Curriculum Vitae for Dr. Samuel Warren Scott

Personal Information

Born: July 15, 1987 in Norwalk, Connecticut, USA Address: Holtsgata 37, 101 Reykjavik, Iceland Mobile: +354 861 9510 Email: <u>samuels@hi.is</u> Kennitala: 150787-4329 Citizenship: USA Wife: Dr. Beeke Stegmann (born February 19, 1987) Children: Adam Oscar (born March 26, 2018) and Ellen Sophia (born February 8, 2021)

Employment

01/2024 – present	Adjunct lecturer, Faculty of Earth Sciences, University of Iceland, Iceland
01/2021 – present	Post-doctoral researcher, Institute of Earth Sciences, University of Iceland
09/2017 – 12/2020	Post-doctoral researcher, Reykjavik University, Iceland
06/2016 - 12/2016	Post-doctoral researcher, ETH Zürich, Switzerland

Appointments

06/2024 – present	Board of Directors	, GEORG Geotherma	Research Cluste	r, Reykjavik,	Iceland
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Education

01/2012 - 06/2016	Ph.D., Earth Sciences ETH Zürich, Switzerland
08/2009 – 06/2011	M.Sc., Sustainable Energy Reykjavik Energy Graduate School for Sustainable Systems (REYST)
08/2005 - 06/2009	B.Sc., Earth System Sciences Pitzer College, Claremont, California, USA
09/2001 – 06/2005	High School Fairfield Warde High School, Fairfield, Connecticut, USA

Research interests

- Fluid flow and heat transfer in high- and low-temperature geothermal systems
- Geochemical characterization of geothermal fluids and volcanic gases
- Interactions between magma and hydrothermal systems

Teaching

2024 – 2025	General Geochemistry, University of Iceland
2022 – 2024	Geothermal Reservoir Physics and Engineering, University of Iceland
2020 - 2024	Geothermal Resources, University of Iceland

Supervision of Graduate Students

Co-supervisor for PhD student Daniel Ciraula (started Oct 2021) and Adolph Bravo (started March 2024) at the University of Iceland

Co-supervisor for seven MSc students at the University of Iceland and two MSc students at Reykjavik University

Grants awarded

2025	Landsvirkjun Energy Research Fund Advancing Geothermal Reservoir Models for Superhot Systems (PI: 1,500,000 ISK)
2025	RANNIS Research Fund HYCOMA: Hydrothermal Cooling of Magmatic Intrusions (PI: 65,400,625 ISK)
2024	RANNIS Infrastructure Fund Enhancing Iceland's Volcanic Research and Monitoring: A proposal for Advanced Degassing Infrastructure (PI: 19,000,000 ISK)
2023	VOR Reykjavik Energy Research Fund Understanding the dynamics of cold groundwater flows in Icelandic low-temperature geothermal systems (PI: 1,000,000 ISK)
2019	Landsvirkjun Energy Research Fund A Statistical Database for the Petrophysical Properties of Icelandic Geothermal Reservoir Rocks (PI: 1.000.000 ISK)

Invited Presentations (recent)

2024	Massachusetts Institute of Technology, ERL seminar series
2024	European Geosciences Union, Invited Speaker (session GMPV: 8.7)
2024	GFZ German Research Centre for Geosciences, Seminar Series

Press Coverage (recent)

2024	German Public Radio, Deutschlandfunk Hope for Super-hot Geothermal Energy: Drilling Deeper for More Geothermal Heat
2023	ThinkGeoEnergy, Renewable Energy Magazine, SciTechDaily, other venues Interest Surging for Superhot, Superdeep Geothermal Energy
2023	Newsweek Iceland Volcano Leads Geologists to New Lava Fountain Theory
2022	American Geophysical Union EOS magazine Innovative Model Elucidates Geothermal Energy Resource

List of Publications

Total citations: 941, h-index: 13 (Google Scholar), orcid: 0000-0001-7608-7358 First authors other than S. Scott indicated in **bold**.

IN REVIEW

(with W. Cumming, S. Hurwitz, C. Munoz-Saez, G. Ryan, F. Samrock, A. Seward, P. Utami) Geothermal energy utilization from volcanic systems. *Encyclopedia of Volcanoes.*

(with **A. Stefánsson**, T. Driesner) Supercritical geothermal resources. *Hydrothermal Processes in the Solar System (American Geophysical Union Book Series)*

PUBLISHED WORKS

- 26. (with **L. Wainman** et al.) Trace element emissions vary with lava flow age and thermal evolution during the Fagradalsfjall 2021-2023 eruptions, Iceland. *Geochemistry, Geophysics, Geosystems*. 25 (12), e2024GC011822, 2024.
- 25. (with **D. Martelo** et al.) Investigation of Scaling and Materials' Performance in Simulated Geothermal Brine. *Materials*. 17 (21), 5250, 2024
- 24. (with **S.M. Aðalsteinsdóttir** et al.) Solubility of NaCl in water vapor at 400-700 °C. *Geochimica et Cosmochimica Acta (in press)*.

