Ananya Mallik

Curriculum vitae

Department of Geosciences | University of Arizona | 1040 E 4th Street, Gould-Simpson Building | Tucson, AZ 85721 | United States of America
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CHRONOLOGY OF EDUCATION

2009- 2014	PhD, Earth Science (Rice University, Houston, TX)
	Dissertation: *"Experimental investigation of crust-mantle hybridization in the Earth's shallow upper mantle"*
2006- 2008	Master of Science, Applied Geology (Jadavpur University, Kolkata, India)
2003 - 2006	Bachelor of Science, Geology (Jadavpur University, Kolkata, India)

CHRONOLOGY OF EMPLOYMENT

2023 – present	Faculty Member at the Arizona Astrobiology Center
2020 – present	Assistant Professor (The RealReal Inc. Endowed Chair in Gem Science), The University of Arizona, Tucson, AZ
2019– 2020	Assistant Professor, University of Rhode Island, Kingston, RI
2018	Postdoctoral Research Associate, Brown University, Providence, RI
2016– 2018	Alexander von Humboldt Postdoctoral Fellow, Bayerisches Geoinstitut, Bayreuth, Germany
2015- 2016	Postdoctoral Fellow, Bayerisches Geoinstitut, Bayreuth, Germany
2010– 2014	Visiting Scientist, Lunar and Planetary Institute, Houston, Texas
2009- 2014	Research Assistant, Rice University, Houston, Texas
2008 - 2009	SPM Fellow (Council of Industrial and Scientific Research, India), Jadavpur University, Kolkata, India
2006	Summer Fellow of Indian Academy of Sciences, Wadia Institute of Himalayan Geology, Dehradun, India

Leave of absence:

Aug – Dec 2021	Parental leave

HONORS AND AWARDS

2025	National Science Foundation CAREER Award
2022 - 2023	Mineralogical Society of America Distinguished Lecturer
2015	Alexander von Humboldt Postdoctoral Fellowship, Germany
2015	Leroy Caleb Gibbon Award, Department of Earth Science, Rice University
2013	Outstanding Graduate Student Award, Department of Earth Science, Rice University
2012	Torkild Rieber Award, Department of Earth Science, Rice University
2010	Outstanding Student Award, Houston Geological Society
2009	Watt Fellowship, Department of Earth Science, Rice University
2009	President's Fellowship, Rice University
2008	SPM Fellowship, Council of Industrial and Scientific Research, India
2008	University Gold Medal, Jadavpur University
2008	Junior Research Fellowship, Council of Industrial and Scientific Research, India
2007	Ranked all-India 8th in Graduate Aptitude Test for Engineering (Geology and Geophysics) organized by the Ministry of Human Resource Development, Government of India
2006	Summer Research Fellowship, Indian Academy of Sciences, India

SERVICE / OUTREACH

Local/State Outreach *limited to period in current rank at the University of Arizona*

2022	Invited Speaker - College of Science Lecture Series
2022	Invited Speaker - Tucson Gem and Mineral Society, Tucson, AZ
2021	Invited Guest Speaker - University of Arizona's OLLI (Osher Life-long Learning Institute)/Outreach College

National/International Outreach

2020 – present	Associate Editor – *Journal of Geophysical Research: Planets*
2024 – present	Executive Editor – *Advances in Geochemistry and Cosmochemistry*
2024 – present	Member, NASA Lunar Exploration Analysis Group (LEAG) Science Goals Committee

Referee of Journals: *AGU books*; *Earth and Planetary Science Letters*; *Geochemistry, Geophysics, Geosystems*; *Progress in Earth and Planetary Science*; *Geochimica et Cosmochimica Acta; Geology; American Mineralogist; Contributions to Mineralogy and Petrology; Lithos; International Geology Review; Geophysical Research Letters; Nature Communications; Nature; Journal of Geophysical Research: Solid Earth; Journal of Geophysical Research: Planets; Chemical Geology; Scientific Reports; Science Advances; Proceedings of the National Academy of Sciences (PNAS); Icarus*

Referee of Proposals: *National Science Foundation, Proposal for Research Foundation - Flanders (FWO) Belgium, Natural Environment Research Council (NERC) United Kingdom, French National Research Agency (ANR)*

