



EDUCATION

Stanford University - PhD Candidate in Geophysics, expected 2025

Stanford Leland Junior University (Stanford), Stanford, CA

- Researching lunar paleomagnetism in the lab of Dr. Sonia Tikoo.
- Coursework focused on planetary science, geophysical modeling, and applied mathematics.
- National Science Foundation Graduate Research Fellow, 2020-ongoing.
- Additional focus on outreach and education including high school and undergraduate mentoring.

Caltech - B.S. Geology, Minor: Environmental Science and Engineering, received 2018

California Institute of Technology (Caltech), Pasadena, CA

- 3 years of geophysical lab research experience resulting in 1 journal paper and 2 conference presentations.

RESEARCH AND WORK EXPERIENCE

PhD Candidate in the lab of Dr. Sonia Tikoo, Stanford University, September 2020 – Present

- Thermal modeling of cooling lunar impact ejecta bodies.
- Magnetic field modeling in 3 dimensions in Python.
- Inverse modeling of satellite magnetic field data using MATLAB.
- Paleomagnetism laboratory techniques focused on analysis of extraterrestrial samples.
- Development and implementation of new cutting-edge paleomagnetism laboratory equipment.
- Lab Safety Coordinator responsible for oversight, safety training, and chemical management.

Research Project in the lab of Dr. Laura Schaefer, Stanford University, January 2022-Present.

- Thermochemical modeling of lunar magma ocean crystallization and trace element partitioning.

GIS Technician, City of Tallahassee, Tallahassee Florida, 2018-2020.

- Created and maintained digital databases, maps, and records of city utilities projects.
- Extensive experience with ESRI ArcGIS geospatial platform.

Undergraduate Researcher in the lab of Dr. Joe Kirschvink, Professor of Geobiology, Caltech, 2015 – 2017

Worked full-time during summer fellowships and continued work part-time while taking classes.

2017: Extended Late-Cretaceous Magnetostratigraphy of the James Ross Basin Island

- Completed a paleomagnetic study of Antarctic sediment cores for high-precision biostratigraphic dating.

2016: Investigating the Death of the Moyero River Superchron

- Concluded research project on Estonian paleostratigraphy, sample processing and data analysis.
- 2nd author on paper published in the journal Palaeogeography, Palaeoclimatology, Palaeoecology.

2015: Investigating the Role of Magnetite in Cryopreservation

- Introductory project on paleomagnetic methods with industrial and medical applications.
- Presented at American Geophysical Union Fall Meeting 2015.

PUBLICATIONS

Grappone, J. M., T. Chaffee, Y. Isozaki, H. Bauert, and J. L. Kirschvink. "Investigating the duration and termination of the Early Paleozoic Moyero reversed polarity Superchron: Middle Ordovician paleomagnetism from Estonia." Palaeogeography, Palaeoclimatology, Palaeoecology 485 (2017): 673-686.

PRESENTATIONS

Chaffee, Thom, Sonia M. Tikoo, Sam G. Boeschen, Ji-In Jung, and Benjamin P. Weiss. "Null Paleointensities of 2Ma Lunar Impactite Glass from South Ray Crater". Presented at LunaSCOPE meeting, August 7 2024.

Chaffee, Thom, Sonia M. Tikoo, Rachel Elise Maxwell, and Ian Garrick-Bethell. "Crustal Magnetic Anomalies Preclude a Stable Selenocentric Axial Dipole Structure for the Ancient Lunar Dynamo." In *55th Lunar and Planetary Science Conference*, no. 3040, p. 2237, March 13 2024.

Chaffee, Thom M., Sonia Tikoo, Sam G. Boeschen, Raisha Abubo, Benjamin P. Weiss. "No Evidence of Magnetization from Impact-Generated Fields in 2 Ma Lunar Impact Melt Glasses." GP24A-08 presented at 2023 Fall Meeting, AGU, 11-15 Dec.

Chaffee, Thom, Sonia Tikoo, Rachel Elise Maxwell, and Ian Garrick-Bethell. "Testing the Robustness of Parker's Method Against Complexly Magnetized Sources and Implications for Lunar and Planetary Paleopole Determinations". Bay Area Planetary Science Conference, 19 September 2023

Chaffee, Thom, Sonia M. Tikoo, Raisha Abubo, Sam G. Boeschen, Benjamin P. Weiss. "Testing Whether Lunar Melt Glasses Preserve Records of Impact-Generated Magnetic Fields." Lunar and Planetary Science Conference, March 2023

Chaffee, Thom M., Sonia Tikoo, Rachel Elise Maxwell, and Ian Garrick-Bethell "Testing the Robustness of Parker's Method Against Complexly Magnetized Sources and Implications for Lunar and Planetary Paleopole Determinations" GP32B-0350 presented at 2022 Fall Meeting, AGU, 12-16 Dec.