- 23. (with **A. Stefánsson** et al.) Silica solubility and molecular speciation in water vapor at 400-800 °C. *Geochimica et Cosmochimica Acta (in press)*.
- 22. (with **A. Stefánsson** et al.) Isotopic and kinetic constraints on methane origins in hydrothermal fluids. *Geochimica et Cosmochimica Acta.* 373, 84-97, 2024.
- 21. (with **M. Pfeffer** et al.) SO₂ emission rates and incorporation into the air pollution dispersion forecast during the 2021 eruption of Fagradalsfjall, Iceland. *Journal of Volcanology and Geothermal Research.* 449, 108064, 2024.
- 20. (with I. Galeczka, I. Gunnarsson, S. Arnórsson, A. Stefánsson) Silica polymerization and nanocolloid nucleation and growth kinetics in aqueous solutions. *Geochimica et Cosmochimica Acta*. 371, 78-94, 2024.
- 19. (with A. Yapparova, P. Weis, M. Houde) Hydrological constraints on the potential of enhanced geothermal systems in the ductile crust. *Geothermal Energy: Science, Energy, Technology.* 12, 10, 2024.
- 18. (with M. Pfeffer, C. Oppenheimer, E. Bali, Oliver D. Lamb, T. Barnie, A. Woods, R. Kjartansdóttir, A. Stefánsson) Near-surface magma flow instability drives cyclic lava fountaining at Fagradalsfjall, Iceland. *Nature Communications*. 14, 6810, 2023.
- 17. (with L. Lévy, C. Covell, H. Franzson, B. Gibert, Á. Valfells, J. Newson, J. Frolova, E. Júlíusson and M. Guðjónsdóttir) Valgarður: A Database of the Petrophysical, Mineralogical, and Chemical Properties of Icelandic Rocks. *Earth System Science Data*. 15:3, 1165-1195, 2023.
- 16. (with **A. Yapparova**, B. Lamy-Chappuis and T. Driesner) Cold water injection near the magmatic heat source can enhance production from high-enthalpy geothermal fields. *Geothermics.* 112, 102744, 2023.
- 15. (with **A. Yapparova**, B. Lamy-Chappuis and T. Driesner) A Peaceman-type well model for the 3D Control Volume Finite Element Method and numerical simulations of supercritical geothermal resource utilization. *Geothermics*. 105, 102516, 2022.
- 14. (with **S. A. Halldórsson** et al.) Rapid shifting of a deep magmatic source at Fagradalsfjall volcano, Iceland. *Nature*. 609, 7927, 529-534, 2022.
- 13. (with **E. Gomez-Diaz**, T. Ratouis, J. Newson) Numerical modeling of reinjection and tracer transport in a shallow aquifer, Nesjavellir Geothermal System, Iceland. *Geothermal Energy: Science, Energy, Technology.* 10:7, 2022.
- 12. (with C. Covell, J. O'Sullivan, O. Maclaren, R. Nicholson, J. Newson, M. Guðjónsdóttir) Bayesian Calibration of a Natural State Geothermal Reservoir Model, Krafla, North Iceland. *Water Resources Research*. 58, e2021WR031254, 2022.
- 11. (with **E. Jolie** et al.) Geological controls on successful utilization of geothermal resources for power generation. *Nature Reviews Earth & Environment.* 2:5, 324-339, 2021.
- 10. Decompression boiling and natural steam cap formation in high-enthalpy geothermal systems. *Journal of Volcanology and Geothermal Research.* 395, 106765, 2020.
- 9. (with C. Covell, E. Júliusson, Á. Valfells, J. Newson, B. Hrafnkelsson, H. Pálsson, M. Guðjónsdóttir) A probabilistic geologic model of the Krafla geothermal system constrained by gravimetric data. *Geothermal Energy: Science, Energy, Technology.* 7:29, 2019.
- 8. (with **M. Heřmanská**, A. Stefansson) Supercritical fluids around magmatic intrusions: IDDP-1 at Krafla, Iceland. *Geothermics.* 78, 101-110, 2019.
- 7. (with T. Driesner) Permeability changes resulting from quartz precipitation and dissolution around upper crustal intrusions. *Geofluids*. 6957306, 2018.
- 6. (with **S. Fekete**, T. Driesner, P. Weis) Multiple stable isotope fronts during non-isothermal fluid flow. *Geochimica et Cosmochimica Acta*. 233, 537-557, 2018.
- 5. (with T. Driesner, P. Weis) Boiling and condensation of saline geothermal fluids above magmatic intrusions. *Geophysical Research Letters*. 44:4, 2017.

- 4. (with T. Driesner, P. Weis) The thermal structure and temporal evolution of high-enthalpy geothermal systems. *Geothermics*. 62:33-47, 2016.
- 3. (with T. Driesner, P. Weis) Geologic controls on supercritical geothermal resources above magmatic intrusions. *Nature Communications*. 6:7837, 2015.
- (with **D. Zezin**, T. Driesner, C. Sanchez-Valle, T. Wagner) Volumetric properties of mixed electrolyte aqueous solutions at elevated temperatures and pressures. The systems CaCl₂– NaCl– H₂O and MgCl₂–NaCl–H₂O to 523.15 K, 70 MPa, and ionic strength from 0.1 to 18 mol·kg⁻¹. *Journal of Chemical & Engineering Data*. 59:8, 2570–2588, 2014.
- 1. (with I. Gunnarsson, S. Arnórsson, A. Stefánsson) Gas chemistry, boiling and phase segregation in a geothermal system, Hellisheidi, Iceland. *Geochimica et Cosmochimica Acta*. 124, 170-189, 2014.