

Alida Perez-Fodich, Ph.D

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University of Chile
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EDUCATION

- 2019 PhD in Geological Sciences: Geochemistry and Isotope Geology
Department of Earth and Atmospheric Sciences, Cornell University
- Dissertation: Understanding volcanic weathering processes through geochemical modeling, trace elements and hydrology. Advisor: Dr. Louis Derry
- 2013 MSc in Geology
Department of Geology, University of Chile. Advisor: Dr. Martin Reich
- 2010 BSc in Geology
Department of Geology, University of Chile

PROFESSIONAL APPOINTMENTS

- 2020–Present Assistant Professor
Department of Geology, University of Chile

PUBLICATIONS

- Fernandez, N.M., **Perez-Fodich, A.**, Derry, L.A., Druhan, J.L. (2021) A first look at Ge/Si partitioning during amorphous silica precipitation: Implications for Ge/Si as a tracer of fluid-silicate interactions. *Geochimica et Cosmochimica Acta*, 297, 158-178. doi:[10.1016/j.gca.2021.01.007](https://doi.org/10.1016/j.gca.2021.01.007)
- Perez-Fodich, A.**, & Derry, L. A. (2020) A model for germanium-silicon equilibrium fractionation in kaolinite. *Geochimica et Cosmochimica Acta*, 288, 199-213. doi:[10.1016/j.gca.2020.07.046](https://doi.org/10.1016/j.gca.2020.07.046)
- Perez-Fodich, A.**, & Derry, L. A. (2019). Organic acids and high soil CO₂ drive intense chemical weathering of Hawaiian basalts: Insights from reactive transport models. *Geochimica et Cosmochimica Acta*, 249, 173-198. doi:[10.1016/j.gca.2019.01.027](https://doi.org/10.1016/j.gca.2019.01.027)
- Alvarez, F., Reich, M., Snyder, G., **Perez-Fodich, A.**, Muramatsu, Y., Daniele, L., & Fehn, U. (2016). Iodine budget in surface waters from Atacama: Natural and anthropogenic iodine

sources revealed by halogen geochemistry and iodine-129 isotopes. *Applied Geochemistry*, 68, 53-63. doi:[10.1016/j.apgeochem.2016.03.011](https://doi.org/10.1016/j.apgeochem.2016.03.011)

Alvarez, F., Reich, M., **Perez-Fodich, A.**, Snyder, G., Muramatsu, Y., Vargas, G., & Fehn, U. (2015). Sources, sinks and long-term cycling of iodine in the hyperarid Atacama continental margin. *Geochimica et Cosmochimica Acta*, 161, 50-70. doi: [10.1016/j.gca.2015.03.032](https://doi.org/10.1016/j.gca.2015.03.032)

Perez-Fodich, A., Reich, M., Alvarez, F., Snyder, G. T., Schoenberg, R., Vargas, G., Muramatsu, Y., Fehn, U. (2014). Climate change and tectonic uplift triggered the formation of the Atacama Desert's giant nitrate deposits. *Geology*, 42(3), 251-254. doi:[10.1130/g34969.1](https://doi.org/10.1130/g34969.1)

Reich, M., Snyder, G. T., Alvarez, F., **Perez, A.**, Palacios, C., Vargas, G., Cameron, E. M., Muramatsu, Y., Fehn, U. (2013). Using iodine isotopes to constrain supergene fluid sources in arid regions: insights from the chuquicamata oxide blanket. *Economic Geology*, 108(1), 163-171. doi:[10.2113/econgeo.108.1.163](https://doi.org/10.2113/econgeo.108.1.163)

SUBMITTED, UNDER REVIEW, IN PREP

Perez-Fodich, A., Derry, L.A., Walter, M.T., Marçais, J. The effect of weathering in runoff-to-groundwater partitioning in the Island of Hawai'i: perspectives for landscape evolution. In prep. for *Journal of Geophysical Research: Earth Surface*.

Perez-Fodich, A., Derry, L. A., Smieska, L. Fe oxidation and trace element gradients during early weathering of spheroidally weathered Hawaiian basalts. In prep. for *Chemical Geology*.

Perez-Fodich, A., Dontsova, K., Juarez, S. A reactive transport approach to elucidate mineral dissolution and precipitation controls in solute exports from the ECOTRON basalt weathering experiment. In prep. for *Vadose Zone Journal*.

