

# Dr. Alexander Sehlke

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📄 Alexander-Sehlke

🌐 alexsehlke

## Summary

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**Position and Focus:** Planetary Geologist at NASA Ames Research Center/BAER Institute, with focus on scientific exploration of the solar system through returned sample analyses, fieldwork, space flight hardware development, and NASA-led science exploration missions. Serving as Principal Investigator (PI) and Co-Investigator (Co-I) on multiple research awards funded by NASA's Science Mission Directorate (SMD).

**Publications and Presentations:** Author of 31 peer-reviewed papers in international scientific journals and over 100 scientific abstracts presented at prestigious international conferences such as the American Geophysical Union (AGU), Lunar and Planetary Science Conference (LPSC), Meteoritical Society (MetSoc), among others.

**Teaching and Mentoring:** Extensive experience in teaching and mentoring students at high school, undergraduate, and graduate levels.

## Education

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| <b>PhD</b>  | <b>University of Missouri, Columbia MO</b> , Geological Sciences<br>• Minor in College Science Teaching | Jan 2011 – Dec 2015 |
| <b>Dipl</b> | <b>Leibniz Universitaet Hannover, Germany</b> , Geosciences<br>• Minor in Material Sciences             | Oct 2005 – Jan 2011 |

## Professional Appointments

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| <b>NASA Ames Research Center/ BAER Institute</b> , Research Scientist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Moffett Field, CA, USA<br>Jan 2019 – present  |
| <ul style="list-style-type: none"> <li>• <i>Apollo Lunar Sample Analysis</i>: Investigating the thermochronology of the lunar surface and subsurface using thermoluminescence, with a focus on cold trap prospecting in support of NASA's Artemis program.</li> <li>• <i>Planetary Analog Research</i>: Leading field and laboratory studies of terrestrial analog sites to better understand planetary surface processes on the Moon and Mars.</li> <li>• <i>Spaceflight Instrumentation</i>: Designing, developing, and field-testing advanced scientific instruments for robotic and crewed planetary exploration.</li> <li>• <i>NASA VIPER Mission</i>: Instrument Scientist for the Volatiles Investigating Polar Exploration Rover (VIPER), contributing to hardware development and science operations.</li> <li>• <i>NASA Ames Vertical Gun Range (AVGR)</i>: Serving as Science PI for NASA's premier hypervelocity impact facility, enabling experimental studies of planetary surface processes and impact dynamics.</li> </ul> |                                               |
| <b>NASA Ames Research Center/ USRA</b> , Postdoctoral Researcher                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Moffett Field, CA, USA<br>Feb 2016 – Jan 2019 |
| <ul style="list-style-type: none"> <li>• Planetary Analog Research: Volcanic Terrains on Earth as Analogs for the Moon and Mars</li> <li>• Instrument Development for Human Space Exploration Missions</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                               |

## Awards and Honors

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### NASA Ames Honor Award

- Contractor Employee in 2020
- Partnership RESOURCE Research Program in 2020
- Team/Group BASALT Research Program in 2020
- Team/Group FINESSE Research Program in 2018

## Committees and Assignments

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**SSSERVI NASA Exploration Science Forum, Science Organization Committee** Mar 2025 – May 2025

**SSSERVI NASA Exploration Science Forum, Session Co-Chair** July 2024

- Sample Science
- In-Situ Resource Utilization

**Lunar and Planetary Science Conference** Mar 2023

- Moderator: Planetary Volcanism: Eruptions in Fire and Ice
- Moderator: Lunar Regolith Properties and Processes

**SSSERVI NASA Exploration Science Forum, Session Co-Chair** July 2022

- Apollo Next Generation Sample Analysis

**SSSERVI NASA Exploration Science Forum, Science Organization Committee Co-Chair** Mar 2022 – July 2022

**Lunar Surface Science Workshop #17 - Defining a Coordinated Lunar Resource Evaluation Campaign** July 2022

- Documentarian

**Lunar Surface Science Workshop #13 - Inclusive Lunar Exploration** Jan 2022

- Session Co-Chair
- Documentarian

**Peer Review Assignments: NASA Research Proposals** 2016 – present

- Several NASA Research Opportunities in Space and Earth Science (ROSES) program proposals, once or twice per year. Served as External Reviewer, Executive Secretary, Panelist, and Panel Chair.