Departmental Committee(s)

2023 – 2024	Geosciences Annual Performance Review Committee
2023	Organized thermodynamic modeling workshop at University of Arizona with Prof. Paul Asimow (Caltech) and Dr. Paula Antoshechkina (Caltech)
2023	Geosciences Department Chair Search Committee
2022 – 2023	Geosciences Graduate Students Admissions Committee
2022	Led the nomination and hiring of Dr. Susan Leib as an Adjunct Faculty in Geosciences
2022	Lowell Chair in Economic Geology Search Committee
2021 – 2022	GeoDaze Judge
2021	Lundin Chair in Economic Geology Search Committee
2020	Gem Science and Minerals Program Curriculum Committee

College Committee(s)

2022 – 2023	College of Science Lecture Series Committee

University Committee(s)

2023 – present	Member, Operations and Governance Committee, Arizona Astrobiology Institute
2023 – present	Member, Kuiper-Arizona Laboratory for Astromaterials (K-ALFAA) Oversight Committee
2020 – present	Member, Alfie Norville Gem and Mineral Museum Advisory Board

Other Committees *limited to period in current rank at the University of Arizona*

Student committees:

2025 – present	Comprehensive/Dissertation committee member of Namya Baijal and Gabe Gowman (both PhD track, UA LPL)
2024	Dissertation examiner (external) of S. Ray, PhD candidate at Australian National University, Canberra, Australia. Primary advisor(s) – G. Yaxley
2023	Dissertation examiner (external) of C. Shu, PhD candidate at Macquarie University, Sydney, Australia. Primary advisor(s) – S. Foley and N. Daczko
2023	Thesis examiner (external) of J. Jing, PhD candidate at Vrije University, Amsterdam, Netherlands. Primary advisor – W. van Westrenen
2023 - present	Dissertation committee member (external) of E. Cunningham, PhD candidate at University of Utah, Salt Lake City, UT. Primary advisor – S. Lambart
2023	Diagnostic committee member of Alec Martin (PhD track, UA Geosciences)
2022 – present	Diagnostic/Comprehensive/Dissertation committee chair of Isaiah Spring (PhD track, UA Geosciences)
2022 – present	Diagnostic/Comprehensive committee member of Rebecca Fulton (PhD track, UA Geosciences)
2022 – present	Comprehensive/Dissertation committee member of Zoe Wilbur (UA LPL)
2022	Dissertation committee member of Hannah Tompkins (MS, UA Geosciences)
2021 – present	Comprehensive/Dissertation committee member of Emilie Bowman (PhD candidate, UA Geosciences)
2021 – 2023	Dissertation committee member of Lisa Zieman (PhD candidate, UA Geosciences) and Amanda Stadermann (PhD candidate, UA LPL)
2021	Diagnostic committee member of Porfirio Ascencio (MS candidate, UA Geosciences)
2021	Dissertation committee of Roy Edward Greig (PhD candidate, UA Geosciences)
2020 – present	Diagnostic/Comprehensive/Dissertation committee chair of Anna Rebaza (PhD candidate, UA Geosciences) and Arkadeep Roy (PhD candidate, UA Geosciences)
2021 – present	Minor advisor of Amanda Stadermann (2021-2023, UA LPL), Zoe Wilbur (2022-present, UA LPL), Namya Baijal (2023 onwards, UA LPL), Gabriel Gowman (2023 onwards, UA LPL)

Scientific community service committees (limited to period in current rank at the University of Arizona):

