Henry Manelski

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EDUCATION

Purdue University **05 2022 – Present**
*PhD Student - **Planetary Science**, Advisor: Roger Wiens* *West Lafayette, IN*

Columbia University **08 2018 – 05 2022**
*BSc - **Applied Mathematics**, GPA: 3.56* *New York, NY*

SELECTED COURSEWORK

- Dynamical Systems
- Geochemistry for a Habitable Planet
- Mathematics of Data Science
- Space Instrumentation
- Laboratory Analysis of Planetary Materials
- Mars Seminar
- Partial Differential Equations
- Space Policy (audited)

WORK AND LEADERSHIP EXPERIENCE

SuperCam Science Team | Student Collaborator **05 2022 - Present**

- Working on Perseverance rover mission operations as a science Payload Uplink Lead (sPUL) for SuperCam, data validation of LIBS data for the Planetary Data System (PDS), and data interpretation. I specialize in analysis of Laser Induced Breakdown Spectroscopy (LIBS) data, plasma diagnostics, and trace element geochemistry. As a member of the LIBS Working Group and through my work with plasma diagnostics, I have helped build and validate SuperCam's elemental calibration.

Jet Propulsion Laboratory | Research Assistant **06 2021 - 08 2021**

- Awarded a Summer Undergraduate Research Fellowship (SURF) at JPL/Caltech for the summer of 2021. I used principal components analysis and spectral parameters to investigate passive spectra from the Curiosity Rover's ChemCam instrument. This project led to a poster presentation at LPSC 2022 and a paper published in the *Journal of Geophysical Research: Planets* in 2023.

Crater Café | Lead Organizer **05 2024 - Present**

- Serving as the lead organizer for the Purdue EAPS Planetary group's weekly seminar: Crater Café. Helping to bring world class planetary scientists to Purdue to share their research with our department.

EAPS Graduate Student Association | Secretary **09 2023 - 09 2024**

- Served as a liaison for graduate students in Purdue EAPS to communicate with faculty and staff. Organized monthly meetings to plan events, discuss graduate student concerns, and make our voices heard within the department.

TEACHING EXPERIENCE

Purdue University EAPS | Teaching Assistant **01 2025 - Present**

- Ran lab sessions for "EAPS 112: Earth Through Time". Made custom presentations to engage students and graded lab assignments.

Columbia University Dept. of Earth & Enviro. Eng. | Teaching Assistant **01 2022 - 05 2022**

- Helped to build the curriculum for and grade projects/exams for the course "EAEE 4262: Space Exploration and Mining". Held office hours and review sessions. Created lesson plans and ran discussion sessions.

Columbia University Dept. of Mathematics | Teaching Assistant **09 2020 - 12 2020**

- Graded exams and held office hours for the course "MATH 1102: Calculus II". Ran review sessions before exams.

SKILLS & INTERESTS

Languages: English (Native), German (C1/B2), Mandarin (B1), Polish (B1)
Technical: Python (Pandas, Numpy, Sci-kit learn), ArcGIS Pro, Multivariate regression (PLS, Elastic Net), Supervised machine learning (Random Forest, ExtraTrees), JMARS
Citizenship: United States, Austria

PUBLICATIONS

H. T. Manelski, R. C. Wiens, B. Bousquet, P. B. Hansen, S. Schröder, S. Clegg, N. D. Martin, A. E. Nelson, R. K. Martinez, A. M. Ollila, A. Agnes. (2024). LIBS Plasma Diagnostics with SuperCam on Mars: Implications for Quantification of Elemental Abundances. *Spectrochimica Acta Part B: Atomic Spectroscopy*, 222. https://doi.org/10.1016/j.sab.2024.107061

Clément Royer, CC Bedford, JR Johnson, BHN Horgan, A Broz, O Forni, S Connell, RC Wiens, L Mandon, BS Kathir, EM Hausrath, A Udry, JM Madariaga, E Dehouck, RB Anderson, P Beck, O Beyssac, É Clavé, Samuel M Clegg, E Cloutis, T Fouchet, Travis SJ Gabriel, BJ Garczynski, A Klidaras, **HT Manelski**, L Mayhew, J Núñez, Ann Martha Ollila, S Schröder, JI Simon, U Wolf, KM Stack, A Cousin, S Maurice. (2024). Intense alteration on early Mars revealed by high-aluminum rocks at Jezero crater. *Nature Communications: Earth & Environment*, 5, 671. https://doi.org/10.1038/s43247-024-01837-2

