

Curriculum vitae

Alejandro Cisneros de León

E-mail: acisneros@seoe.sc.edu

Research unique identifier: ORCID 0000-0002-0133-2838

Citizenship: Mexican and U.S. (dual citizenship)

Languages: Spanish (native), English (fluent), German (intermediate), and French (basic)

Education

- 2020 **Ph.D.** (Dr. rer. Nat., summa cum laude), Heidelberg University, Germany
Thesis title: “Magmatic processes and timescales of explosive volcanoes of the Chiapanecan and Central American volcanic arcs through zircon petrochronology”
Supervisor: Prof. Dr. Axel K. Schmitt
- 2015 **Master in Earth Sciences**, National Autonomous University of Mexico (UNAM)
Thesis title: “Petrogenesis of the Mariscal and Soconusco anorthosites and related rocks in the Chiapas massif complex”
Supervisor: Dr. Fernando Ortega-Gutiérrez
- 2011 **Bachelor in Geological Engineering**, National Autonomous University of Mexico (UNAM)
Thesis title: “Geochemical and petrographic characterization of anorthosites from the titaniferous Rosendo area, Mazapa de Madero, Chiapas”
Supervisor: Ing. Alfredo Victoria-Morales

Teaching experience

- 2022 **Lecturer of part of the course “Solid Earth Processes”**
School of the Earth, Ocean and Environment, University of South Carolina, USA
- 2018 – 2021 **Lecturer of part of the short course “Advanced Methods of Petrology”**
Institute of Earth Sciences, Heidelberg University, Germany
- 2016 – 2019 **Tutor in senior student research projects**
Institute of Earth Sciences, Heidelberg University, Germany
- 2013 **Petrography lecturer of the course “Petrogenesis of Crystalline Rocks”**
Faculty of Sciences, National Autonomous University of Mexico (UNAM)
- 2011 – 2013 **Teaching assistant in the lecture “Metamorphic Petrology”**
Faculty of Engineering, National Autonomous University of Mexico (UNAM)
- 2011 – 2013 **Teaching assistant in the lecture “Mineralogy”**
Faculty of Engineering, National Autonomous University of Mexico (UNAM)

Professional work experience

- 06-2025 – Present **Assistant Professor**
School of the Earth, Ocean and Environment, University of South Carolina, USA.
- 05-2023 – 04-2025 **NSF Postdoctoral Fellow**
College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, USA. Mentor: Dr. Shanaka L. de Silva
- 01-2022 – 04-2023 **Postdoctoral Research Fellow**
School of the Earth, Ocean and Environment, University of South Carolina, USA. Mentor: Dr. Besim Dragovic
- 11-2020 – 09-2021 **Scientific Assistant**
Institute of Earth Sciences, Heidelberg University, Germany
- 03-2015 – 08-2015 **Geotechnical Engineer**
VORSEVI México

11-2012 – 04-2013

Exploration Mining Geologist
Cambria Geosciences Inc.

Independent research grants

05-2023 – present **Timescales of magmatic resurgence at Toba caldera (US\$180,000.00)**; NSF postdoctoral fellowship at Oregon State University

Mentoring/co-supervising students

06-2023 – present Master's student Verenice Becerril Gonzalez (Oregon State University)