FELLOWSHIPS

2014	CONICYT PhD Fellowship (Chilean Science Foundation). \$200,000
2014	Fulbright Foreign Student PhD Fellowship.
2007	Anglo American Excellence Undergraduate Scholarship. \$20,000

RESEARCH GRANTS

2020	FONDECYT Iniciacion 2020 Grant 11200656: "Chemical weathering fluxes from continental arc volcanoes and their implication for elemental and atmospheric CO ₂ budgets in the Southern Andes". ANID (Chilean Science Foundation). \$130,000
2020	U-Inicia 2020 Grant UI- 006/20: "Flujos de meteorización química en arcos volcánicos continentales y sus implicancias para los balances de elementos y dióxido de carbono atmosférico en los Andes del Sur". University of Chile. \$11,000
2019	International Association of Geochemistry Student Research Grant. \$2,200

2018	Make Our Planet Great Again Short-stay Research Grant. \$9,000
2018	Cornell Research Travel Grant. \$2,000
2017	Cornell High Energy Synchrotron Source (CHESS). Beamtime
2017	Geological Society of America Graduate Student Research Grant. \$1,325
2017	Donovan Research Fund Cornell University. \$1,000
2016	Integral Consulting Research Grant. \$2,000
2016	Arthur L. Bloom Grant for Pacific Studies. \$1,000

AWARDS AND HONORS

2017	Goldschmidt Merit Student Travel Grant. Geochemical Society
2016	Fall Meeting Student Travel Grant. America Geophysical Union
2007	Outstanding Student FCFM University of Chile
2006	Outstanding Student FCFM University of Chile
2005	Irma Salas Merit Scholarship

INVITED TALKS

2020	GET Université de Toulouse III, Paul Sabatier, February 12 th 2020: “Understanding weathering processes using trace elements”
2020	Institut de Physique du Globe de Paris, January 17 th 2020: “Understanding volcanic weathering processes”.

CONFERENCE PRESENTATIONS (only first author)

2020	Perez-Fodich, A. , Derry, L.A. The Convolution of Time and Weathering Intensity on the Fate of Runoff-To-Groundwater Partitioning in the Island of Hawai'i . Goldschmidt Conference 2020. Virtual, Global.
2019	Perez-Fodich, A. , Derry, L. A., Aguirre, A. A. Depleted Ge/Si groundwater ratios and a thermodynamic model for equilibrium fractionation in natural systems. AGU Fall Meeting 2019. San Francisco CA, USA.
2019	Perez-Fodich, A. , Derry, L. A. Modeling Ge/Si weathering signatures using thermodynamic data for synthetic germanium minerals. Goldschmidt Conference 2019. Barcelona, Spain.
2019	Perez-Fodich, A. Organic acids and high soil CO ₂ drive intense chemical weathering of Hawaiian basalts: Insights from reactive transport models. Congrès des Doctorants 2019. Institut de Physique du Globe de Paris, Paris, France.

- 2018 **Perez-Fodich, A.**, Derry, L. A. Tracking Fe-oxidation in spheroidal weathering of basalts. Goldschmidt Conference 2018. Boston MA, USA.
- 2017 **Perez-Fodich, A.**, Derry, L. A. Extreme basalt weathering results from high soil CO₂, unsaturated conditions and organic acids. Goldschmidt Conference 2017. Paris, France.
- 2017 **Perez-Fodich, A.** Intense basalt weathering: high soil CO₂, unsaturated conditions and organic acids. Critical Zone Observatories All Hands Meeting 2017. Arlington VA, USA.
- 2016 **Perez-Fodich, A.**, Walter, M. T., Derry, L. A. Understanding the roles of ligand promoted dissolution, water column saturation and hydrological properties on intense basalt weathering using reactive transport and watershed-scale hydrologic modeling. AGU Fall Meeting 2016. San Francisco CA, USA.
- 2013 **Perez Fodich, A.**, Alvarez, F., Snyder, G.T., Schoenberg, R., Reich, M. The Role of Groundwater in the Formation of the Giant Nitrate Deposits of Atacama: Iodine-129 and Stable Chromium Isotopic Evidence. Goldschmidt Conference 2013. Florence, Italy.
- 2012 **Perez Fodich, A.**, Alvarez, F., Reich, M., Snyder, G., Schoenberg, R., Vargas, G., Palacios, C. The origin of the nitrate ore fields from the Atacama Desert revisited: New insights from the iodine-129 and stable chromium isotopic systems. XIII Congreso Geológico Chileno, Antofagasta, Chile.