**Peer Review Assignments: Manuscripts** 2015 – present

- International scientific journals, such as *Journal of Geothermal Research*, *Frontiers in Earth Science*, *Journal of Volcanology and Geophysical Research*, *Earth and Planetary Science Letters*, *Icarus*, *American Ceramic Society*

## Peer-reviewed Publications

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**Thermal Equilibrium States and Timescales of Lunar Cold Traps via Low-Temperature Thermoluminescence** 2025

**A Sehlke**, D Sears, and the ANGSA Science Team  
Planetary and Space Science, in review

**Geomorphological Evidence of Near-Surface Ice at Candidate Landing Sites in Northern Amazonis Planitia, Mars** 2025

E Luzzi, JL Heldmann, KE Williams, G Nodjoumi, A Deutsch, **A Sehlke**  
<https://doi.org/10.1029/2024JE008724> (JGR Planets, Vol 130(5))

**A detailed  $\mu$ -FTIR study of Hermean glasses: Spectral mainband shape and flank, what do they tell us?** 2025

A. Stojic, **A. Sehlke**, AG Whittington, A. Morlok, H. Hiesinger

<https://doi.org/10.1016/j.jnoncrysol.2025.123523> (Journal of Non-Crystalline Solids, Volume 660)

**Thermoluminescence and Apollo 17 ANGSA lunar samples: NASA's fifty-year experiment and prospecting for cold traps** 2024

DWG Sears, **A. Sehlke**, HH Schmitt, and the ANGSA Science Team

<https://doi.org/10.1029/2024JE008358> (Journal of Geophysical Research: Planets, Volume 129(4))

**Apollo Next Generation Sample Analysis (ANGSA): An Apollo Participating Scientist Program to Prepare the Lunar Sample Community for Artemis** 2024

CK Shearer, FM McCubbin, S Eckley, SB Simon, A Meshik, F McDonald, HH Schmitt, RA Zeigler, J Gross, J Mitchell, C Krysher, RV Morris, R Parai, BL Jolliff, JJ Gillis-Davis, K Joy, SK Bell, P Lucey, L Sun, Z Sharp, C Dukes, **A Sehlke**, A Mosie, J Allton, C Amick, JI Simon, TM Erickson, JJ Barnes, MD Dyar, K Burgess, N Petro, D Moriarty, NM Curran, JE Elsila, RA Colina-Ruiz, T Kroll, D Sokaras, HA Ishii, JP Bradley, D Sears, B Cohen, O Pravdivseva, MS Thompson, CR Neal, R Hanna, R Ketcham, K Welten, and the ANGSA Science Team

<https://doi.org/10.1007/s11214-024-01094-x> (Space Science Review, Volume 220:62)

**Synthetic analogs for lava flows on the surface of Mercury: A mid-infrared study** 2024

A Morlok, **A Sehlke**, AN Stojic, AG Whittington, I Weber, MP Reitze, Hiesinger H, Helbert J.

<https://doi.org/10.1016/J.ICARUS.2024.116078> (Icarus, Volume 415)

**The Apollo 17 Regolith: Induced Thermoluminescence Evidence for Formation by a Single Event ~100 Million Years Ago and Possibly the Presence of Tycho Material** 2024

**A Sehlke**, DWG Sears, and the ANGSA Science Team

<https://doi.org/10.1029/2023JE008083> (Journal of Geophysical Research: Planets, Volume 129(4))

**Average VNIR reflectance: A rapid, sample-free method to estimate glass content and crystallinity of fresh basaltic lava** 2022

E Rader, S Ackiss, **A Sehlke**, J Bishop, B Orrill, K Odegaard, M Meier, A Doloughan

<https://doi.org/10.1016/j.icarus.2022.115084> (Icarus, Volume 383)

**Ejecta blocks around the Kings Bowl phreatomagmatic crater in Idaho: An indication of subsurface water amounts with implications for Mars** 2022

DWG Sears, **A Sehlke**, SS Hughes, S Kobs-Nawotniak

[10.1016/j.pss.2022.105564](https://doi.org/10.1016/j.pss.2022.105564) (Planetary and Space Science, Volume 222)

**Spontaneous reheating of crystallizing lava** 2021

AG Whittington, **A Sehlke**

[10.1130/g49148.1](https://doi.org/10.1130/g49148.1) (Geology, Volume 49 Issue 12)

**The impact and recovery of asteroid 2018 LA** 2021

P Jenniskens, M Gabadirwe, QZ Yin, A Proyer, O Moses, and with '**A Sehlke**' among 61 other international co-authors'

<https://doi.org/10.1111/maps.13653> (Meteoritics & Planetary Science, Volume 56, Issue 4)

