Sonia M Tikoo-Schantz, Ph.D.

Curriculum Vitae (dated 12/05/2025)

Research Interests

I use paleomagnetism and fundamental rock magnetism as tools to investigate problems in the planetary sciences including dynamo magnetic field evolution, the origins of remanent magnetization within planetary crusts, and impact cratering processes.

Contact Information

Assistant Professor
Department of Geophysics and,
by courtesy, Earth and Planetary Sciences
Stanford University
397 Panama Mall, 3rd Floor
Stanford, CA 94305

smtikoo@stanford.edu
Phone: 650-724-9833
magnetism.stanford.edu

Section 1. Academic History

Education

Massachusetts Institute of Technology, Cambridge, MA
Ph.D., Planetary Science (degree conferred February 19, 2014).
Thesis: "Decline of the Lunar Dynamo"

California Institute of Technology, Pasadena, CA
B.S. with Honor, Geology and History minor (2008)

Scholarships and Honors (prior to Ph.D. completion)

- Stephen E. Dwornik Award Honorable Mention (2012) for Best Graduate Oral Presentation at the 43rd Lunar and Planetary Science Conference.
- NASA Earth and Space Sciences Fellowship (2008).
- National Science Foundation Graduate Fellowship (2008).
- Fritz Burns Prize in Geology (2007) awarded to a junior geoscience major at Caltech for exceptional potential to conduct scientific research.

Postdoctoral Training

University of California, Berkeley	Jan. 2014 – Dec. 2015
Berkeley Geochronology Center	Jan. 2014 – Dec. 2015
Massachusetts Institute of Technology	Nov. 2013 – Jan. 2014

Section 2. Employment History

Assistant Professor, Department of Geophysics, Stanford University	(Sept. 2019-) 01/09/2019-
Visiting Research Scientist, Rutgers University	Aug. 2019 - Aug. 2023
Assistant Professor, Rutgers University *note: maternity leave in Fall 2017*	Jan. 2016 – Jun. 2019
Invited (Visiting) Professor, CEREGE/Aix-Marseille University (France)	May-Jun. 2017
Visiting Research Scientist, Rutgers University.	Oct. 2014 – Dec. 2015

Section 3. Public and Professional Service

Professional Service

Field-Specific Long-Term Planning/Committee Service:

- Future Ocean Drilling in the US "FOCUS" Steering Committee (2023-present).
- Magnetics Information Consortium (MagIC) Advisory Committee (2023-present).
- Member of the Mercury and Moon Panel for the 2023-2032 Planetary Science and Astrobiology Decadal Survey, National Academy of Sciences.
- Institute for Rock Magnetism (University of Minnesota) Review and Advisory Committee (2018-2023)
- Participant, International Ocean Discovery Program/U. S. Science Support Program workshop NEXT: Scientific Ocean Drilling Beyond 2023 (2019).

Journal and Proposal Peer Review:

- Editor for *Geochemistry, Geophysics, Geosystems (G-Cubed)*. March 2024-present.
- Associate Editor for *Journal of Geophysical Resarch Planets*. July 2019-March 2024.
- Served as reviewer for *Science; Science Advances, PNAS, Nature Communications; Nature Communications Earth and Environment; Icarus; Scientific Reports, Earth and Planetary Science Letters; Geochimica et Cosmochimica Acta; Geophysical Research Letters; Journal of Geophysical Research Planets; Geological Society of America Bulletin; Meteoritics & Planetary Science; Geochemistry, Geophysics,*

Geosystems; The Astrophysical Journal Letters; Geology; Space: Science & Technology; *Scientific Data*.

- Served on multiple NASA and NSF review panels, as well as an external reviewer.

University Service:

- Faculty Advisory Board, Stanford Introductory Seminars (IntroSems) (2023-present)
- Stanford Doerr School of Sustainability research labs committee (2023-present)
- Stanford Doerr School of Sustainability space committee for new building design (2023-present)
- Geophysics Department faculty search committee member (2023).
- Geophysics Department graduate studies committee (2022-present)
- Associate Chair for Diversity and Inclusion (ACDI), Department of Geophysics. Co-chair of Geophysics Department Diversity Committee and member of Stanford Doerr School of Sustainability DEI council as part of the ACDI role (2020-2023).
- Presented about research to undergraduate student researchers who were participating in the Sustainability Undergraduate Research in Geoscience and Engineering (SURGE) and Sustainability and Earth Summer Undergraduate Research (SESUR) summer programs at Stanford (multiple years).
- Faculty sponsor for Stanford course Diversity and Inclusion in the Geosciences (2021).
- Gave Professional Development Seminar: *Communicating Your Science*, School of Earth, Energy, and Environmental Sciences (2019, 2021).
- Graduate Admissions Committee, Department of Geophysics (2019-2020)

Conference/Workshop Organization (since 2019):

- Organizing/steering committee member, Integrating Ocean Drilling and NASA Science: A Workshop to Explore Missions to Planet Earth, Washington, DC (April 2-4, 2024).
- Organizing committee member, Endurance Science Workshop, Pasadena, CA (August 9-11, 2023)
- Co-founder and co-organizer of multiple (annual-ish) Bay Area Planetary Science Meetings (founded 2019).
- Convener for planetary magnetism sessions at multiple annual American Geophysical Union (AGU) Fall Meetings

- Convener for lunar geophysics sessions at multiple annual Lunar and Planetary Science Conferences
- Co-organizer/Workshop Committee Member: 2020 Early Career Workshop: Demystifying the IODP Proposal Process for Early Career Scientists: Pacific Ocean. Hosted by the U.S. Science Support Program, at the Lamont-Doherty Earth Observatory, Palisades, NY (February 17-20, 2020).