RESEARCH EXPERIENCE

- 2020–Present Principal Investigator FONDECYT Iniciacion (ANID 11200656), University of Chile, Santiago, Chile.
- 2020–Present Research Associate at Andean Geothermal Center of Excellence (FONDAP 15090013), University of Chile, Santiago, Chile.
- 2020–Present International Collaborator at Deep EarthShape Project (DFG-SPP 1803). German Science Foundation. Germany–Chile.
- 2018–2019 Institut de Physique du Globe de Paris (IPGP) Visiting Student Researcher Long-term research stay at the Geochemistry of External Envelopes (G2E) group. Principal Investigator: Dr. Jérôme Gaillardet. Paris, France.
- 2014–2019 Cornell University PhD Student Graduate researcher in the Department of Earth and Atmospheric Sciences Principal Investigator: Dr. Louis Derry. Ithaca NY, USA.
- 2012 Universität Tübingen Short-term Student Researcher Short-term research at the Isotope Geochemistry Laboratory

Principal Investigator: Prof. Ronny Schönberg. Tübingen, Germany.

- 2012 Rice University Short-term Student Researcher
Shor-term research at the Marine Geochemistry Laboratory
Principal Investigator: Dr. Glen Snyder. Houston TX, USA.
- 2011 Catholic University of the North Short-term Student Researcher
Short-term research at the Fluid Inclusion Laboratory.
Principal Investigator: Dr. Eduardo Campos. Antofagasta, Chile.
- 2011–2013 University of Chile Master Student
Research assistant in the Department of Geology for FONDECYT Grant 1100014.
Principal Investigator: Dr. Martin Reich. Santiago, Chile.

PROFESSIONAL SERVICE

- 2020 Reviewer for Geochimica et Cosmochimica Acta (1), American Journal of Science
(2), Chemical Geology (1), Environmental Pollution (1), G-cubed (2)
- 2020 Convener at Goldschmidt Conference
- 2019 Reviewer for Chemical Geology (1), CATENA Regional (1), Ecological Modeling (1)

TEACHING EXPERIENCE

Main Instructor

- 2020–2021 Thermodynamics of Geological Processes. Department of Geology, University of
Chile.
- 2020–2021 Introduction to Geology. Department of Geology, University of Chile.

Workshop instructor

- 2020 Applied Hydrogeology in Mining and Environmental Problems, University of Chile.

Teaching Assistant

- 2012 Geochemistry. Dept. of Geology, University of Chile.
- 2011 Geology of Chile. Dept. of Geology, University of Chile.
- 2010–2011 Field Geology I. Dept. of Geology, University of Chile.
- 2009–2010 Stratigraphy and Paleontology. Dept. of Geology, University of Chile.

SERVICE AND OUTREACH

- 2019 Seminar Chair for Cornell Cross-Scale Biogeochemistry and Environmental Science
Seminar Series (BESS).

2018 Seminar Chair for Cornell Cross-Scale Biogeochemistry and Environmental Science Seminar Series (BESS).
2018 Faculty Liaison for Snee Graduate Organization. Cornell University.
2012 Graduate Faculty Liaison for FCFM Faculty Council. University of Chile.

ANALYTICAL TECHNIQUES

ICP-MS Thermo Element 2 + hydride generator
ICP-OES Spectro Blue.
General inorganic geochemistry clean laboratory procedures.
Sample purification for isotope preparation: $^{30}\delta\text{Si}$, $^{53}\delta\text{Cr}$, I^{129} .
Fluid-inclusion T-X measurements Linkam TS 1500.

SOFTWARE AND PROGRAMMING SKILLS

Geochemical Software: CrunchFlow (Advanced), Geochemist Workbench (Advanced), PhreeqC (Intermediate).
Programming Languages: Matlab (Intermediate), R (Basic), Bash script (Basic).

LANGUAGES

English: Fluent (C2)
Spanish: Native
French: Oral/Reading Intermediate (B1). Writing Basic (A2).
Croatian/Russian: Elementary (A1), can read with dictionary.

SHORT COURSE/WORKSHOPS

2019 AGU International Critical Zone Network of Networks Early Career Workshop. San Francisco CA, USA.
2018 Critical Zone Ecosystem Dynamics Summer Course. Gran Paradiso, Italy.
2016 Tutorial Community Land Model v.5. NCAR, Boulder CO, USA.

SOCIETY MEMBERSHIPS

Geochemical Society (member since 2011)
European Association of Geochemistry (member since 2011)
International Association of Geochemistry (member since 2018)
American Geophysical Union (member since 2012)

INDUSTRY EXPERIENCE

2013-2014 Mid-term Production Geologist
Derk Engineering and Geology for CODELCO. Radomiro Tomic Mine, Chile.

REFERENCES

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