**Induced thermoluminescence as a method for dating recent volcanism: The Blue Dragon flow, Idaho, USA and the factors affecting induced thermoluminescence** 2021

DWG Sears, **A Sehlke**, SS Hughes

<https://doi.org/10.1016/j.pss.2020.105129> (Planetary and Space Science, Volume 195)

**Basaltic fissure types on Earth: Suitable analogs to evaluate the origins of volcanic terrains on the Moon and Mars?** 2020

- SS Hughes, WB Garry, **A Sehlke**, EH Christiansen, SE Kobs Nawotniak, DWG Sears, RC Elphic, DS Lim, JL Heldmann  
[10.1016/J.PSS.2020.105091](https://doi.org/10.1016/J.PSS.2020.105091) (Planetary and Space Science, Volume 193)
- Thermal properties of glassy and molten planetary candidate lavas** 2020  
**A Sehlke**, AM Hofmeister, AG Whittington  
<https://doi.org/10.1016/J.PSS.2020.105089> (Planetary and Space Science, Volume 193)
- Rheology of a KREEP Analog Magma: Experimental Results Applied to Dike Ascent through the Lunar Crust** 2020  
**A Sehlke**, AG Whittington  
<https://doi.org/10.1016/j.pss.2020.104941> (Planetary and Space Science, Volume 187)
- Microbial community distribution in variously altered basalts: Insights into astrobiology sample site selection** 2020  
A Brady, E Gibbons, **A Sehlke**, C Renner, S Kobs Nawotniak, D Lim, G Slater  
[10.1016/j.pss.2020.105107](https://doi.org/10.1016/j.pss.2020.105107) (Planetary and Space Science, Volume 194)
- The rheology of crystallizing basaltic lavas from Nyiragongo and Nyamuragira volcanoes, D.R.C.** 2020  
A Morrison, AG Whittington, B Smets, M Kervyn, **A Sehlke**  
<https://doi.org/10.30909/vol.03.01.0128> (Volcanica, Volume 3 Issue 1)
- A Low-Diversity Microbiota Inhabits Extreme Terrestrial Basaltic Terrains and Their Fumaroles: Implications for the Exploration of Mars** 2019  
C Cockell, J Harrison, A Stevens, S Payler, S Hughes, S Kobs Nawotniak, A Brady, R Elphic, C Haberle, **A Sehlke**, K Beaton, A Abercromby, P Schwendner, J Wadsworth, H Landenmark, R Cane, A Dickinson, N Nicholson, L Perera, D Lim  
[10.1089/ast.2018.1870](https://doi.org/10.1089/ast.2018.1870) (Astrobiology, Volume 19 Issue 3)
- Opportunities and Challenges of Promoting Scientific Dialog throughout Execution of Future Science-Driven Extravehicular Activity** 2019  
SE Kobs Nawotniak, MJ Miller, AH Stevens, JJ Marquez, SJ Payler, AL Brady, SS Hughes, CW Haberle, **A Sehlke**, KH Beaton, SP Chappell, RC Elphic, DSS Lim  
[10.1089/ast.2018.1901](https://doi.org/10.1089/ast.2018.1901) (Astrobiology, Volume 19 Issue 3)
- The BASALT Research Program: Designing and Developing Mission Elements in Support of Human Scientific Exploration of Mars** 2019  
D Lim, A Abercromby, S Kobs Nawotniak, D Lees, M Miller, A Brady, Z Mirmalek, **A Sehlke**, S Payler, A Stevens, C Haberle, K Beaton, S Chappell, S Hughes, C Cockell, R Elphic, M Downs, JL Heldmann  
[10.1089/ast.2018.1869](https://doi.org/10.1089/ast.2018.1869) (Astrobiology, Volume 19 Issue 3)
- Basaltic Terrains in Idaho and Hawai'i as Planetary Analogs for Mars Geology and Astrobiology** 2019  
S Hughes, C Haberle, S Kobs Nawotniak, **A Sehlke**, W Garry, R Elphic, S Payler, A Stevens, C Cockell, A Brady, JL Heldmann, D Lim  
[10.1089/ast.2018.1847](https://doi.org/10.1089/ast.2018.1847) (Astrobiology, Volume 19 Issue 3)
- Strategic Planning Insights for Future Science-Driven Extravehicular Activity on Mars** 2019  
A Brady, S Kobs Nawotniak, S Hughes, S Payler, A Stevens, C Cockell, R Elphic, **A Sehlke**, C Haberle, G Slater, D Lim  
[10.1089/ast.2018.1850](https://doi.org/10.1089/ast.2018.1850) (Astrobiology, Volume 19 Issue 3)
- Requirements for Portable Instrument Suites during Human Scientific Exploration of Mars** 2019