Public Service/Outreach:

- Served as geophysics/planetary science expert in BBC Earth/PBS-NOVA episodes: "Day The Dinosaurs Died" (2017), "Dinosaur Apocalypse: Part 1" and "Dinosaur Apocalypse: Part 2" (2022), "Ancient Earth: Birth of the Sky" and "Ancient Earth: Inferno" (2023) and in multiple radio shows or podcasts such as *Science Friday* (2017-present). Also interviewed by various science or news organizations for popular articles (*EOS*, *The Atlantic*, *Times of India*, etc.).
- Lecturer/discussion panelist at the American Museum of Natural History (2019, 2020), U.S. National Archives (2019), California Academy of Sciences (2023).
- Virtual and in-person presentations about the Moon, impact cratering, and scientific ocean drilling at numerous schools (preschool-high school level).
- Judge, David Perlman Award for outstanding scientific writing by journalists (AGU award), (2020, 2021).

Section 4. Post-Degree (Post-Ph.D.) Honors and Awards

Awards/Honors

- Selected as Invited Keynote Speaker, International Lunar Sample Research Symposium (ISLRS), Hong Kong SAR (2025).
- Editor's Citation for Excellence in Refereeing, *Geophysical Research Letters*, American Geophysical Union (2024).
- Selected as Ocean Discovery Lecturer, USSSP Ocean Discovery Lecture Series, International Ocean Discovery Program (2022-2023).
- Inspiring Early Academic Career Award, Stanford Faculty Women's Forum (2021).
- Gabilan Faculty Fellow, Stanford University (2021-2023).
- Presidential Grant for Junior Faculty, Stanford University (2020).
- Doris Curtis Outstanding Woman in Science Award, Geological Society of America (2017).
- Awarded Invited Professorship at CEREGE, Aix-en-Provence, France (2017).

Invited Departmental Seminar Presentations

Macau University of Science and Technology (11/2025)
Stanford University (Department of Geophysics, 05/2025)
University of California Los Angeles (2/2025)
University of Southern Florida (2/2024)
University of California Berkeley (09/2023)
San Diego State University (04/2023)
Florida State University (04/2023)
University of Florida (04/2023)
University of Minnesota (02/2023)
Louisiana State University (02/2023)
University of Rochester (11/2022)
Univ. Potsdam (Germany) (10/2022)
University of California Los Angeles (10/2022)
Purdue University (Crough Lecture, 04/2022)
Taiwan Space Union (06/2021)
University of Washington (06/2021)
University of California LA/Berkeley (05/2021)
Stanford University (Department of Physics, 05/2021)
University of Texas at Austin (05/2021)
University of California Berkeley (04/2021)
Scripps Institution of Oceanography (03/2021)
University of Liverpool (02/2021)
California Institute of Technology (GPS Division Seminar, 11/2020)
Lunar and Planetary Institute (11/2020)
University of Wisconsin-Milwaukee (10/2020)
University of California Santa Cruz (01/2020)
Stanford University (Department of Geological Sciences, 01/2020)
University of Nebraska Lincoln (12/2019)
Stanford University (TPG Seminar, 11/2019)
Harvard University (10/2019)
Lehigh University (10/2019)
Ecole Normale Superieure (France) (05/2019)
Washington University in St. Louis (Stephen Zatman Memorial Lecture, 10/2018)

Pennsylvania State University – Geosciences (10/2018)
Pennsylvania State University – Center for Exoplanets and Habitable Worlds (10/2018)
Stanford University – Geophysics (04/2018)
Rutgers University (04/2018)
Binghamton University (03/2018)
CEREGE/Aix-Marseille University, France (Invited Professor Colloquium, 06/2017)
Lunar and Planetary Laboratory, University of Arizona (04/2017)
Southwest Research Institute (03/2017)
Johns Hopkins University (03/2017)
Department of Terrestrial Magnetism, Carnegie Institute of Washington (02/2017)
Lamont-Doherty Earth Observatory, Columbia University (05/2016)
Earth-Life Science Institute, Tokyo Institute of Technology (09/2015)
University of California Berkeley (04/2015)
University of California Santa Cruz (12/2014)
California Institute of Technology (Planetary Science Seminar, 10/2014)
San Jose State University (10/2014)
Massachusetts Institute of Technology (Planetary Seminar, 05/2014)
Berkeley Geochronology Center (02/2014)
Princeton University (01/2014)
Rutgers University (01/2014)

Professional Societies

- American Geophysical Union
- Geological Society of America

Grants Funded

- Lunar Structure, Composition, and Processes for Exploration (LunaSCOPE). NASA Solar System Exploration Research Virtual Institute (SSERVI). Co-Investigator (Institutional Principal Investigator). NASA grant # 80NSSC23M0161. Grant period: 07/01/2023-06/30/2028 (estimated).

- Expedition 399 Post-Expedition Award. U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP-IODP). Grant period: 11/01/2023-04/30/2026.

- Elucidating the origin of lunar paleomagnetic records by linking bulk rock magnetic properties with nanoscale electron microscopy. Stanford Doerr School of Sustainability Doerr Discovery Grant. (03/01/24 – summer 2026).

- Participation of Ethan Lopes on International Ocean Discovery Program (IODP) Expedition 399 (Building Blocks of Life, Atlantis Massif) aboard the JOIDES Resolution. U.S. Science Support Program (subaward from Columbia University). Grant period: 04/01/2023-03/31/2024.

- Collaborative Research: Late Cretaceous - early Cenozoic paleolatitude of the Walvis Ridge hotspot: Implications for true polar wander and hotspot geodynamics. Co-Principal Investigator (Institutional Principal Investigator). NSF grant #2232971. Grant period: 02/01/2023-12/31/2026.