2024	Co-chair – Session: *Origin, Distribution, and Transport of Volatiles in Earth and Terrestrial Planets*. American Geophysical Union Fall Meeting 2024 (with L. Bellino, E. Mallick, A. Rebaza)
2024	Invited Co-chair – Session: *Lunar Mantle*. Lunar and Planetary Science Conference 2024 (with N. Dygert, moderator: E. Culley)
2024	Co-convener – Session: *Volatile Cycling, from Mantle to Crust: Experimental, Geological, and Numerical Insights*. Goldschmidt 2024 (with D. Coulthard Jr., E.H.G Cooperdock, M. Myers, J. Ciazela, Z. Wang)
2023	NASA Planetary Science Division Review Panel Chair
2023	Co-chair – Session: *Origin, Distribution and Transport of Volatiles in Earth and Terrestrial Planets.* American Geophysical Union Fall Meeting 2023 (with C. Sun, C.R.M. Jackson)
2023	Invited Co-chair – Session: *Primordial Lunar Volatiles: From Origin to Eruption*. Lunar and Planetary Science Conference 2023 (with L. Borg, moderator: C. Renggli)
2022	National Science Foundation Review Panel
2021	Co-convener – Session: *Chemical Geodynamics throughout the Solar System – Combining insights from observations, experiments, analogues, and models.* Goldschmidt 2021 (with M.G. Fox-Powell, D. Spencer, K. Prissel, M. Telus, L.N Willhite, N. Dygert, M. M Dasani)
2020	Co-chair – Session: *Intraplate Volcanism and Deep Volatile Cycling: Insights into the Dynamic Processes in the Solid Earth.* Fall Meeting of American Geophysical Union, 2020 *(*with V. Finlayson, B. Peters, B. Marty)

PUBLICATIONS / CREATIVE ACTIVITY

Refereed Journal Articles - Published ** Substantially based on work done as a graduate student, º undergraduate and graduate student advisees*

Roy A.º, **Mallik A.**, Donaldson-Hanna K., Goepfert T., Hervig R. (2025) Miyake-jima anorthite: A lunar crustal material analog. *American Mineralogist*, **110(1)**, 154–170. https://doi.org/10.2138/am-2023-9122-a

Bowman E.º**, Mallik A.**, Ducea M. (2024) Partial melting of arclogite and petrogenesis of alkaline-silicate complexes. *Earth and Planetary Science Letters*, *645*, 118952.

Rebaza A.M. º, **Mallik A.**, Cooperdock E.H.G., Holman B º. (2024) The fate of ultramafic-rich mélanges in cold to hot subduction zones: Implications for diapirism (or not) and chemical geodynamics. *Earth and Planetary Science Letters*, *647*, 119020.

Mallik A., Rebaza A. M. º, Kapp P., Li L., Du Y., Al Shams A. º and Cooperdock E. H. G. (2023) Metabasic rocks as important nitrogen carriers to forearc depths: Implications for deep nitrogen cycling. *Geochim. Cosmochim. Acta* **361**, 265–275.

Rebaza A. M.º, **Mallik A.,** Straub S.M. (2023) Multiple episodes of metasomatism of the sub-arc mantle by slab partial melt: An insight into intermediate to hot subduction zones. *Journal of Petrology*, *64*(3), egad011. doi: 10.1093/petrology/egad011

Mallik A., Schwinger S., Roy A.º, Moitra P. (2022). Controls on determining the bulk water content of the Moon. *Meteoritics and Planetary Science*. doi:10.1111/maps.13921

Yanay N., Wang Z., Dettman D.L., Quade J., Huntington K.W., Schauer A.J., Nelson D.D., McManus J. B., Thirumalai K., Sakai S., Rebaza A.M.º, **Mallik A.** (2022). Rapid and precise measurement of carbonate clumped isotopes using laser spectroscopy *Science Advances 8, eabq0611.* doi:10.1126/sciadv.abq0611

Ducea M. N., Currie C. A., Balica C., Lazar I., **Mallik A.**, Petrescu L., Vlasceanu M. (2022). Diapirism of Carbonate Platforms Subducted into the Upper Mantle. *Geology*. doi:10.1130/G50000.1

Fuqua H., Bremner P.M., **Mallik A.,** Diamond M.R., Panovska S., Lock S.J (2021). Exploring the Sensitivity of Lunar Interior Structure from Geophysical and Geochemical Constraints. *Earth and Space Science Open Archive.* doi: 10.1002/essoar.10506842.1

Mallik, A., Lambart, S., & Chin, E. J. (2021). Tracking the Evolution of Magmas from Heterogeneous Mantle Sources to Eruption. In *Mantle Convection and Surface Expressions* (pp. 151–177). doi:10.1002/9781119528609.ch6