- A Sehlke**, Z Mirmalek, D Burt, CW Haberle, D Santiago-Materese, SE Kobs Nawotniak, SS Hughes, WB Garry, N Bramall, AJ Brown, JL Heldmann, DSS Lim  
[10.1089/ast.2018.1841](https://doi.org/10.1089/ast.2018.1841) (Astrobiology, Volume 19 Issue 3)
- Induced thermoluminescence as a method for dating recent volcanism: Hawaii County, Hawaii, USA** 2018  
 DWG Sears, H Sears, **A Sehlke**, SS Hughes  
[10.1016/j.jvolgeores.2017.09.022](https://doi.org/10.1016/j.jvolgeores.2017.09.022) (Journal of Volcanology and Geothermal Research, Volume 349)
- X-ray computed tomography of extraterrestrial rocks eradicates their natural radiation record and the information it contains** 2018  
 DWG Sears, **A Sehlke**, JM Friedrich, ML Rivers, DS Ebel  
[10.1111/maps.13183](https://doi.org/10.1111/maps.13183) (N/A, Volume 53 Issue 12)
- Induced thermoluminescence as a method for dating recent volcanism: Eastern Snake River Plain, Idaho, USA** 2017  
 DWG Sears, H Sears, **A Sehlke**, S Hughes  
[10.1002/2016JB013596](https://doi.org/10.1002/2016JB013596) (Journal of Geophysical Research: Solid Earth, Volume 122 Issue 2)
- Transport properties of glassy and molten lavas as a function of temperature and composition** 2016  
 A Hofmeister, **A Sehlke**, G Avar, A Bollasina, G Robert, AG Whittington  
[10.1016/j.jvolgeores.2016.08.015](https://doi.org/10.1016/j.jvolgeores.2016.08.015) (Journal of Volcanology and Geothermal Research, Volume 327)
- The viscosity of planetary tholeiitic melts: A configurational entropy model** 2016  
**A Sehlke**, AG Whittington  
[10.1016/j.gca.2016.07.027](https://doi.org/10.1016/j.gca.2016.07.027) (Geochimica et Cosmochimica Acta, Volume 191)
- Field and experimental constraints on the rheology of arc basaltic lavas: the January 2014 Eruption of Pacaya (Guatemala)** 2016  
 A Soldati, **A Sehlke**, G Chigna, AG Whittington  
[10.1007/s00445-016-1031-6](https://doi.org/10.1007/s00445-016-1031-6) (Bulletin of Volcanology, Volume 78 Issue 6)
- Rheology of lava flows on Mercury: An analog experimental study** 2015  
**A Sehlke**, AG Whittington  
[10.1002/2015JE004792](https://doi.org/10.1002/2015JE004792) (Journal of Geophysical Research E: Planets, Volume 120 Issue 11)
- Pahoehoe to a'a' transition of Hawaiian lavas: An experimental study** 2014  
**A Sehlke**, AG Whittington, B Robert, AJ Harris, L Gurioli, E Médard  
[10.1007/s00445-014-0876-9](https://doi.org/10.1007/s00445-014-0876-9) (Bulletin of Volcanology, Volume 76 Issue 11)
- Thermal diffusivity of Fe-rich pyroxene glasses and their melts** 2014  
 A Hofmeister, **A Sehlke**, AG Whittington  
[10.1016/j.chemgeo.2014.06.018](https://doi.org/10.1016/j.chemgeo.2014.06.018) (Chemical Geology, Volume )
- Textural and rheological evolution of basalt flowing down a lava channel** 2014  
 B Robert, AJ Harris, L Gurioli, E Médard, **A Sehlke**, AG Whittington  
[10.1007/s00445-014-0824-8](https://doi.org/10.1007/s00445-014-0824-8) (Bulletin of Volcanology, Volume 76 Issue 6)

## Selected Abstracts and Presentations

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- Thermochronometry of Lunar Cold Traps via Thermoluminescence: Probing Their Thermal Equilibrium Over Billions of Years** 2025  
**A Sehlke**, and DWG Sears  
 Goldschmidt Conference 2025, to be held in Prague from July 7-11 2025, Czech Republic - Oral Presentation