- Paleolatitude of basal sediments along the Walvis Ridge and implications for hotspot fixity and true polar wander. U.S. Science Support Program (subaward from Columbia University). Grant period: 09/01/2022-11/30/2023.

- Participation of Sonia Tikoo-Schantz on International Ocean Discovery Program (IODP) Expedition 399. U.S. Science Support Program (subaward from Columbia University). Grant period: 12/01/2021-11/30/2022.

- Lunar Vertex Mission. Co-Investigator (Institutional Principal Investigator). NASA PRISM1 Program. Grant period: 11/01/2021-present (end date TBD).

- Assessing paleointensity variability during the lunar high field epoch. Principal Investigator. NASA grant # 80NSSC21K1541. Grant period: 10/01/2021-09/30/2024.

- Assessing the habitability of post-impact hydrothermal systems using the Chicxulub crater as a natural laboratory. Principal Investigator. NASA grant # 80NSSC20K1528. Grant period: 09/01/20-08/31/25.

- Investigating mechanisms for producing metallic Fe enrichments and magnetic anomalies within planetary crusts. Co-Investigator (Institutional Principal Investigator). NASA grant #80NSSC20K0640. Grant period: 02/11/2020 - 02/10/2024.

- Collaborative Research: Chicxulub impact effects and the recovery of life. Co-Principal Investigator (Institutional Principal Investigator). NSF grant #1737037. Grant period: 08/15/2017-08/14/2020 (approximate).

- Intrepid Planetary Mission Concept. Co-Investigator (Institutional Principal Investigator). NASA grant #80NSSC20K0260. Grant period: 11/08-2019-08/30/2020

- Origins of impact-related magnetization within the Chicxulub impact structure and implications for upper peak ring formation. (Expedition 364 Post-Expedition Activity Award). U.S. Science Support Program (subaward from Columbia University). Grant period: 2017-2019.

- Participation of Sonia Tikoo-Schantz on International Ocean Discovery Program (IODP) Expedition 364 (Chicxulub impact crater). U.S. Science Support Program (subaward from Columbia University). Grant period: 2016 (3 months).

- Early Career: Acquisition of a superconducting rock magnetometer with automated sample handling and rock magnetic characterization for paleomagnetism research. Principal Investigator. NSF grant #1535812. Grant period: 04/01/2016-03/21/2018.

Section 5. Scholarly Publications

† = graduate students supervised as primary project advisor
‡ = postdoctoral researchers supervised as primary project advisor
**** = undergraduate students supervised as primary project advisor***

Authorship conventions: *For publications led by students or postdocs that I supervised, I am typically listed as the 2nd author (or otherwise immediately after the students who led the study). For publications with many authors that were not led by my group, I will note my contributions below. Many-authored review papers typically list the non-lead authors in alphabetical order following the lead authors' names. In addition, I am technically an un-named co-author (e.g., listed under "IODP Expedition ### Science Party" or similar) on numerous papers that I do* ***not*** *list below as I believe my contributions to those works were too minimal to report here.*

Peer-Reviewed Publications

SUBMITTED/UNDER REVISION

[8] **†Jung, J., Tikoo, S. M.**, Chung, J. (submitted to *JGR Machine Learning*). Automated Mineral Identification and Rock-Type Classification of Lunar Mare Basalts using SEM Images.

[7] †Lopes, E. L., Vanorio, T., Guo, T., Ding, J., **Tikoo, S.** (submitted to *Geophysical Research Letters)*. Fibrous mineral arrangements and fault slip: Decoding failure modes.

[6] **†Lopes, E. L., Tikoo, S. M., *Ju, O., †Mells, J.,** Vanorio, T., Burns, D. H., Deans, J., Hatfield, R. G., Blum, P., John, B., Kuehn, R., Lang, S. Q., McCaig, A. M., Parsons, A. J. (submitted to *Journal of Geophysical Research Solid Earth*). Serpentinization and magnetic properties of the lower oceanic lithosphere: Insights from the Atlantis Massif.

[5] Pickersgill, A., Christou, E., Tremblay, M. M., Barfod, D. N., Rasmussen, C., Mark, D. F., Lee, M. R., Schmieder, M., Collins, G. S., Dymock, R., Gulick, S. P. S., Kring, D. A., Morgan, J. V., Osinski, G. R., Swindle, T., **Tikoo, S.**, Wittmann, A., and the Expedition 364 Scientists. (submitted to *Nature Communications)*. Critical constraints on a cradle of life: Duration of hydrothermal activity at Chicxulub.

[4] McCall, N., Gulick, S. P. S., **Tikoo, S.**, Bhandari, A., Hesse, M., Vanorio, T., Malenda, M., ***†*Chaffee, T., *†*Lopes, E.**, Rasmussen, C., Kring, D. A., Wittmann, A., Ketcham, R., Le Ber, E., Lofi, J., Loggia, D. (submitted to *Icarus*). Comparative study of the porosity and permeability of Chicxulub peak-ring rocks.

[3] Jenniskens, P., Zolensky, M., Gordon, A., Gordon, J., Hankey, M., Silber, E., Giannone, M. R., Han, J., Le, L., Fries, M., Ziegler, K., Chan, Q., Behera, D., Watson, J., Sephton, M., Brakeley, J., Munday, B., Kebukawa, Y., Gainsforth, Z., Suzuki, M., Brennecka, G., Render, J., Busemann, H., Krietsch, D., Maden, C., Welten, K., Nishiizumi, K., Caffee, M., Hiroi, T., Ruchti, S., Schmitt-Kopplin, P., Hertzog, J., Carre, V., Glavin, D., Dworkin, J., McLain, H., Mojarro, A., Aponte, J., Buckner, D., Ogawa, N., Takano, Y., Ohkouchi, N., **Tikoo, S., *†*Jung, J.,** Riveros, E., Friedrich, J., Ebel, D. (submitted to *Science Advances*). Meteor over New York City: Brines in a primitive CM asteroid.