Yaxley, G.M., Ghosh, S., Kiseeva, E.S., **Mallik, A.**, Spandler, C., Thomson, A.R., Walter, M.J. (2019). CO_2-Rich Melts in Earth, in: Deep Carbon: Past to Present. Cambridge University Press, Cambridge, pp. 129–162. doi: 10.1017/9781108677950.006

Mallik A., Ejaz T º., Shcheka S. and Garapic G. (2019). A petrologic study on the effect of mantle overturn: Implications for evolution of the lunar interior. *Geochimica et Cosmochimica Acta* **250**, 238–250, doi: 10.1016/j.gca.2019.02.014

Mallik A., Li Y., Wiedenbeck M. (2018). Nitrogen evolution in Earth's atmosphere-mantle assessed by recycling in subduction zones**.** *Earth and Planetary Science Letters* 482, 556-566, doi: 10.1016/j.epsl.2017.11.045.

Mallik A.*, Dasgupta R., Tsuno K., Nelson Jº. (2016). Effects of water, depth and temperature on partial melting of mantle wedge fluxed by hydrous sediment melt in subduction zones. *Geochimica et Cosmochimica Acta* 195, 226-243, doi: 10.1016/j.gca.2016.08.018.

Mallik A.*, Nelson J°., Dasgupta R. (2015). Mantle wedge hybridization by subducted sediment-derived hydrous rhyolitic melt at 2-3 GPa – Implications for generation of ultrapotassic magmas in convergent margins. *Contributions to Mineralogy and Petrology* 169, 1–24, doi: 10.1007/s00410-015-1139-2.

Garapic G., **Mallik A.***, Dasgupta R., Jackson M.G. (2015). Oceanic lavas sampling the high $^{3}He/^{4}He$ mantle reservoir: Primitive, depleted, or re-enriched? *American Mineralogist,* 100, 2066–2081, doi: 10.2138/am-2015-5154.

Mallik A.*, Dasgupta R. (2014). Effect of variable CO_2 on eclogite-derived andesite and lherzolite reaction at 3 GPa—Implications for mantle source characteristics of alkalic ocean island basalts. *Geochemistry Geophysics Geosystems* 15, doi:10.1002/2014GC005251.

Mallik A.*, Dasgupta R. (2013). Reactive infiltration of MORB-eclogite derived carbonated silicate melt into fertile peridotite at 3 GPa and genesis of alkalic magmas. *Journal of Petrology* 54, 2267–2300, doi:10.1093/petrology/egt047.

Dasgupta, R., **Mallik, A.***, Tsuno, K., Withers, A. C., Hirth, G., Hirschmann, M. M. (2013). Carbon-dioxide-rich silicate melt in the Earth's upper mantle. *Nature* 493, 211-215, doi:10.1038/ nature11731.

Mallik A.*, Dasgupta R. (2012). Reaction between MORB-eclogite derived melts and fertile peridotite and generation of ocean island basalts. *Earth and Planetary Science Letters* 329–330, 97–108, doi:10.1016/j.epsl.2012.02.007.

Works in Progress *° undergraduate and graduate student advisees*

Ballmer M., Spaargaren R., **Mallik A.**, Cabeza-Cordoba A.M., Nakajima M., Vilella K. Present-day Earth Mantle Structure set up by Crustal Pollution of the Basal Magma Ocean. (*accepted, Science Advances)*

Andrews-Hannah J., Bottke W., Broquet A., Evans A., Gowman G., Johnson B., Keane J., Levin J., **Mallik A.**, Marchi S., Moruzzi S., Roy A.°, Wakita S. The South Pole-Aitken impact basin as a window into early lunar evolution. (*under review, Nature)*

Rebaza A. M.°, Holman, B.°, **Mallik A.,** Cooperdock, E.H.G. The journey of sediment-rich mélanges in subduction zones (*in revision, Journal of Geophysical Research: Solid Earth)*

Spring I.°, **Mallik A.**, Kirk J., Moitra P., Borg L., Hervig R. Trace element analyses of plagioclase from troctolite 76535 and implications for Mg-suite petrogenesis on the Moon. (*in revision, Meteoritics and Planetary Science)*

Other Publications

Mallik A. Diamonds as windows to deep Earth (2022). *Nature Geoscience: All Minerals Considered – Invited,* doi:10.1038/s41561-022-01064-4