- Transit Times of Lunar Meteorites Via Thermoluminescence** 2025  
J Baden, **A Sehlke**, and DWG Sears  
56th Lunar and Planetary Science Conference, Abstract Nr. 1672 - Poster Presentation
- Glimmerings in the Cold and Dark: Thermoluminescence of Lunar Regolith at Cryogenic Temperatures for Cold Trap Prospecting** 2024  
**A Sehlke**, and DWG Sears  
NASA Exploration Science Forum held at Washington University in St. Louis, MO, USA - Oral Presentation
- Science, Operations, and Technology Development from NASA's RESOURCE Project** 2024  
JL Heldmann, **A Sehlke**, MC Deans, and the RESOURCE Team  
NASA Exploration Science Forum held at Washington University in St. Louis, MO, USA - Oral Presentation
- Update on the Near Infrared Volatiles Spectrometer System (NIRVSS) Instrument on the Volatiles Investigating Polar Exploration Rover (VIPER) Mission: Calibration and Surface Operations** 2024  
**A Sehlke**, A Colaprete, K Ennico-Smith, S Gyalay, E Noe Dobrea, TL Roush, JE Benton, R Bielawski, M Chin, J Connally, A Cook, L Ellingson, JB Forgione, DT Hoang, V Jha, A Rademacher, F Renema, EJ Talle, B White, C Youngquist, and the VIPER Science Team  
NASA Exploration Science Forum held at Washington University in St. Louis, MO, USA - Oral Presentation
- The Apollo 17 Regolith: Induced Thermoluminescence Evidence for Formation by a Single Event 100 Million Years Ago and Possibly the Presence of Tycho Material** 2024  
**A Sehlke**, DWG Sears, ANGSA Science Team  
55th Lunar and Planetary Science Conference, Abstract Nr. 2536 - Poster Presentation
- The Effect of Composition on the Spectral Appearance of Hermean Analog Glasses** 2024  
AN Stojic, **A Sehlke**, A Morlok, AG Whittington, MP Reitze, I Weber, H Hiesinger, J Helbert  
55th Lunar and Planetary Science Conference, Abstract Nr. 1857 - Poster Presentation
- New Model to Calculate Lava Viscosity During Disequilibrium Crystallization for a Wide Range in Cooling and Strain Rates** 2023  
**A Sehlke**, AG Whittington  
54th Lunar and Planetary Science Conference, Abstract Nr. 2677 - Poster Presentation
- Lunar Regolith Thermoluminescence Glow Curve Fitting to Extract Its Most Important Kinetic Parameters.** 2023  
**A Sehlke**, DWG Sears, ANGSA Science Team  
54th Lunar and Planetary Science Conference, Abstract Nr. 1870 - Oral Presentation
- Geomorphical Evidence of Near-Surface Ice at Candidate Landing Sites in Arcadia Planitia, Mars** 2023  
E Luzzi, JL Heldmann, K Williams, A Deutsch, **A Sehlke**, G Nodjoumi  
54th Lunar and Planetary Science Conference, Abstract Nr. 2677 - Oral Presentation
- Thermal Histories of Lunar Cold Traps: Prospecting for Volatiles by Thermoluminescence** 2022  
**A Sehlke**, DWG Sears  
Lunar Polar Volatiles Conference, LPI Contrib. Nr. 5024 - Poster Presentation
- A Fifty-Year Experiment, the Natural TL Kinetics of Apollo 17 Regolith, and Prospecting for Water and Other Volatiles on the Moon** 2022