[2] ***†*Zorzi, A., Tikoo, S. M.,** Sori, M. M., Bramson, A. M. (submitted). Lifetime of impact-induced subglacial hydrothermal systems on Mars.

[1] Nichols-Fleming, F., Evans, A., Johnson, B., **Tikoo, S.** (under revision for *J. Geophys. Res. Planets*). The influence of cool impactor accretion on the early lunar paleomagnetic record.

PUBLISHED/IN PRESS

[48] Namayandeh, A., Lamb, C., Sarabia, J. L., Shakouri, M., ***†*Lopes, E.**, Pacheco, Honeyman, A., Coker, A., Stewart, B., **Tikoo, S**., Peak, D., Fendorf, S. (in press). Non-linear redox transformations of chromium in soil during wildfire heating: The critical role of iron mineralogy. *Environmental Science and Technology.*

[47] Yao, C., Shi, Y., ***†*Jung, J.**, Vaci, Z., Wang, Y., Liu, Z., Yu, Y., Zhang, C., **Tikoo-Schantz, S.**, Zu, C. (2025). Universal reconstruction of complex magnetic profiles with minimum prior assumptions. *Phys. Rev. Applied,* 24, 064020. DOI: 10.1103/q312-kf83.

[46] Gulick, S., Kaskes, P., Lowery, C., Rae, A., **Tikoo, S.** (2025). From impact to extinction to recovery: Discoveries of IODP-ICDP Expedition 364 to the Chicxulub impact structure. *Marine Geology,* 491, 107661.

[45] ***†*Jung, J., Tikoo, S. M.**, Vaci, Z., Krawczynski, M. J., Solheid, P., Burns, D. H. (2025). Magnetic mineralogy in lunar mare basalts and implications for paleointensity retrieval. *J. Geophys. Res. Planets* 130 (9), e2025JE009030.

[44] ***†*Chaffee, T., Tikoo, S. M.**, Maxwell, R. E., Garrick-Bethell, I. (2025). Testing the fidelity of paleopole determinations from multidirectionally magnetized lunar crustal anomaly source bodies. *J. Geophys. Res. Planets,* 130 (9), e2024JE008805.

[43] Kring, D. A., Fagan, A. L., Bickel, V. T., Deutsch, A. N., Gaddis, L. R., Gross, J., Hiesinger, H., Hunning, T. M., Hurtado, J. M., Iqbal, W., Joy, K. H., Keszthelyi, L., Lemelin, M., Looper, C. A., Martinez-Camacho, J., Osinski, G., Peña-Asensio, E., Schmedemann, N., Siegler, M., **Tikoo, S.**, van de Bogert, C. H., Zacny, K. (2025). Notional geological traverses, station activities, and sample collection on Mons Malapert, lunar south polar region. *J. Geophys. Res. Planets*, 130(7), e2024JE008905.

[42] Gattacceca, J., Gounelle, M., Devouard, B., Barrat, J.-A., Bonal, L., King, A. J., Maurel, C., Beck, P., Roskosz, M., Viennet, J.-C., Mukherjee, D., Dauphas, N., Heck, P. R., Yokoyama, T., López Garcia, K., Poch, O., Grauby, O., Harrison, C. S., Vonogradoff, V., Vernazza, P., **Tikoo, S.**, Vidal, V., Rochette, P., AuYang, D., Borschneck, D., Jurasek., J., Clark, B. (2025). Oued Chebeika 002: A new CI1 meteorite linked to outer solar system bodies. *Meteorit. Planet. Sci.* doi: 10.1111/maps.14359.

[41] †**Verhagen, C., Tikoo, S.**, Schmieder, M., Gattacceca, J., Demory, F., Gross, J., Kring, D., Burger, P., Gulick, S., Morgan, J., Rebolledo-Vieyra, M., Urrutia-Fucugauchi, J., Wittmann, A., Pickersgill, A., Rasmussen, C. (2025). Exploring the origins of magnetization within the Chicxulub crater upper peak ring. *Meteorit. Planet Sci.* 60(4), 823-848.

[40] †**Jung, J., Tikoo, S. M.**, Burns, D. H. (2024). Assessing lunar paleointensity variability during the 3.9-3.5 Ga high field epoch. *Earth Planet. Sci. Lett.* 638, 118757.

[39] Liang, Y., **Tikoo, S. M.**, Krawczynski, M. J. (2024). Plausibility of lunar crustal magmatism producing strong crustal magnetism. *J. Geophys. Res. Planets* 129(5), e2023JE008179.

[38] Robinson, R. S., **Tikoo, S.**, Fulton, P. (2024). Sea changes for scientific ocean drilling. *Physics Today.* 77(2), 28-34.

[37] †**Yang, H., Tikoo, S. M.**, Carvallo, C., Bilardello, D., Solheid, P., Gaastra, K., Sager, W., Thoram, S., Hoernle, K., Hoefig, T., Avery, A., Del Gaudio, A., Huang, Y., Bhutani, R., Buchs, D., Class, C., Dai, Y., Dalla Valle, G., Fielding, S., Han, S., Homrighausen, S., Kubota, Y., Li, C.-F., Nelson, W., Petrou, E., Potter, K., Pujatti, S., Scholpp, J., Shervais, J., Tshiningayamwe, M., Wang, X.-J., Widdowson, M. (2024) Preliminary characterization of submarine basalt magnetic mineralogy using amplitude-dependence of magnetic susceptibility. *Geochem. Geophys. Geosyst.* 25(2), e2023GC011222.