MEDIA

2024	Hot Spot Lavas Around the World May Have Something in Common – EoS, AGU
2023	What's the deepest-occurring gemstone on Earth? – Live Science
2023	Newest Geoscience Track Meets the Needs of the Gem Industry – School of Mining and Mineral Resources, University of Arizona
2022	Layers of Learning: UA Science Lecture Series Puts Minerals Under a Microscope – Tucson Weekly
2020	Mineral Scientist Spearheads One-of-a-Kind Gem Science Program – Lowell Institute of Mineral Resources
2020	Plucky Ladies – Dr. Ananya Mallik – audio podcast
2019	From the Lunar Far Side, China's Rover Reveals the Moon's Hidden Depths – Scientific American
2019	URI researcher calculates temperature inside moon to help reveal its inner structure – University of Rhode Island (the article was shared by several media outlets globally)
2013	Magma in mantle has deep impact – EurekAlert!, AAAS (the article was shared by several media outlets globally)

CONFERENCES / SCHOLARLY PRESENTATIONS *limited to period in current rank at the University of Arizona*

Invited Seminars/Colloquia

China University of Geosciences, Wuhan, China, 2025
Center for High Pressure Science & Technology Advanced Research, Beijing, China, 2025
Department of Earth Sciences, Zhejiang University, Hangzhou, China, 2025
SZ4D Mini-Workshop - Experimental Petrology in Subduction Zones: Advancing Research and Community Initiatives with SZ4D, Washington D.C., 2024
Center for Earth Sciences, Indian Institute of Science, Bangalore, India, 2024
School of Earth and Space Exploration, Arizona State University, 2023
Department of Earth Sciences, University of Southern California, 2023
Mineralogical Society of America Distinguished Lecture Series (2022-2023) – UT El Paso, University of Idaho, Michigan State University, University of South Carolina, University of Western Ontario, McGill University, Syracuse University, Grand Valley State University, Concord University
Indian Institute of Science, Education, and Research, Kolkata, India –2023

Lunar and Planetary Laboratory, University of Arizona –2022
Physical Research Laboratory, Ahmedabad, India – 2022
Department of Earth Sciences, University of Hawaii Manõa – 2022
Department of Geology and Geophysics, University of Utah – 2021
Department of Geology and Environmental Science, James Madison University – 2021
Department of Geosciences, Idaho State University – 2021
Department of Marine Chemistry & Geochemistry, Woods Hole Oceanographic Institute – 2020
School of Earth and Climate Sciences, University of Maine – 2020
Department of Earth and Environmental Sciences, University of Michigan – 2020
Department of Geological and Atmospheric Sciences, Iowa State University – 2020
Department of Geological Sciences, Stanford University – 2020

Conferences ** presenter º undergraduate and graduate student advisees*

Bloch E.*, Ibañez-Mejia M., Watkins J., Foley M., Johnson A., Turner S., Tissot F., **Mallik A.**, Ulmer P. Diffusive isotope fractionation of Zr in silicate melts. Goldschmidt 2024. [ORAL]

Mallik A.*, Schwinger S., Moitra P., Roy A º. Water Outgassing During Magma Ocean Crystallization and the Potential Endogenous Origin of Water-Ice in the Permanently Shadowed Regions of the Moon. 55th Lunar and Planetary Science Conference, March 2024. [ORAL]

Purdie Z. º*, Baijal N. º, Spring I. P. º, **Mallik A.**, Asphaug E., Melikyan R. E., Denton C. A., Cambioni S., Emsenhuber A. Applying Laboratory Studies to 3D Modeling Results of Thermodynamic Evolution During Planet-Forming Collisions. 55th Lunar and Planetary Science Conference, March 2024. [POSTER]

Roy A.º*, **Mallik A.**, Bremner P., Diamond M., Haviland H., Goepfert T., Hervig R. The Present-Day Selenotherm: A Function of the Distribution of Heat-Producing Elements in the Lunar Interior. 55th Lunar and Planetary Science Conference, March 2024. [ORAL]