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, R. C. Wiens, J. R. Johnson, E. B. Rampe, J. Frydenvang, N. L. Lanza, O. Gasnault. (2023). Compositional variations in sedimentary deposits in Gale Crater as observed by ChemCam passive and active spectra. *Journal of Geophysical Research: Planets*, 128, e2022JE007706. https://doi.org/10.1029/2022JE007706

CONFERENCE ABSTRACTS

H. T. Manelski, R. C. Wiens, A. Broz, J. A. Hurowitz, M. Tice, S. Clegg, E. Dehouck, O. Forni, S.J. VanBommel, S. Schröder, T. S.J. Gabriel. Nickel Enrichments in Fine-Grained Sedimentary Rocks, Jezero Crater, Mars: Implications for the Formation/Alteration History of Neretva Vallis. Lunar and Planetary Science Conference 2025, The Woodlands, TX.

H. T. Manelski, R. C. Wiens, S. Schröder, P. B. Hansen, B. Bousquet, N. Martin, S. Clegg. LIBS Plasma Diagnostics with SuperCam on Mars. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, R. C. Wiens, J. R. Johnson, E. B. Rampe, J. Frydenvang, N. L. Lanza, O. Gasnault. Variability in Mt. Sharp Group Bedrock as seen by ChemCam Passive and Active Spectra. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, J. R. Johnson, R. Wiens, N. Lanza, J. Frydenvang. Classification of ChemCam passive spectral targets in Gale crater. Lunar and Planetary Science Conference 2022, The Woodlands, TX.

A. P. Broz, H. Kalucha, K. Benison, B. Horgan, A. Klidaras, **H. T. Manelski,** L. Mandon, S. Connell, et al. Green Reduction Spots in Red Beds of the Bright Angel Formation, Jezero Crater, Mars and Implications for Biosignature Preservation Potential. Lunar and Planetary Science Conference 2025, The Woodlands, TX.

R. B. Anderson, T.S.J. Gabriel, F. Seel, E. Clavé, P. Pilleri, S. Clegg, O. Forni, A. Ollila, C. Legett, **H. T. Manelski,** A. Cousin, R. Wiens, et al. Toward an Updated SuperCam LIBS Major Element Calibration. Lunar and Planetary Science Conference 2025, The Woodlands, TX.

C. C. Bedford, C. Royer, R. C. Wiens, J. R. Johnson, B. H. N. Horgan, A. Broz, O. Forni, S. Connell, L. Mandon, B. S. Kathir, E. M. Hausrath, A. Udry, J. M. Madariaga, E. Dehouck, R. B. Anderson, P. Beck, O. Beyssac, É. Clave, S. M. Clegg, E. Cloutis, T. Fouchet, T. S. J. Gabriel, B. J. Garzynski, A. Klidaras, **H. T. Manelski,** L. Mayhew, J. Nuñez, A. M. Ollila, S. Schröder, J. Bell, J. I. Simon, U. Wolf, K. M. Stack, A. Cousin, S. Maurice. Discovery of Light-toned Float Rocks in Jezero Crater: A Tale of Aqueous Alteration and High-temperature Metamorphism. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

W. Rapin, S. Maurice, A. Ollila, R. C. Wiens, B. Dubois, T. Nelson, L. Bonhomme, Y. Parot, S. Clegg, R. Newell, L. Ott, B. Chide, V. Payre, C. Bedford, S. Connell, **H. Manelski,** S. Schröder, M. Buder, C. Yana, P. Bousquet. µLIBS: Developing a Lightweight Elemental Micro-Mapper for In Situ Exploration. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

O. Forni, C. C. Bedford, C. Royer, Y. Liu, R. C. Wiens, E. Dehouck, P-Y. Meslin, A. Udry, O. Beyssac, T. S. Gabriel, P. Beck, O. Gasnault, C. Quantin-Nataf, J. R. Johnson, S. Schröder, P. Pilleri, **H. T. Manelski,** B. C.

Clarck, A. Cousin, S. Maurice, S. M. Clegg. Nickel-Copper Deposits on Mars? Discovery of Ore-Grade Abundances, and Implications on Formation and Alteration. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

M. M. Sori, K. L. Laferriere, K. S. Burkman, J. Herring, A. Klidaras, **H. T. Manelski,** R. A. McGlasson, S. M. Menten, I. F. Pamerleau, S. L. Pérez-Cortés. Hollows as a Source for Mercury's Polar Organics. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

O. Mikulskytė, J. Kingsworth, **H. T. Manelski,** Luka Pikulic, J. Rothenbuchner. Science Objectives of the Tumbleweed Mission-Swarm Based Wind Driven Rover Mars Exploration. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

AWARDS

Tomas Hirschfield Scholar Award at FACSS SciX 2024