Stanford University

THOM CHAFFEE

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EDUCATION

Stanford University - PhD Candidate in Geophysics, expected 2025 Stanford University, 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
- Paleomagnetism laboratory techniques focused on analysis of extraterrestrial samples
- 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

- Thermodynamic modeling of magma ocean crystallization

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

Joined lab group on request of professor after completing the graduate level paleomagnetism course as a freshman. Worked directly with professor with no graduate student intermediates. 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, 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.

Banh, Vivian, **Thom M. Chaffee,** Sonia Tikoo, Ji-In Jung, Sanyum Channa, Fiorella Prada, Robert Sherell, Paul G. Falkowski and Erik E Cordes. "Can Corals Record High Resolution Changes in Earth's Magnetosphere?" ED44A-05 presented at 2022 Fall Meeting, AGU, 12-16 Dec.

McCall, Naoma, Sean P S Gulick, Sonia Tikoo, Athma R. Bhandari, Marc A Hesse, Tiziana Vanorio, Margariete GeorgeAlan Malenda, **Thom M. Chaffee**, Cornelia Rasmussen, Ethan Lopes, David A Kring, Axel Wittmann, Richard A Ketcham, Erwan Le Ber, Johanna Lofi, Auriol Rae, Didier Loggia and Gareth S Collins. "New Insights into the Chicxulub Post-impact Hydrothermal System Based on Permeability Measurements of the Peak Ring Rocks from IODP Expedition 364" EP55C-0814 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.

TEACHING, OUTREACH, AND DEI

Students:
Raisha Abubo, Stanford undergraduate working in the Tikoo lab under my supervision, 2022-ongoing

Sam Boeschen, Stanford undergraduate working in the Tikoo lab under my supervision, 2022-ongoing

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

Wellness:
Stanford Wellness Program Co-Administrator
Wellness role focused on the larger community for the entire Stanford Doerr School

Stanford Geophysics Wellness Liaison, 2021-ongoing
Co-ran department student wellness program, organized student physical and mental health support, workshops for learning wellness skills, and social events

Teaching:
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 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.

AWARDS AND HONORS

Lunar and Planetary Institute Career Development Award, 2023

National Science Foundation Graduate Research Fellow, 2020-ongoing

Dr. George R. Rossman Summer Undergraduate Research Fellow, 2017

Karen and James Cutts Summer Undergraduate Research Fellow, 2016

David C. Elliot Summer Undergraduate Research Fellow, 2015