Spring I.º*, **Mallik A.**, Kirk J., Moitra P., Borg L., Hervig R. Trace element analyses of plagioclase from troctolite 76535 and implications for Mg-suite petrogenesis on the Moon. 55th Lunar and Planetary Science Conference, March 2024. [ORAL]

Roy A.º*, **Mallik A.**, Donaldson-Hanna K., Goepfert T., Hervig R. Geochemistry of Miyakejima anorthites – implications for their usage as analogs of plagioclase from the lunar highlands. 55th Lunar and Planetary Science Conference, March 2024. [POSTER]

Rebaza A. M. º*, **Mallik A.** and Cooperdock E.H.G. The Fate of Ultramafic-Rich Mélanges in Cold to Hot Subduction Zones: Implications for Diapirism and Chemical Geodynamics. American Geophysical Union Fall Meeting, December 2023. [ORAL]

Mallik A.*, Rebaza A. M. º, Li L., Du Y., Shams A. A. º, Kapp P., Cooperdock E.H.G. Nitrogen subduction efficiency via metabasic rocks: case study from a tectonic mélange in Central Tibet. Goldschmidt 2023. [INVITED/ORAL]

Roy A. º*, **Mallik A.**, Bremner P. M., Haviland H. F., Diamond M., Goepfert T. J., and Hervig R. L. The Effects of Heat-Producing Element Abundance and Distribution on the Present-Day Lunar Thermal Profile. Gordon Research Seminar, June 2023. [POSTER]

Roy A. º*, **Mallik A.**, Barnes J. J., Moitra P. and Allmeyer A. Jº. urKREEP Origin of Enigmatic Silicic Lunar Magmas. Gordon Research Conference, June 2023. [POSTER]

Roy A. º*, **Mallik A.**, Bremner P. M., Haviland H. F., Diamond M., Goepfert T. J., and Hervig R. L. The Effects of Heat-Producing Element Abundance and Distribution on the Present-Day Lunar Thermal Profile. Thermal Models for Planetary Science IV, April 2023. [ORAL]

Moitra P.*, **Mallik A.**, Barnes J. J., Andrews-Hanna J. C. Effects of C-O-H Degassing and Bubble Growth on Explosive Lunar Volcanic Eruptions. 54th Lunar and Planetary Science Conference, March 2023. [ORAL]

Andrews-Hanna J. C.*, Evans A. J., and **Mallik A**. Forming the Lunar Asymmetries. 54th Lunar and Planetary Science Conference, March 2023. [ORAL]

Mallik A.*, Schwinger S., Moitra P., Roy Aº. Constraining the Wetness of the Moon by Modelling Lunar Magma Ocean Crystallization: Insights and Challenges. 54th Lunar and Planetary Science Conference, March 2023. [ORAL]

Roy A. º*, **Mallik A.**, Bremner P. M., Haviland H. F., Diamond M., Goepfert T. J., and Hervig R. L. The Significance of Partition Coefficients of Heat Production Elements in the Lunar Interior for Determining the Present-Day Selenotherm. 54th Lunar and Planetary Science Conference, March 2023 [POSTER]

Roy A. º*, **Mallik A.**, Barnes J. J., Moitra P. and Allmeyer A. J. urKREEP Origin of Enigmatic Silicic Lunar Magmas. 54th Lunar and Planetary Science Conference, March 2023 [POSTER]

Mallik A.*, Schwinger S., Roy A.º, & Moitra P. Controls on determining the bulk water content of the Moon. American Geophysical Union Fall Meeting, December 2022 [INVITED TO UNION SESSION/ ORAL]

Mallik A.*, Rebaza A. M.º, Li L., Du Y., Shams A. A., & Kapp P. Nitrogen behavior in metabasic rocks from a low-angle subduction zone: Insights from amphibolite and epidote-blueschists from the Qiantang Metamorphic Belt, Central Tibet. American Geophysical Union Fall Meeting, December 2022. [ORAL]

Rebaza A. M.º*, **Mallik A.,** & Cooperdock, E.H.G. Phase equilibria of ultramafic-rich and sediment-rich mélange lithologies in cold to hot subduction zones – Implications for deep nitrogen cycling. American Geophysical Union Fall Meeting, December 2022. [POSTER]