Peer-reviewed publications

- [21] **Cisneros de León, A.**, Danišik, M., Schmitt, A.K., Schindlbeck-Belo, J.C., Kutterolf, S., Mittal, T., Garrison, J.M., Sims, K.W.W., 2025. Refining the Eruption Chronology of Atilán Caldera Through Zircon Double-Dating. *Geochem. Geophys. Geosyst.* 26, e2024GC011953.
- [20] **Cisneros de León, A.**, Schmitt, A.K., Mittal, T., Danišik, M., de Silva, S., Kutterolf, S., Schindlbeck-Belo, J.C., Self, S., Comment on “A Bayesian age from dispersed plagioclase and zircon dates in the Los Chocoyos ash, Central America” by Baudry et al. (2024), *Earth and Planetary Science Letters*,
- [19] Lewis, C., de Silva, S., **Cisneros de León, A.**, Burns, D., Villarroel, M., 2025, Effusive volcanic microcosm of a regional ignimbrite flare-up: Prolonged life cycle of the Chaxas Complex, northern Chile, and its influence on modern volcanic arc character, [GSA Bulletin](#),
- [18] Schmitt, A. K., Sliwinski, J., Caricchi, L., Bachmann, O., Riel, N., Kaus, B. J. P., **Cisneros de León, A.**, Cornet, J., Friedrichs, B., Lovera, O., Sheldrake T., Weber, G., 2023, Zircon age spectra to quantify magma evolution, [Geosphere](#), 19(4): 1006-1031.
- [17] **Cisneros de León, A.**, Danišik, M., Schindlbeck-Belo, J.C., Kutterolf, S., Schmitt, A.K., Freundt, A., Kling, A., Wang, K.-L., and Lee, H.-Y., 2023, Timing and recurrence intervals for voluminous silicic eruptions from Amatitlán Caldera (Guatemala), [Quaternary Science Reviews](#), v. 301, p. 107935.
- [16] **Cisneros de León, A.**, Schmitt, A.K., Weber, B., 2022, Multi-episodic formation of baddeleyite and zircon in polymetamorphic anorthosite and rutile-bearing ilmenitite from the Chiapas Massif complex, Mexico. [Journal of metamorphic geology](#), 1– 35.
- [15] **Cisneros de León, A.**, Mittal, T., de Silva, S. L., Self, S., Schmitt, A. K., and Kutterolf, S., 2022, On Synchronous Supereruptions: [Frontiers in Earth Science](#), v. 10.
- [14] **Cisneros de León, A.**, Schmitt, A. K., Kutterolf, S., Schindlbeck-Belo, J. C., Hernández, W., Sims, K. W. W., et al. (2021). Zircon and melt extraction from a long-lived and vertically extensive magma system underneath Ilopango caldera (El Salvador). [Geochemistry, Geophysics, Geosystems](#), 22, e2020GC009507.
- [13] **Cisneros de León, A.**, Schindlbeck-Belo, J. C., Kutterolf, S., Danišik, M., Schmitt, A. K., Freundt, A., Pérez, W., Harvey, J. C., Wang, K. L., and Lee, H. Y., 2021, A history of violence: magma incubation, timing and tephra distribution of the Los Chocoyos supereruption (Atilán Caldera, Guatemala): [Journal of Quaternary Science](#), v. 36, no. 2, p. 169-179.
- [12] Tazzo-Rangel, D., Weber, B., Schmitt, A.K., González-Guzmán, R., **Cisneros de León, A.**, Hecht, L., (2020) Permo-Triassic metamorphism in the Mérida Andes, Venezuela – New insights from geochronology, O isotopes, and geothermobarometry: [International Journal of Earth Sciences](#), 110, 2465-2493.
- [11] Weber, B., Schmitt, A.K., **Cisneros de León, A.**, González-Guzmán, R., and Gerdes, A., (2020) Neoproterozoic extension and the Central Iapetus Magmatic Province in southern Mexico - new U-Pb ages, Hf-O isotopes and trace element data of zircon from the Chiapas Massif Complex: [Gondwana Research](#) 88, 1-20.
- [10] Kutterolf, S., Schindlbeck- Belo, J.C., Rohr, I., Rademacher, M., **Cisneros de León, A.**, Eisele, S., Freundt, A., Hernandez, W., Wang, K.L., 2019. The Arce Tephra: Two subsequent paroxysmal Plinian eruptions from Coatepeque Caldera (El Salvador). [Journal of Volcanology and Geothermal Research](#), 390, 106673.
- [9] **Cisneros de León, A.**, Schmitt, A. K., Storm, S., Weber, B., Schindlbeck-Belo, J. C., Trumbull, R. B., and Juárez, F., (2019), Millennial to decadal magma evolution in an arc volcano from zircon and tephra of the 2016 Santiaguito eruption (Guatemala): [Lithos](#) 340-341, 209-222.