- A Sehlke**, DWG Sears, ANGSA Science Team  
53rd Lunar and Planetary Science Conference, LPI Contrib. Nr. 2030 - Oral Presentation
- THEIA - A Thermal History Exploration Instrument for Artemis** 2022  
**A Sehlke**, DWG Sears, JL Heldmann  
Annual Meeting of the Lunar Exploration Analysis Group, Abstract Nr. 5005 - Poster Presentation
- In-Situ Thermoluminescence Measurements on the Moon Using THEIA - Thermal History Exploration Instrument for Artemis** 2022  
**A Sehlke**, DWG Sears, JL Heldmann  
NASA Exploration Science Forum held at the University of Colorado, Boulder CO, USA - Poster Presentation
- Crystallization, latent heat release, and thermal history of magmas** 2022  
AG Whittington, **A Sehlke**, B Halvernon  
Goldschmidt Conference - Oral Presentation
- Recalescence during crystallization of stardust: Resolution of the amorphous interstellar medium paradox** 2022  
A Speck, AG Whittington, **A Sehlke**  
American Astronomical Society Meeting '#240', American Astronomical Society Meeting Abstracts '#147.04' - Poster Presentation
- Five Decades of Thermoluminescence Studies on Lunar Samples: First Results of NASA's Unique 46-Year Experiment and Implications for Resource Prospecting on the Moon** 2022  
**A Sehlke**, DWG Sears, ANGSA Science Team  
53rd Lunar and Planetary Science Conference, Abstract Nr. 1267 - Oral Presentation
- High-Temperature Rheology Measurements on Planetary Analog Magmas and Lavas** 2022  
**A Sehlke**  
53rd Lunar and Planetary Science Conference, Abstract Nr. 1171 - Poster Presentation
- Lunar Cold Traps: Prospecting by Thermoluminescence** 2022  
**A Sehlke**, DWG Sears, ANGSA Science Team  
NASA Exploration Science Forum & European Lunar Symposium, held virtually - Oral Presentation
- Lava Surface Roughness and Morphologies: A New Remote-Sensing Method To Estimate Physical Properties of Lava Flows on Earth, the Moon and Mars** 2021  
**A Sehlke**, J Leija, SE Kobs Nawotniak, SS Hughes, DWG Sears, WB Garry, AG Whittington, DSS Lim, JL Heldmann  
Workshop on Terrestrial Analogs for Planetary Exploration, Abstract Nr. 2595 - Oral Presentation
- Natural Thermoluminescence of Lunar Samples: Review and Update** 2021  
**A Sehlke**, DWG Sears, ANGSA Science Team  
52nd Lunar and Planetary Science Conference, Abstract Nr. 2548 - Oral Presentation
- A luminescence-based Instrument to Explore the History and Nature of the Lunar Surface** 2020  
**A Sehlke**, DWG Sears  
American Geophysical Union 2020 Fall Meeting. Abstract Nr. V013-0006 - Poster Presentation
- Looking Backwards to Look Forward: A Fifty-Year Experiment in the Kinetics of Thermoluminescence of Lunar Samples and the Apollo Next Generation Sample Analysis Program (ANGSA)** 2020  
**A Sehlke**, DWG Sears, ANGSA Science Team



51st Lunar and Planetary Science Conference, Abstract Nr. 1148 - Oral Presentation

**Thermal Properties of Glassy and Molten Planetary Candidate Lavas.** 2019

**A Sehlke**, AM Hofmeister, AG Whittington

American Geophysical Union, Annual Fall Meeting 2019, Abstract ID V43D-0107 - Poster Presentation

**Requirements for portable instrument suites during human scientific exploration of Mars** 2018

**A Sehlke**, Z Mirmalek, D Burt, CW Haberle, D Santiago-Materese, SE Kobs Nawotniak, SS Hughes, WB Garry, N Bramall, AJ Brown, JL Heldmann, DSS Lim

NASA Exploration Science Forum held at NASA Ames Research Center, Moffett Field CA, USA - Oral Presentation

**Synchrotron X-Ray Computed Microtomography and the Radiation History of Meteorites** 2017

**A Sehlke**, DWG Sears, JM Friedrich, ML Rivers, DS Ebel

80th Annual Meeting of the Meteoritical Society, Abstract Nr. 1987 - Oral Presentation

**The Ultimate Geologic Tricorder? Handheld Science Instruments and Requirements for Future Human Exploration Missions on Other Worlds** 2017

**A Sehlke**, Z Mirmalek, B Cohen, CW Haberle, SE Kobs Nawotniak, SS Hughes, A Brown, JL Heldmann, DSS Lim

48th Lunar and Planetary Science Conference, Abstract Nr. 2451 - Poster Presentation

**The Viscosity of Tholeiitic Planetary Melts: A Configurational Entropy Model** 2016

**A Sehlke**, AG Whittington

47th Lunar and Planetary Science Conference, Abstract Nr. 1957 - Poster Presentation

**Rheology of lava flows on Mercury: an experimental study** 2015

**A Sehlke**, AG Whittington

45th Lunar and Planetary Science Conference, Abstract Nr. 2275 - Poster Presentation

**Concentric cylinder viscometry at subliquidus conditions on Mauna Ulu lavas, Kilauea Volcano, Hawaii** 2013

**A Sehlke**, B Robert, AJ Harris, L Gurioli, AG Whittington

American Geophysical Union, Annual Fall Meeting 2013, Abstract ID V51D-2697 - Poster Presentation

