2020
Executive Secretary for NASA Review Panels	2018, 2019, 2020
Lunar and Planetary Institute Outreach and Engagement Workshop	2019

INVITED TALKS

<i>Protons and Ions and Dust, Oh My! Improving Models of Space Weathering in an Age of Sample Return.</i> School of Earth and Environmental Sciences Colloquium, CUNY Queens College.	2023
<i>Does Flux Matter? Investigating Solar Wind Space Weathering of Carbon-Rich Asteroids Using Laboratory Analog Experiments.</i> Naval Research Laboratory.	2022
<i>Ageing Asteroids: Understanding the Surface Evolution of Carbon-Rich Asteroids through Laboratory Simulations of Space Weathering.</i> Buseck Center for Meteorite Studies, Arizona State University, Aug 2021	2021
<i>From Atoms to Asteroids: Investigating Space Weathering Effects Using Coordinated Analysis of a H⁺- and He⁺-Irradiated Carbonaceous Chondrite.</i> 4 th Annual Pre-Meeting Congress for Students, Postdocs, and Early Career Professionals, Microscopy and Microanalysis Meeting.	2020
<i>Understanding the Evolution of Carbonaceous Asteroid Surfaces through Laboratory Simulations of Space Weathering.</i> School of Geographical and Earth Sciences Colloquium, University of Glasgow.	2020
<i>Coordinated Analysis of an Ion Irradiated Carbonaceous Chondrite in Advance of OSIRIS-REx Sample Return.</i> Virginia Initiative on Cosmic Origins (VICO) Workshop, University of Virginia.	2019

SKILLS

Computing:

- (Advanced) GATAN Digital Micrograph, NSS X-ray Microanalysis, AZtech (Oxford), Adobe Illustrator, Adobe Photoshop, Inkscape, Excel, PowerPoint
- (Intermediate) ENVI, ArcGIS/ArcMap, QGIS, GIMP, ImageJ, Mars Analyst's Notebook, Planetary Data System (PDS), JMARS, Protochips
- (Basic) Fortran 95, Mathematica, gnuplot

Laboratory:

- Transmission Electron Microscopy, Scanning Electron Microscopy, Energy-Dispersive X-Ray Spectroscopy, Focused Ion Beam-SEM, sample preparation

Other:

- Public speaking, technical writing, database compilation, graphic design (logos, posters), event planning, educational material development

MEDIA ARTICLES

"EAPS graduate student Dara Laczniaik receives multiple awards for planetary science research", Purdue University

https://www.eaps.purdue.edu/news/articles/2021/1110_laczniaik_awards.html

"Student Spotlight: Dara Laczniaik", Microscopy Society of America

https://myemail.constantcontact.com/Your-September-MSA-Update-Has-Arrived.html?soid=1104410920088&aid=1Z17Ec_p-C4 (towards bottom of page)

"EAPS Student Awarded Indiana Space Grant for Carbonaceous Chondrite Research", Purdue University

<https://www.eaps.purdue.edu/news/articles/2019/laczniaik.html>

PROFESSIONAL MEMBERSHIPS

**If only one year is shown, I am currently still a member of the society.*

Association for Women Geoscientists (2023)

American Geophysical Union (2022)

The Planetary Society (2022)

Microscopy Society of America (2020)

Microanalysis Society (2020)

Earth Science Women's Network (2019)

The Meteoritical Society (2019)

The Geological Society of America (2016)

National Association of Geoscience Teachers (2023)