- [8] **Cisneros de León, A.**, Schmitt, A. K., Roberge, J., Heiler, L., Ludwig, C., and Schmitt, F. H., (2019), Zircon in *sak lu'um*: Evidence of multiple Eocene silicic tephra layers as palygorskite precursors in the Yucatán peninsula, Mexico: [Journal of South American Earth Sciences](#), v. 93, p. 394-411.
- [7] **Cisneros de León, A.**, and Schmitt, A. K., (2019), Intrusive reawakening of El Chichón volcano prior to its Holocene eruptive hyperactivity: [Journal of Volcanology and Geothermal Research](#), v. 377, p. 53-68.
- [6] **Cisneros de León, A.**, and Schmitt, A. K., (2019), Reconciling Li and O diffusion in zircon with protracted magmatic crystal residence: [Contributions to Mineralogy and Petrology](#), v. 174, no. 4, p. 28.
- [5] Weber, B., Schmitt, A. K., **Cisneros de León, A.**, and González-Guzmán, R., (2019), Coeval Early Ediacaran Breakup of Amazonia, Baltica, and Laurentia: Evidence from micro-baddeleyite dating of dykes from the Novillo Canyon, Mexico: [Geophysical Research Letters](#), v. 46, no. 4, p. 2003-2011.
- [4] Weber, B., González-Guzmán, R., Manjarrez-Juárez, R., **Cisneros de León, A.**, Martens, U., Solari, L., Hecht, L., and Valencia, V., (2018), Late Mesoproterozoic to Early Paleozoic history of metamorphic basement from the southeastern Chiapas Massif Complex, Mexico, and implications for the evolution of NW Gondwana: [Lithos](#), v. 300-301, p. 177-199.
- [3] **Cisneros de León, A.**, Weber, B., Ortega-Gutiérrez, F., González-Guzmán, R., Maldonado, R., Solari, L., Schaaf, P., and Manjarrez-Juárez, R., (2017), Grenvillian massif-type anorthosite suite in Chiapas, Mexico: Magmatic to polymetamorphic evolution of anorthosites and their Ti-Fe ores: [Precambrian Research](#), v. 295, p. 203-226.
- [2] González-Guzmán, R., Weber, B., Manjarrez-Juárez, R., **Cisneros de León, A.**, Hecht, L., and Herguera-García, J. C., (2016), Provenance, age constraints and metamorphism of Ediacaran metasedimentary rocks from the El Triunfo Complex (SE Chiapas, México): evidence for Rodinia breakup and Iapetus active margin: [International Geology Review](#), v. 58, no. 16, p. 2065-2091.
- [1] Angeles-Garcia, S., Reyes-Salas, A., Alva-Valdivia, L., **Cisneros de León, A.**, and Ortega-Gutierrez, F., 2014, Provenance studies of archaeological materials by scanning electron microscopy: [Acta Microscopica](#), v. 23, no. 3, p. 176-180.