## Invited Talks, Lectures and Presentations

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**Requirements for Handheld VNIR and XRF Instruments during Human Exploration Missions.** 2022

Lunar Petrology and Landed Instrument Interchange Workshop

NASA Jet Propulsion Laboratory, Pasadena CA, USA

**Exploration of our Solar System: Earth-based Science Investigations in Preparation for NASAs Moon to Mars Campaign. Graduate Student Seminar.** 2021

Graduate Student Seminar (virtual)

Department of Geological Science, University of Texas at San Antonio, USA

**Rheological and Thermal Evolution of Magmatic Systems: Insights into the Volcanic Past of our Solar System.** 2020

Speaker Seminar Series

Department of Earth and Planetary Sciences, University of California - Santa Cruz CA, USA

**Rheological and Thermal Evolution of Magmatic Systems: Insights into the Volcanic Past in our Solar System** 2019



Keynote at GeoMünster Conference  
Münster, Germany

**Anatomy of the Blue Dragon: Changes in Lava Flow Morphology and Physical Properties Observed in an Open Channel Lava Flow as a Planetary Analogue.** 2017

Geological Society of America Annual Meeting  
Seattle WA, USA

**Designing Future Human Spaceflight** 2017

Keynote at Sensors Expo 2017  
San Jose CA, USA

**Straight outta morphologies: Understanding the magmatic history of lava terrains on Earth and other rocky worlds in our Solar System** 2017

Speaker Seminar Series  
Department of Geological Sciences, San Jose State University, San Jose CA, USA

**The morphological transition from pāhoehoe to aā of basaltic lavas: Combining field studies and experimental work to interpret the volcanic past on Earth and other planets and moons.** 2017

Speaker Series Seminar  
United States Geological Survey (USGS), Menlo Park CA, USA

## Technical Reports and Other Publications (not Peer-reviewed)

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**Inclusive Lunar Exploration** 2022

K Bennett and P Prem (Co-Chairs), C Ahrens, N Kumari, L Pigue, **A Sehlke**, and C Tai Udovicic  
Lunar Surface Science Workshop Virtual Session 13 (LSSW-13) Report


**White Paper: Investigations Regarding Subsurface Temperature Profiles at Polar Regions on the Moon** 2020

**A Sehlke**, and DWG Sears  
Artemis III Science Definition Team Report, White Paper #2107


## Interviews and Mentions in Media

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**The Secrets of Moondust** July 2019

written by Marina Koren (The Atlantic Staff Writer)  
[The Atlantic](#) 

**NASA's lassoing of moon's potential for future use starts with a trove of rocks** Mar 2019

written by Peter Fimrite (Science and Environment Reporter)  
[San Francisco Chronicle \(Front Page, continued on pg. A8\)](#) 

**11 Secrets of Volcanologists** Mar 2018

written by Lela Nargi  
[Mental Floss](#) 

## Research Awards and Funding

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**The Vertical Gun Range at NASA Ames** Oct 2024 – Sept 2028

- NASA ROSES Planetary Science Enabling Facilities Program - \$1,567,144
- PI: Chuck Cornelison, Science PI: Alexander Sehlke

**1-Year Funded Extension, Thermoluminescence Studies on Frozen Apollo 17** Apr 2023 – Mar 2024

**Samples: Temperature Estimates of Shaded and Illuminated Lunar Surfaces.**

- NASA ROSES Science Mission Directorate Single-Source - By invitation only (2022) - \$113,000

- PI: Alexander Sehlke, Co-I: Derek WG Sears

**1-Year Funded Extension, Thermoluminescence Studies on Frozen Apollo 17 Samples: Temperature Estimates of Shaded and Illuminated Lunar Surfaces.** Apr 2022 – Mar 2023

- NASA ROSES Apollo Next Generation Sample Analysis (ANGSA) Program - \$103,359
- PI: Alexander Sehlke, Co-I: Derek WG Sears

**THEIA: Thermal History Exploration Instrument for Artemis** Oct 2020 – Sept 2021

- NASA Ames Research Center Innovation Funds - \$41,000
- PI: Jennifer Heldmann, Co-Is: Alexander Sehlke, Derek WG Sears

**Resources for Exploration & Science of OUR Cosmic Environment (RESOURCE)** Feb 2020 – Jan 2025

- NASA Solar System Exploration Virtual Research Institute (SSERVI) - \$7,452,467
- PI: Jennifer Heldmann, Deputy PIs: Alexander Sehlke, Matthew Deans, Co-Is: 16 across academia, federal agencies and private sector