[36] **Tikoo, S. M.,** †**Jung, J.** (2023) A lunar origin for paleomagnetic records in Apollo samples. *Geophys. Res. Lett.* 50, e2023GL105152. DOI: 10.1029/2023GL105152.

[35] Thoram, S., Sager, W., Gaastra, K., **Tikoo., S.**, Carvallo, C., Avery, A., Del Gaudio, A., Huang, Y., IODP Expedition 391 Scientists (2023). Nature and origin of magnetic lineations within Valdivia Bank: Ocean plateau formation by complex seafloor spreading. *Geophys. Res. Lett.* 50(13), e2023GL103415.

[34] †**Verhagen, C. M., †Jung, J., Tikoo, S. M.**, Wittmann, A., Kring, D. A., Brachfeld, S., Wu, L., Burns, D. H., Gulick, S. P. S. (2023). Significance of secondary Fe-oxide and Fe-sulfide minerals in upper peak ring suevite from the Chicxulub impact structure. *Minerals* 13(3), 353.

[33] Kring, D. A., Bickel, V., Fagan, A. L., Gaddis, L., Hiesinger, H., Hurtado, J. M., Huning, T., Joy, K. H., Lemelin, M., Looper, C. A., Osinski, G. R., Pösges, G., **Tikoo, S. M.**, van de Bogert, C. H. (2023) Elevation changes and slope that may affect EVA workload near potential Artemis landing sites. *2023 IEEE Aerospace Conference*, Big Sky, MT, USA, 2023, pp. 1-17, doi: 10.1109/AERO55745.2023.10115539.

[32] †**Zorzi, A., Tikoo, S. M.**, Beroza, G. C., Sleep, N. H. (2022). Reevaluating links between meteorite impacts and late Cenozoic global warming. *Geophys. Res. Lett.* 49(12), e2022GL099313.

[31] Lapotre, M. G. A., Bishop, J. L., Ielpi, A., Lower, D. R., Siebach, K. L., Sleep, N. H., **Tikoo, S. M.** (2022). Mars as a time machine to Precambrian Earth. *J. Geol. Soc.* 179(5), doi: 10.1144/jgs2022-047.

[30] **Tikoo, S. M.**, Evans, A. J. (2022, **invited review paper**) Dynamos in the inner solar system. *Ann. Rev. Earth Planet Sci.* 50, 99-122.

[29] Jones, M. J., Evans, A. J., Johnson, B. C., Weller, M. B., Andrews-Hanna, J. C., **Tikoo, S. M.**, Keane, J. T. (2022). A South Pole-Aitken impact origin for the lunar compositional asymmetry. *Sci. Adv.* 8(14), eabm8475.

[28] Wieczorek, M., Weiss, B. P., Breuer, D., Cebron, D., Fuller, M., Gattacceca, J., Garrick-Bethell, I., Halekas, J., Hemingway, D., Hood, L., Laneuville, M., Nimmo, F., Oran, R., Purucker, M., Rueckriemen, T., Soderlund, K., **Tikoo, S. M.,** Lunar Magnetism (2022, in press). *New Views of the Moon II., Rev. Min Geochem. https://hal.science/hal-03524536/file/Lunar%20magnetism-revised-FINAL-author-formatted.pdf*

[27] Evans, A. J., **Tikoo, S. M.** (2022). An episodic high-intensity lunar core dynamo. *Nat. Astron.* 6(3), 325-330.

[26] ‡**Strauss, B. E., Tikoo, S. M.**, Gross, J., Turrin, B., Setera, J. (2021). Constraining the decline of the lunar dynamo. *J. Geophys. Res. Planets.* 126, e2020JE006715.

[25] Bralower, T. J., Cosmidis, J., Fantle, M. S., Passey, B. H., Gulick, S. P. S., Lowery, C. M., Morgan, J. V., Vajda, V., Whalen, M. T., Wittman, A., Artemieva, N., Carte, J., Chen, S. A., Cockell, C., Farley, K., Freeman, K. H., Garber, J., Goderis, S., Gonzalez, M., Grice, K., Hajek, E., Heaney, P. J., Jones, H. L., Kring, D. A., Lyons, S. L., Rasmussen, C., Schaefer, B., Sibert, E., Smit, J., **Tikoo, S. M.**, Tovar, F. J., Zachos, J. C. (2020). The habitat of the nascent Chicxulub crater. *AGU Advances* 1(4), e2020AV000208.

[24] Kring, D. A., **Tikoo, S. M.**, Schmeider, M., Riller, U. P, Simpson, S. L., Osinski, G., Gattacceca, J., Wittmann, A., †**Verhagen, C. M**., Cockell, C. S., Coolen, M., Longstaffe, F. J., Gulick, S. P. S., Morgan, J. V., Bralower, T. J., Chenot, E., Christeson, G. L., Claeys, P., Ferriere, L., Gebhardt, C., Goto, K., Green, S. L., Jones, H., Lofi, J., Lowery, C. M., Ocampo-Torres, R., Perez-Cruz, L., Pickersgill, A., E., Poelchau, M. H., Rae, A. S. P., Rasmussen, C., Sato, H., Smit, J., Tomioka, N. Urrutia-Fucugauchi, J., Whalen, M. T., Xiao, L., Yamaguchi, K. E. (2020). Probing the hydrothermal system of the Chicxulub impact crater. *Sci. Adv.* 6(22), eaaz3053.