Oral/poster presentations at conferences as first author

- 2025 Poster presentation at **International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) Scientific Assembly 2025** (Geneva, Switzerland) from June 29th – July 5th: “Homogeneous mush and sub-solidus carapace feeds post-caldera volcanism within the Toba Caldera”
- 2024 Oral presentation at **AGU fall meeting 2024**, December 9-13: “Supereruption sourced from a rapidly established transcrustal magmatic system: the case of Los Chocoyos from Atitlán caldera”.
- 2024 Poster at AGU fall meeting 2024, December 9-13: “Evaluating the fluid-flow cipher code in deep subduction systems using Li isotopes in garnet: the case of the Pouébo eclogite, New Caledonia”.
- 2023 Poster at **Gordon Research Conference (GRC) Geochronology**, August 13-18: “On Synchronous Supereruptions”.
- 2022 Poster at **GSA Connects meeting 2022** (Denver, USA): “Timing and recurrence intervals for major eruptions from Amatitlán caldera (Guatemala)”.
- 2022 Poster at **GSA Connects meeting 2022** (Denver, USA): “A billion-year odyssey: multi-episodic formation of metamorphic baddeleyite and zircon in mafic rocks from the Chiapas Massif Complex, Mexico”.
- 2021 Oral presentation at **DMG-section virtual meeting** geochemistry, petrology and petrophysics 2021: “Timing and distribution of the Los Chocoyos supereruption from Atitlán caldera (Guatemala)” (**Second place award for best oral presentation**).
- 2021 Oral presentation at virtual **EGU 2021** (Vienna, Austria): “Timing and distribution of the Los Chocoyos supereruption from Atitlán caldera (Guatemala) by zircon ^{238}U - ^{230}Th and (U-Th)/He double-dating”
- 2020 Oral presentation at virtual **AGU Fall Meeting 2020** (San Francisco, USA): “Magmatic processes and timescales of explosive volcanoes of the Chiapanecan and Central American volcanic arcs through zircon petrochronology”.
- 2019 Oral presentation at **EGU 2019** (Vienna, Austria): “Re-investigation of Li and O diffusion behavior in xenocryst-rich zircon from El Chichón volcano (Chiapas, Mexico)”.

- 2019 Poster presentation at **DMG-section meeting** geochemistry, petrology and petrophysics 2019 (Heidelberg, Germany) “Zircon in *sak lu'um*: Evidence of multiple Eocene silicic tephra layers as palygorskite precursors in the Yucatán peninsula, Mexico”.
- 2018 Poster presentation **DMG-section meeting** geochemistry, petrology and petrophysics 2018 (Göttingen, Germany) “Re-investigation of Li and O diffusion behavior in xenocryst-rich zircon from El Chichón volcano (Chiapas, Mexico)”.
- 2018 Poster presentation **INQUA–INTAV** International Field Conference and Workshop: Crossing New Frontiers - Tephra Hunt in Transylvania from 24-29 June 2018 in Braşov, Romania: “Zircon in tephra as a novel tool to decrypt geologic and archeological archives: a case study from Central America”.
- 2017 Poster at **Latin American Colloquium** 2017 (Heidelberg, Germany): “Oxygen isotope geochemistry of zircon from El Chichón volcano, Mexico: its role in diffusion and magma genesis”.
- 2016 Poster at **European Mineralogical Conference** 2016 (EMC; Rimini, Italy): “The origin of baddeleyite, srilankite, högbomite and zircon coronas in Ti-Fe ores from the Mariscal-Soconusco massif-type anorthosite complex, southeastern Mexico”.
- 2013 Poster at **AGU Fall meeting** 2013 (San Francisco, USA): “A Paleozoic massif anorthosite related to rutile bearing ilmenite ore deposits, south of the Polochic fault, Chiapas Massif complex, Mexico”.
- 2013 Oral presentation at **Congreso Nacional de Geoquímica** 2013 (INAGQ, Mexico): “Paleozoic anorthosites related to rutile-bearing ilmenite ore deposits within the Chiapas Massif Complex, Mexico”
- 2013 Oral presentation at **Coloquio de Meteorítica** 2013 (Mexico): “Petrographic and chemical analyses to determine if a rock sample from the Farallon Dunes, Veracruz, corresponds with extraterrestrial material”.
- 2012 Oral presentation at **Congreso Minero Hierro** 2012 (Mexico) “Titanium in Mexico: an approach to new discoveries in Chiapas, Mexico”.
- 2012 Poster at **Geological Association of America** GSA 2012 Cordilleran meeting (Mexico): “Petrography and geochemistry of anorthosites in the Chiapas Massif Complex”.