Roy A.º*, **Mallik A.**, Bremner P., Haviland H., Diamond M., Goepfert T., & Hervig R. Partition coefficients of heat producing elements during Lunar Magma Ocean crystallization and their influence on the present-day selenotherm. American Geophysical Union Fall Meeting, December 2022. [POSTER]

Bowman E.º***, Mallik A.**, & Ducea M. Investigating the composition of magmas produced during partial melting of arclogite. American Geophysical Union Fall Meeting, December 2022. [POSTER]

Moitra P.*, **Mallik A.**, Barnes J.J., & Andrews-Hanna J.C. Effects of C-O-H degassing and bubble growth on the explosivity of lunar volcanic eruptions. American Geophysical Union Fall Meeting, December 2022. [POSTER]

Moitra P.*, **Mallik A.**, Barnes J.J., & Andrews-Hanna J. C. Controls of fO_2-based C-O-H degassing and Diffusive Bubble Growth on Explosive Volcanic Eruptions on the Moon. Lunar and Planetary Science Conference, March 2022. [ORAL]

Bremner P.M.*, Diamond M.R., Haviland H., & **Mallik A**. The Unresolved Problem with Deriving Lunar Thermal Profiles When Including Heat Producing Elements. American Geophysical Union Fall Meeting, December 2021. [POSTER]

Zieman L.*, Ibañez-Mejia M., Pardo N, Rooney A. D., **Mallik A.**, & Bloch E.M. Tracing garnet clinopyroxenite formation and recycling using arc magma geochemistry: an example from the modern Andean continental arc. American Geophysical Union Fall Meeting, December 2021. [POSTER]

Bremner, P. M.*, Haviland, H. F., **Mallik, A.**, & Diamond, M. (2021). The Unresolved Problem with Deriving a Lunar Temperature Profile from Heat Producing Elements. *2021 Annual Meeting of the Lunar Exploration Analysis Group*, *2635*, 5052. [ORAL]

Ballmer M. D*, Spaargaren R., Vilella K., **Mallik A.**, Bolrão D., Morison A., & Nakajima M. Crystallization sequence of a Basal Magma Ocean in light of geophysical and geochemical constraints. Goldschmidt 2021. [ORAL]

Mallik, A*., Schwinger S., Roy A & Moitra P. The Importance of Hydrogen Partitioning During Lunar Magma Ocean Crystallization: Implications for Constraining the Water Content of the Bulk Silicate Moon. Lunar and Planetary Science Conference, March 2021. [ORAL]

Rebaza, A. º*, **Mallik, A.,** & Straub, S. M. Multiple episodes of melt-rock reaction at the slab-mantle interface: Formation of high silica primary magmas in intermediate to hot subduction zones. American Geophysical Union Fall Meeting, December 2020. [POSTER]

Mallik, A*., Schwinger S., Moitra P. & Roy Aº. Controls of Hydrogen Partitioning on the Formation of Wet Reservoirs During Lunar Magma Ocean Crystallization. American Geophysical Union Fall Meeting, December 2020. [ORAL]

Ballmer, M.*, Spaargaren, R., **Mallik, A.,** Hier-Majumder, S., Bolrão, D. P., Morison, A., & Nakajima, M. Reactive Crystallization of the Basal Magma Ocean on Terrestrial Planets. American Geophysical Union Fall Meeting, December 2020. [POSTER]

AWARDED GRANTS AND CONTRACTS *limited to period in current rank at the University of Arizona (Amount brought to the University of Arizona: $2.34 million as lead/sole PI, $3.37 million overall)*

Federal

Project/Proposal Title: *Understanding magmatic volatile loss and its effect on the prevalence of effusive vs. explosive styles of volcanism on the Moon*; Commitment in months: 0.5 Y1, 0.5 Y2, 0.25 Y3; Role: **Co-Investigator** (Principal Investigator: P. Moitra, other Co-Investigators: J. J. Barnes, J. C. Andrews-Hanna); Sponsor: **NASA Solar System Workings;** Full amount (100% to UA)- $133,613; Proposal period: 01/26/23-01/25/25