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Other Publications

PUBLISHED BOOK CHAPTERS

[14] Sager, W. W., Hoernle, K., Höfig, T. W. and Expedition 391 Scientists: Avery, A. J., Bhutani, R., Buchs, D. M., Carvallo, C. A., Class, C., Dai, Y., Dalla Valle, G., Del Gaudio, A. V., Gaastra, K. M., Han, S., Homrighausen, S., Kubota, Y., Li, C.-F., Nelson, W. R., Petrou, E., Potter, K. E., Pujatti, S., Scholpp, J., Shervais, J. W., Thoram, S., Tikoo-Schantz, S., Wang, X.-J., Widdowson, M. (2023) Expedition 391 summary. Proceedings of the International Ocean Discovery Program 391.https://doi.org/10.14379/iodp.proc.391.101.2023

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Petrou, E., Potter, K. E., Pujatti, S., Scholpp, J., Shervais, J. W., Thoram, S., **Tikoo-Schantz, S.**, Wang, X.-J., Widdowson, M. (2023) Expedition 391 methods. Proceedings of the International Ocean Discovery Program 391. https://doi.org/10.14379/iodp.proc.391.102.2023

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SELECTED WHITE PAPERS

[2] Neal, C. R., Gulick, S. P. S., Baker, B., D'Hondt, S., Eguchi, N., Gregg, T., Inagaki, F., Koppers, A., Lander, C. M., Moriarty, D., Morono, Y., Orcutt, B., Potter, R., Raymo, M., Schulte, M., **Tikoo, S.**, Torres, M. (2021). Forging Partnerships with Other Federal Programs: NASA and the National Science Foundation (NSF) through Scientific Ocean Drilling. Bulletin of the American Astronomical Society 53(4), 510.

[1] **Tikoo, S. M**., Weiss, B. P., Garrick-Bethell, I., Kirschvink, J. L., Hood, L. L., Blewett, D., Aharonson, O., Head, J. (2020). Next-generation lunar magnetism by Artemis. Science Definition Team for Artemis. White Paper #2078. https://www.lpi.usra.edu/announcements/artemis/whitepapers/2078.pdf.

2023-2032 PLANETARY SCIENCE AND ASTROBIOLOGY DECADAL SURVEY

[2] Endurance: Lunar South Pole-Aitken Basin Traverse and Sample Return Rover. Mission Concept Study Report for the 2023-2032 Planetary Science and Astrobiology Decadal Survey. Science Champion: Keane, J. T.; **Deputy Science Champion: Tikoo, S. M.**; Study Lead: J. Elliott.

[1] National Academies of Sciences, Engineering, and Medicine 2022. Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023-2032. Washington, DC: The National Academies Press. https://doi.org/10.17226/26522. **Served on the Mercury and the Moon panel and wrote portions of decadal survey chapters.**

OPEN ACCESS PREPRINTS + WORKSHOP REPORTS

[2] Keane, J. T., Cohen, B., Crow, C., Greenhagen, B., Jolliff, J., Liu, Y., Shearer, C., **Tikoo, S.,** Valencia, S. (2025). Endurance Science Workshop 2023 Final report. *arXiv.* Doi: 10.48550/arXiv.2502.07831.

[1] Ojha, L., Quesnel, Y., Plattner, A., Karunatillake, S., **Tikoo, S.** The role of serpentinization in magnetizing the Noachian crust of Mars. ESSOAR Preprint: 10.1002/essoar.10507035.1

Selected Recent Conference Abstracts/Presentations

† = graduate students supervised as primary project advisor

‡ = postdoctoral researchers supervised as primary project advisor
**** = undergraduate students supervised as primary project advisor***

S. Tikoo (2025). The role of magnetic mineralogy in lunar crustal magnetism. AGU Fall Meeting, Abstract #P13B-07. Oral presentation.

†**E. Lopes, S. Tikoo** (2025). A paleomagnetic piece to the structural puzzle: Demagnetization behavior of borehole samples from the Atlantis Massif, Mid-Atlantic Ridge. AGU Fall Meeting, Abstract #T22B-01. *Invited oral presentation (Lopes).*

Tikoo, S. M., †**Jung, J.,** †**Chaffee, T.**, J. Gattacceca, B. P. Weiss (2025). Lunar magnetism: What's new and what's next. 1st International Lunar Sample Research Symposium. 22-23 November, 2025. Hong Kong University, Hong Kong SAR. Abstract #ILSRS-5)-000000014.

Tikoo, S., †**Gleason, A.,** †**Yang, H.,** Thoram, S., Gaastra, K., Sager, W., Carvallo, C. (2025). Rock magnetism may complicate paleolatitude estimates from the Walvis Ridge hotspot track. 14th Institute for Rock Magnetism Conferences. 9-12 June 2025. University of Minnesota, Minneapolis.

†**Lopes, E.,** ***Ju, O., Tikoo-Schantz, S.,** †**Jung, J.,** Burns, D. H. (2024). Magnetic characterization of borehole samples from IODP Expedition 399: Atlantis Massif, Mid-Atlantic Ridge. AGU Fall Meeting, Abstract #PP51E-0587.

***Gaal, S.,** †**Jung, J., Tikoo-Schantz, S. M.,** ***Monteith, C.,** Burns, D. H. (2024). Investigating the magnetic properties of the Almahata Sitta Ureilite Meteorite. AGU Fall Meeting, Abstract #GP43C-3579.

***Gaal, S.,** †**Jung, J., Tikoo-Schantz, S. M.,** †**Lopes, E.,** ***Ju, O.,** Burns, D. H. (2024). Magnetization records of terrestrial weathering in the Sericho pallasite. AGU Fall Meeting, Abstract #GP43C-3578.