**Thermoluminescence Studies on Frozen Apollo 17 Samples: Temperature Estimates of Shaded and Illuminated Lunar Surfaces.** Apr 2019 – Mar 2022

- NASA ROSES Apollo Next Generation Sample Analysis (ANGSA) Program - \$348,050
- PI: Alexander Sehlke, Co-I: Derek WG Sears

**Fast and/or Furious? Nature and Emplacement History of Lavas Erupted on Mars** May 2019 – Apr 2022

- NASA ROSES Solar System Workings (SSW) Program - \$490,705
- PI: Alexander Sehlke, Co-I: Alan G Whittington

**IceCrystal: Portable instrument protocol to delineate ancient ice and water on Mars using microcrystallinity of volcanic products** Oct 2018 – Sept 2021

- NASA ROSES Planetary Science and Technology from Analog Research (PSTAR) Program - \$874,012
- PI: Erika Rader, Co-Is: Alexander Sehlke, Janice Bishop

**NASA Postdoctoral Fellowship 3rd-Year Extension** Feb 2018 – Jan 2019

- NASA ROSES Postdoctoral Program (NPP) - \$86,866
- PI: Alexander Sehlke, Co-Is: Jennifer Heldmann, Darlene SS Lim

**NASA Postdoctoral Fellowship** Feb 2016 – Jan 2018

- NASA ROSES Postdoctoral Program (NPP) - \$149,248
- PI: Alexander Sehlke, Co-Is: Jennifer Heldmann, Darlene SS Lim

## Teaching Experience

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**University of Missouri - Columbia MO, USA** 2011 – 2015

- 2015 Course Instructor - The Moon. Undergraduate
- 2015 Teaching Assistant - Regional Geology Field Course. Undergraduate
- 2014 Teaching Assistant/Lab Experiments - Igneous Petrology. Graduate
- 2013 Teaching Assistant - Mineralogy. Undergraduate
- 2012 Teaching Assistant - Mineralogy. Undergraduate
- 2011 Teaching Assistant - Mineralogy. Undergraduate

## Mentoring Experience

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**NASA Internship mentoring at NASA Ames Research Center**

- Summer 2024 (virtual), Arjun Prem, Summit Tahoma Highschool, San Jose CA, USA
- Summer 2024, Jordan Baden, Undergraduate at University of California, Santa Cruz CA, USA
- Summer 2023, Adriana Ariza Pardo, Graduate at UT San Antonio TX, USA

- Spring 2021, Iyare Oseghae, Undergraduate at UT San Antonio TX, USA
- Fall 2020 (virtual), Brianna Orrill, Undergraduate at Arizona State University AZ, USA
- Fall 2020 (virtual), Javier Leija, Undergraduate at Sam Houston University TX, USA
- Summer 2018, Caleb Renner, Undergraduate at Idaho State University ID, USA
- Spring 2017, David Burt, Undergraduate at Whitman College WA, USA

## Technology and Inventions

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**THEIA - Thermal History Exploration Instrument for Artemis:** Instrument prototype to enable thermoluminescence measurements on the lunar surface via robotic or human exploration missions. Technology Readiness Level (TRL) is 4. Invention is submitted to NASA's *New Technology Reporting (NTR) System*, with e-NTR Number 1684365045

## Public Outreach and Engagement

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| <b>ExMASS (Exploration of the Moon and Asteroids by Secondary Students)</b><br><b>Science Advisor</b>                                      | Oct 2023 – July 2024 |
| <ul style="list-style-type: none"> <li>• Logos Charter School, Medford OR, USA - virtual</li> </ul>                                        |                      |
| <b>ExMASS (Exploration of the Moon and Asteroids by Secondary Students)</b><br><b>Science Advisor</b>                                      | Oct 2022 – July 2023 |
| <ul style="list-style-type: none"> <li>• Logos Charter School, Medford OR, USA - virtual</li> </ul>                                        |                      |
| <b>Silicon Valley Comic Con, San Jose CA, USA</b>                                                                                          | July 2019            |
| <ul style="list-style-type: none"> <li>• Panel Discussion on <i>The Artemis Generation: NASA's Journey Forward to the Moon</i>.</li> </ul> |                      |
| <b>Fremont Peak Observatory, San Juan Bautista CA, USA</b>                                                                                 | Aug 2017             |
| <ul style="list-style-type: none"> <li>• Volcanism on terrestrial planets and moons across our solar system</li> </ul>                     |                      |