Project/Proposal Title: *Collaborative Research: Tracking nitrogen in mélange matrix from fore-arc to sub-arc depths with implications for deep nitrogen cycling: A combined field and experimental approach;* Commitment in months: 1 Y1, 1 Y2, 1 Y3; Role: **Principal Investigator** (Co-Principal Investigator: E.H.G Cooperdock)**;** Sponsor: **Petrology and Geochemistry, National Science Foundation**; Full amount - $534,322; Amount to UA - $338,323 (includes REU supplement of $9,364); Award period: 01/01/2022-12/31/2024

Project/Proposal Title: *REU Site: From the clouds to the core: A place-based REU for southwestern US community/tribal college students to increase under-represented group recruitment to the geosciences.* Commitment in months (unpaid): 2 Y1; Role: **Senior Personnel** (Principal Investigator: A. Cohen, co-Principal Investigator: K. Thirumalai); Sponsor: **National Science Foundation**; Full amount (100% to UA) - $402,893; Award period: 11/01/22-10/31/25

Project/Proposal Title: *How 'wet' is the Moon: Insight from hydrogen partitioning during lunar magma ocean crystallization;* Commitment in months: 1 Y1, 1 Y2, 1 Y3; Role: **Principal Investigator** (Co-Investigators: P. Moitra, M. Bose, R. Hervig, S. Schwinger; Collaborators: J.J Barnes, V. Reddy); Sponsor: **NASA Emerging Worlds**; Full amount - $548,566; Amount to UA – $457,689; Award period: 02/01/24-01/31/27

Project/Proposal Title: *Fate of carbonate platform subduction in the Tethyan realm from petrological and geochemical perspectives;* Commitment in months: 0.8 Y1, 0.8 Y2, 0.8 Y3; Role: **Principal Investigator** (Co-Principal Investigator: M. Ducea); Sponsor: **NSF EAR Petrology and Geochemistry**; Full amount (100% to UA) - $567,283; Award period: 08/01/24-07/31/27

Project/Proposal Title: *Investigating the urKREEP Origin of Lunar Silicic Magmas;* Commitment in months (unpaid): 1 Y1, 1 Y2, 1 Y3; Role: **Principal Investigator** (Future Investigator: A. Roy; Co-Investigators: J.J Barnes, P. Moitra); Sponsor: **NASA FINESST**; Full amount (100% to UA) - $100,000; Award period: 08/01/2024 – 07/31/2026

Project/Proposal Title: *GLOW: Constraining the Atmospheric Signatures of Magmatic Volcanism on Terrestrial Exoplanets;* Commitment in months: 0.5 Y1, 0.5 Y2, 0.5 Y3; Role: **Senior Personnel** (Principal Investigator: S. Ranjan; Co- Senior Personnel: P. Moitra); Sponsor: **NSF Astronomy and Astrophysics Research Grants**; Full amount (100% to UA) - $502,435; Award period: 09/01/24-08/31/27

Project/Proposal Title: *CAREER: Evaluating the Continental Crust as a Key Reservoir of Earth's Nitrogen and Constraining the Nitrogen Abundance of Primitive Arc Magmas;* Commitment in months: 0.9 Y1, 0.9 Y2, 0.9 Y3, 0.9 Y4, 0.9 Y5; Role: **Principal Investigator**; Sponsor: **NSF Petrology and Geochemistry/Tectonics**; Full amount (100% to UA) - $877,087; Award period: 02/01/25-01/31/30

State

Project/Proposal Title: *GemHub: One-stop destination for geochemical proxies of gemstone provenance at the University of Arizona;* Commitment in months (unpaid): 1 Y1; Role: **Principal Investigator** (Co-Principal Investigator: J. Kirk)**;** Sponsor: **School of Mining and Mineral Resources, University of Arizona**; Full amount (100% to UA) - $24,735; Award period: 08/01/2022-06/30/2023

Project/Proposal Title: *GemHub: One-stop destination for geochemical proxies of gemstone provenance at the University of Arizona;* Commitment in months (unpaid): 1 Y1; Role: **Principal Investigator** (Co-Principal Investigator: J. Kirk)**;** Sponsor: **School of Mining and Mineral Resources, University of Arizona**; Full amount (100% to UA) - $5000; Award period: 08/01/2023-06/30/2024