†**Jung, J., Tikoo, S. M.,** Vaci, Z., Krawczynski, M. J., Solheid, P., Burns, D. H., Shi, Y., Zu, C. (2024). Magnetic mineralogy in lunar mare basalts and implications for paleointensity. AGU Fall Meeting, Abstract #GP41A-06.

Tikoo, S. M., †Jung, J. (2023). Assessing the effects of magnetic contamination on lunar samples and implications for paleomagnetism. 54th Lunar and Planetary Science Conference, Abstract #1799. The Woodlands, TX.

†**Jung, J., Tikoo, S. M.**, Burns, D. H. (2023) Exploring the possible origins of magnetization recorded in Apollo 11 mare basalts. 54th Lunar and Planetary Science Conference, Abstract #1810. The Woodlands, TX.

†**Chaffee, T., Tikoo, S. M**., ***Abubo, R.,** ***Boeschen, S. G.,** Weiss, B. P. (2023) Testing whether lunar melt glasses preserve records of impact-generated magnetic fields. 54th Lunar and Planetary Science Conference, Abstract #1741. The Woodlands, TX.

Tikoo, S. M., †Jung, J. (2023, **invited talk**) Deconvolving the origin of lunar paleomagnetic records and implications for an ancient dynamo. 2023 Magnetics Information Consortium Workshop. Scripps Institute of Oceanography, UC San Diego, La Jolla, CA.

Tikoo, S. M., Zhang, Y., **†Verhagen, C. M.**, Swanson-Hysell, N. L., Gulick S. P. S., Kring, D. A. (2022) Elucidating impact-related magnetization acquisition processes at the Chicxulub crater with quantum diamond microscopy. 53rd Lunar and Planetary Science Conference, Abstract #1060. The Woodlands, TX.

Section 6. Teaching and Mentoring

Undergraduate and Graduate Teaching (since starting at Stanford in 2019)

- **Planetary Science and Exploration Seminar**, GEOPHYS 375 or EPS 375 or AA 299, 1-unit seminar oriented for upper level undergraduates and graduate students. Fall 2024-2025, Winter 2025, Spring 2025.
- **Introduction to Planetary Science**, GEOPHYS 124/GEOLSCI or EPS 124/ESS125, Spring 2021, 2023, 2025, 3-unit lecture course oriented to undergraduate students.
- **Designing Science Fiction Planets,** GEOPHYS/GEOLSCI or EPS30N, Spring 2022, Fall 2023, 3-unit introductory course (hybrid of lectures and seminar discussions) oriented to college freshmen.
- **Paleomagnetism,** GEOPHYS 139/239 / GEOLSCI or EPS 129/229, Fall 2021 and Fall 2025, 3-unit lecture course for upper level undergraduates and graduate students.
- **Frontiers of Geophysical Research at Stanford**, GEOPHYS 101/201, Fall 2020, 2021, 1-2 unit seminar for geophysics undergraduates and 1st year graduate students.
- **Evolution of Terrestrial Planets**, GEOPHYS 237, Spring 2020 and Spring 2024, 3-unit lecture course for upper-level undergraduates and graduate students.
- **Planetary Magnetism**, GEOPHYS 385T, 1 or 2-unit seminar offered every quarter for upper-level undergraduates and graduate students.

Undergraduate and Graduate Teaching (Rutgers University 2016-2019)

- **Structure and Formation of Terrestrial Planets / Structure and Formation fo the Earth**, 460:441 or 460:509, Fall 2018, 3-unit lecture course oriented to upper-level undergraduate students and graduate students.

- **Geology of Moons and Planets,** 460:224, Spring 2017, 2018, and 2019, 3-unit lecture course for undergraduate non-majors and majors.
- **Planet Mars: The Next Frontier**, Fall 2016, for undergraduate non-majors and majors.

Postdoctoral Associates Advised

- Ji-In Jung, starting July 2025. Lunar magnetism, multiple projects.
- Radchagrit Supakulopas 2018-2019, Rutgers University. Paleomagnetism of the Chesapeake Bay Impact Structure. Now a University Lecturer at the Geophysics Research Center, Prince of Songkla University, Thailand.
- Beckett Strauss, 2016-2017, Rutgers University. Constraining the decline of the lunar dynamo. Now a Senior Project Manager at Plume Clinic (previously a Postdoctoral Researcher at NIST and NASA Goddard prior to joining industry).

Graduate Students Advised

Served as Primary Thesis Advisor:

- Alexis Hensley, 2025-present. Ph.D. student in Geophysics, Stanford University.
- Qinwen (Vespera) Luo, 2025-present. Ph.D. student in Geophysics, Stanford University.
- Alexander Gleason, 2024-present. Ph.D. student in Geophysics, Stanford University.
- Ethan Lopes, 2021-present. Ph.D. student in Geophysics, Stanford Univeristy.
    - Institute for Rock Magnetism Visiting Fellow (2024)
    - National Science Foundation Graduate Fellow (2023-)
- Thomas Chaffee, 2020-present. Ph.D. student in Geophysics, Stanford University.
    - Institute for Rock Magnetism Visiting Fellow (2025)
    - Centennial TA Award (2024)
    - National Science Foundation Graduate Fellow (2020-2023)
    - LPI Career Development Award (2023)
    - Stephen Dwornik Award (Honorable Mention) (2023)
- Ji-In Jung, 2020-2025. Ph.D. student in Geophysics, Stanford University. Now a Postdoctoral Researcher at Stanford University
    - NASA Future Investigator in Space Science and Techonology (FINESST) Award/Grant Winner (2021-2024)

  - Institute for Rock Magnetism Visiting Fellow (2023)
  - LPI Career Development Award (2023)