Other oral/poster presentations as co-author

- 2024 Sarah Penniston-Dorland, **Alejandro Cisneros de León**, William Hoover, Besim Dragovic, Philip Piccoli, Christiana Hoff (2024), *Garnet as an archive of fluid flow processes during subduction metamorphism: Evidence from in situ measurement of Li isotopes*. European Geophysical Union (No. EGU24-6665).
- 2023 Verence Becerril-González, Shanaka L de Silva, **Alejandro Cisneros de León**, Nestor Jiménez, Frank Tepley, *Cerro Volcán Quemado: an enigmatic Holocene monogenetic phreatomagmatic volcano in the altiplano of Bolivia*, GSA Connects 2023 Meeting in Pittsburgh, Pennsylvania, Vol. 55, No. 6, doi: 10.1130/abs/2023AM-391675.

Invited talks/seminars

- 2025 **United States Geological Service (USGS)**, Vancouver Volcano Observatory, April 2025, “Reconstructing the Magmatic History and Eruption Timing of Large Explosive Events: Zircon Petrochronology Insights from El Chichón Volcano and Atitlán Caldera”
- 2024 **Oregon State University**, USA, February 2024, U-series disequilibrium geochronology
- 2024 **Oregon State University**, USA, February 2024, Decoding Magmatic Evolution and Timing of Explosive Eruptions in the Chiapanecan and Central American Volcanic Arcs through Zircon Petrochronology
- 2023 **University of Lausanne**, Switzerland, SIMS winter course 2023, “Zircon petrochronology of volcanic rocks through SIMS: a case study from the 1982 El Chichón volcano eruption, Mexico”

- 2022 **University of Illinois**, Chicago, USA, November 2022, “Unraveling volcanic and magmatic processes from zircon petrochronology: a case study from Quaternary explosive eruptions of the Chiapanecan and Central American volcanic arcs”
- 2022 **University of Washington**, USA, November 2022, “Unraveling volcanic and magmatic processes from zircon petrochronology: a case study from Quaternary explosive eruptions of the Chiapanecan and Central American volcanic arcs”

Research/field experience (*participant/°own project)

- 2024 **"Timescales and processes of magmatic resurgence at Toba caldera"** (NSF postdoctoral fellowship; PI: Alejandro Cisneros de León) Fieldwork; sample collection at Toba caldera, Indonesia; petrography; accessory mineral petrochronology including, mineral crystallization (U-series) geochronology including zircon, allanite, and monazite coupled to trace elements and oxygen isotope compositions (Secondary Ion Mass Spectrometry, SIMS); eruption dating by accessory mineral (U-Th)/He dating (noble gas mass spectrometry).
- 2023 **"Geological Fieldwork at Altiplano Puna Volcanic Complex, Chile"** Sample collection and mapping.
- 2023 **"Characterization of Arendal and Pacoima allanite for development of trace elements reference materials"** Petrography; U-Pb geochronology and trace elements employing laser ablation inductively coupled mass spectrometry (LA-ICP-MS), mineral major compositions (Electron Microprobe, EMP).
- 2022 **"Developing crystal clocks in metamorphic rocks: Using lithium in subduction zone garnets to decipher fluid release timescales"** (NSF collaborative research project*; PI: Besim Dragovic and CO-PI: Sarah Penniston-Dorland). Petrography; garnet compositional mapping (Electron Microprobe, EMP); garnet Lu-Hf geochronology (column chemistry and multi-collector inductively-coupled mass spectrometry, MC-ICP-MS); lithium isotopes in garnet (SIMS); diffusion modeling.
- 2017 **"Zircon in tephra as a novel tool to decrypt geologic and archaeological archives: a case study from Central America"** (DFG project*; PIs: Steffen Kutterolf and Axel K. Schmitt). Fieldwork (Guatemala, El Salvador, and Mexico); sample collection; petrography; whole-rock X-ray fluorescence, whole-rock Sr-Nd isotopes (Thermal Ionization Mass Spectrometry, TIMS), whole-rock U-series isotopes (MC-ICP-MS); zircon geochronology (U-series and U-Pb); trace elements; oxygen and lithium isotopes (SIMS); glass and mineral compositions (EMP, and Laser Ablation Inductively-coupled Mass Spectrometry, LA-ICP-MS); diffusion modeling.
- 2016 **"The August 2016 Santa Maria (Guatemala) eruption: a unique opportunity to test tephra deposition models for Maya archaeological sites"** (National Geographic Society project*; PI: Axel K. Schmitt). Fieldwork; sample collection; whole-rock X-ray fluorescence; whole-rock Sr-Nd isotopes (TIMS); zircon geochronology (U-series and U-Pb) and trace elements (SIMS).
- 2013 **"Tectonic systems of Mexico, origin, and evolution"** (CONACYT project CB-164454*; PI: Fernando Ortega-Gutiérrez). Fieldwork at the granulite Oaxacan complex (Oaxaca), in southern Mexico; geological mapping; sample collection; petrography; whole-rock X-ray fluorescence; whole-rock Sr-Nd isotopes (TIMS); zircon geochronology (U-Pb), oxygen isotopes, and trace elements (SIMS).
- 2013 **"Zircon chronometry of the hyperactive El Chichón volcano (Chiapas, Mexico) and implications for Maya clay"** (UC-MEXUS- CONACYT Collaborative Grants*; PI: Julie Roberge and Axel K. Schmitt). Fieldwork, sample collection, zircon geochronology, trace elements, oxygen and lithium isotopes (Secondary Ion Mass Spectrometry, SIMS).
- 2012 **"Igneous and metamorphic evolution of the southern Maya block and its relationship with other peri-Gondwanan terranes during the Paleozoic"** (CONACYT-180588 project*; PI: Bodo Weber), fieldwork, geological mapping, sample collection, whole-rock X-ray fluorescence, whole-rock Sr-Nd isotopes (TIMS), zircon geochronology (U-Pb), oxygen isotopes, and trace elements (SIMS and LA-ICP-MS).