Chaffee, Thom M. and Laura Schaefer. "Oxygen Fugacity in the Lunar Magma Ocean" DI35B-0037 presented at 2022 Fall Meeting, AGU, 12-16 Dec.

Chaffee, Thomas M., and Sonia M. Tikoo. "Size Thresholds for Unidirectional Remanence Within Lunar Magnetic Anomalies." In *52nd Lunar and Planetary Science Conference*, no. 2548, p. 1642. 2021.

Chaffee, Thomas M., Ross Mitchell, Sarah P. Slotznick, Jennifer Buz, Joseph Biasi, Joseph O'Rourke, Frank Sousa, David Flannery, Roger R. Fu, and Joseph L. Kirschvink. "Extended Late-Cretaceous Magnetostratigraphy of the James Ross Basin Island, Antarctica." In *AGU Fall Meeting Abstracts*, vol. 2017, pp. GP43A-0972. 2017.

Chaffee, Thom M., Joseph L. Kirschvink, and Atsuko K. Kobayashi. "Magnetic Dinner Salads: The Role of Biogenic Magnetite in Cryopreservation for Common Food Plants." In *AGU Fall Meeting Abstracts*, vol. 2015, pp. GP51A-1308. 2015.

AWARDS, TEACHING, SERVICE, AND DEI

Awards:

Stanford Centennial Teaching Award, 2024

Nominated by the Geophysics department for dedication and commitment to teaching with excellent student feedback.

LPSC 2023 LPI Career Development Award

For outstanding first-author abstract submission to the 54th Lunar and Planetary Science Conference

LPSC 2023 Dwornik Award, Honorable Mention

Award for 2nd-best student presentation at the conference

NSF GRFP, 2020

Three years of PhD funding for a research proposal on lunar magnetic anomalies

Students:

Mateo Chavez, student at Foothill College, Palo Alto, working in the Tikoo lab under my supervision, Summer 2024

Raisha Abubo, Stanford undergraduate working in the Tikoo lab under my supervision, 2022-2023

Sam Boesch, Stanford undergraduate (cotermin) working in the Tikoo lab under my supervision, 2022-ongoing
Mentored in developing a novel research project on passive extraction of lunar volatiles for spaceflight.

Vivian Bahn, high school intern via Stanford Earth Young Investigators program, Summer 2022

Service:

Science Explorer (SciX) Ambassador, 2024-ongoing

Outreach and education role for the digital library and database managed by the Smithsonian Astrophysical Observatory under a NASA cooperative agreement.

Committee on Graduate Studies, Stanford, 2023-ongoing

Voting member of the faculty senate committee charged with formulating policy on graduate education and reviewing interdisciplinary degree-granting programs, which reports to the Faculty Senate.

Stanford Wellness Program Co-Administrator, 2022-2023

Wellness role focused on the larger community for the entire Stanford Doerr School of Sustainability.

Stanford Geophysics Wellness Liaison, 2021-2023

Co-ran department student wellness program, organized student physical and mental health support, workshops for learning wellness skills, and social events.

Teaching:

Guest lecture, Formation and Dynamics of Planets course at Stanford, Nov 2024

Guest lecture on planetary formation and core differentiation for a graduate course with a focus on active learning activities.

Teaching Assistant, Stanford Earth & Planetary Sciences, Spring 2024.

Ran and graded weekly lab sections and assisted with field exercises and exam grading.

Teaching Assistant, Stanford Geophysics, "Introduction to Planetary Science", Spring 2023.

Gave lectures, graded problem sets, ran weekly office hours.

Volunteer, Stanford GeoKids, 2022-ongoing

Run weekly Earth science educational activities for classrooms of 2nd-4th graders.

Stanford Geophysics, graduate student mentor, 2021-ongoing

Provide mentorship and assistance to new graduate students their first year in the department.

Teaching Assistant, Caltech Geology, "Earth and the Environment", 2015, 2016, 2017.

Designed and supervised teaching labs, assisted students with questions, oversaw field expeditions.

Diversity, Equity and Inclusion:

Participant in Center for Integration of Research, Teaching, and Learning IDEAL Pedagogy course, Stanford, 2024 (ongoing)

Elected labor advocate for LGBTQIA+, disabled, immigrant, and first-generation/low-income students, Stanford Graduate Workers Union, 2023-ongoing

Participant in student-run "Diversity in Geophysics" course, Stanford, 2020

Accessibility Aide, Caltech, 2017-2018

Selected by the Deans' Office as an assistant to interpret figures, scribe, and assist vision impaired graduate student Newton Nguyen.