- Hong Yang, 2021-2023 (graduated). M.S. student in Geophysics, Stanford University. Now employed at a leading battery company in China.
  - Institute for Rock Magnetism Visiting Fellow (2023)
- Ryan Galinkin, 2018-2019 (graduated). M.S. student in Physics, Rutgers University. Now a middle school science teacher in Kissimmee, Florida.
- Dr. Christina Verhagen, 2017-2023 (graduated). Ph.D. student in Earth and Planetary Sciences, Rutgers University. Now a Postdoctoral Researcher at Montclair State University.
  - Richard K. Olson Award, Rutgers University (2022)
  - 1st Place, Rutgers University 3-Minute Thesis Speaking Competition (2020)
  - National Science Foundation Graduate Fellow (2018-2021)
  - AGU Outstanding Student Paper Award (2019)
  - LPI Career Development Award (2018)

Served as Second Project/Thesis Chapter Advisor:

- Jonathan Mells, 2024-present. Ph.D. student in Geophysics, Stanford University.
- Andrea Zorzi, 2021-2022. Ph.D. student in Geological Sciences, Stanford University.

Served as Thesis Committee Member (or Rapporteur in French system):

- Jillian Musgrove (formerly Raab), M.S. student in Geophysics at the University of Houston (2025-present). *Reading/Thesis committee member.*
- Sarah Hickernell, Ph.D. student in the Department of Earht and Planetary Sciences, Stanford University (2025). *Defense Committee member/chair of defense only.*
- Keiji Hammond, Ph.D. student in the Department of Earth and Planetary Sciences, Stanford University (2025-present). Primary advisor: Ayla Pamukcu. *Reading/Thesis committee member.*
- Barron Nguyen, coterminal M.S. Student in the Department of Earth and Planetary Sciences, Stanford University (2025-present). Primary advisor: Laura Schaefer.
- Yuntian Li, Ph.D. student in the Department of Applied Physics, Stanford University (2024). *Defense committee member/chair of defense only.*

- Hong Yang, Ph.D. Student in the Department of Earth and Planetary Sciences, Stanford University (2022-2024). Primary advisor: Wendy Mao. *Reading/Thesis committee member.*
- Soraya Alfred, M.S. and Ph.D student in Geophysics at UT Austin (2023-present). Primary Advisors: Sean Gulick an Marc Hesse. *Reading/thesis committee member.*
- Margariete Malenda, Ph.D. student in the Department of Geophysics, Stanford University (2022-2024). Primary advisor: Tiziana Vanorio. *Reading/Thesis committee member.*
- Matthew Reinhold, Ph.D. Student in the Department of Earth and Planetary Sciences, Stanford University (2022-present). Primary advisor: Laura Schaefer. *Reading/Thesis committee member.*
- Andrea Zorzi, Ph.D. Student in the Department of Earth and Planetary Sciences, Stanford University (2021-present). Primary advisor: Laura Schaefer. *Reading/Thesis committee member.*
- Nathan Stacey, Ph.D. Student in Aeronautics and Astronautics, Stanford University (2022). Primary advisor: Simone D'Amico. *Defense Committee member*.
- Cansu Culha, Ph.D. Student in the Department of Geophysics, Stanford University, (2020-2022). Primary advisor: Jenny Suckale. *Reading/Thesis committee member.*
- Sabrina Tecklenburg, M.S. Student in the Department of Geological Sciences, Stanford University, (2020-2021). Primary advisor: Wendy Mao.
- Jacob "Coby" Abrahams, Ph.D. Student in the Department of Earth and Planetary Sciences, University of California, Santa Cruz (2020-2022). Primary advisor: Francis Nimmo.
- Megan Kelley (Seritan), Ph.D. Student in the Department of Earth and Planetary Sciences, University of California, Santa Cruz (2019-2022). Primary advisor: Ian Garrick-Bethell.
- Xiaoran Chen, Ph.D. Student in the Department of Earth and Planetary Sciences, Rutgers University (2020). Primary advisor: Vadim Levin.
- Kevin McCormack, former Ph.D. student in the Department of Geophysics, Stanford University (Ph.D. received in 2020). Primary advisor: Mark Zoback. *Defense committee member only.*
- Molly Witter, former Ph.D. student in the Department of Geological Sciences, Stanford University (Ph.D. received in 2020). Primary advisor: Marty Grove. *Defense committee member/chair of defense only.*
- Dulcie Head, Ph.D. Student in the Department of Geophysics, Stanford University (Ph.D. received in 2019). Primary advisor: Tiziana Vanorio. *Defense committee member only.*

- Shannon Boyle, former M.S. student in the Department of Earth and Planetary Sciences, Rutgers University (M.S. received in 2019). Primary advisor: Juliane Gross.
- Dr. Camille Lepaulard, former Ph.D. student at CEREGE, University of Aix-Marseille, France (Ph.D. received in 2018). Primary advisor: Jerome Gattacceca.

Undergraduate Students Advised (since starting at Stanford in 2019)

- Lily Muehlenhard, Bryn Mawr undergraduate (2025)
- Olivia Ju, Stanford undergraduate in Physics (2024)
- Sophia Gaal, Colorado College undergraduate in Physics (2024)
- Mateo Chavez, Foothill College undergraduate in Physics (2024)
- Benjamin Otter, Stanford undergraduate in Aerospace Engineering (2023)
- Sam Boeschen, Stanford undergraduate in Earth Systems Science (2022-present).
- Raisha Abubo, Stanford undergraduate in Earth and Planetary Sciences (2022-present).

High School Students Advised

- Vivian Bahn, Stanford Earth Young Investigators Program, Independence High School, San Jose, CA (2022).