2012 **“Design of metamorphic petrology learning guides based on integrated fieldwork and rock collections”**. (PAPIME 103912*; Alfredo Victoria-Morales). Fieldwork at high-pressure Acatlán complex (Puebla), southern Mexico, sample collection, geological mapping, petrography.

Awards & honors

NSF Postdoctoral Fellowship (2023). Timescales of magmatic resurgence at Toba caldera (US\$180,000.00). Oregon State University.

Best Ph.D. Dissertation award (2020/2021), Institute of Earth Sciences, Heidelberg University, Germany (EUR\$ 400.00).

Travel award for the Gordon Research Conference (GRC) meeting in Geochronology 2023 (US\$ 1,000.00 waiver fee)

Professional service

Editorial board member of Boletín de la Sociedad Geológica Mexicana, 2021 - present.

Reviewer for NSF, Geology, CMP, JVGR, Revista Mexicana de Ciencias Geológicas, Boletín de la Sociedad Geológica Mexicana, International Geology Review, Journal of Petrology, Bulletin of Volcanology.

Outreach activities

September 18, 2024 **The Louis Stokes Alliance for Minority Participation (LSAMP) program** – Introduction to Volcanism in the Cascades and Trashcano Experiment, Oregon State University.

August 6–9, 2024 **4H Migrant Youth Camp** – Leading scientist. Daily talks and experiments about types of volcanic eruptions and their origins and hazards. Salem, Oregon.

06-12-2024 **Temblores y Volcanes** – Leading scientist. Talk about the common origin of earthquakes and volcanos at the Lincoln Bilingual Elementary School, Corvallis, Oregon.

06-01-2024 **Get Outdoors Day** – Leading scientist. Participated in Earth sciences outreach activities for bilingual families in Peavy Arboretum forest, Corvallis, Oregon.

07-2007 **Geology on my school garden** – Earth sciences outreach activities in the junior/high school of the indigenous community of Guaquitepec, Chiapas, Mexico.

2016 – 2019 **Unikids** – Earth Sciences outreach activities at Heidelberg University for elementary school level.

Creator of scientific-technical video tutorials on Earth Sciences publicly available on YouTube and published by Heidelberg University (Germany). Link: <https://www.youtube.com/watch?v=iIY5BIFpAH8&t=1410s>