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Academic Appointments

2022 - present	President and Senior Research Scientist, OFM Research Inc.
2012 - present	Adjoint Professor of Earth and Environmental Sciences, Vanderbilt University
2007 - present	Affiliate Professor, Earth and Space Sciences, University of Washington
2005 - 2022	Vice President and Senior Research Scientist, OFM Research Inc.
2003 - 2005	Professor, Geophysical Sciences and the College, University of Chicago
1994 - 1999	Chairman, Geological Sciences, University of Washington
1988 - 2003	Professor, Geological Sciences, University of Washington
1985 - 1988	Associate Professor, Geological Sciences, University of Washington
1980 - 1985	Assistant Professor, Geological Sciences, University of Washington

Education

1980	Geology, University of California, Berkeley	Ph.D.
1978	Geology, University of California, Berkeley	M.A.
1976	Geology, University of California, Berkeley	B.A.

Research Interests

Computational Thermodynamics; Igneous Petrology; Mineralogy; Geochemistry; Thermodynamic Modeling

Publications

- Bell, A. S., Waters, L., & Ghiorso, M. (2024). "The olivine-spinel-a sio₂ melt (osas) oxybarometer: A new method for evaluating magmatic oxygen fugacity in olivine-phyric basalts." *American Mineralogist: Journal of Earth and Planetary Materials*.
- Wolf, A. S., & Ghiorso, M. S. (2024). "Melts 2.0: A bayesian calibration for silicate melting with a robust redox model." *2024 Goldschmidt Conference*.
- Ghiorso, M. S., Matthews, S., & Sverjensky, D. A. (2023). "Melts+dew: Modeling major element-cl-f-s phase equilibria, redox reactions and elemental partitioning in magmatic-hydrothermal systems." *Goldschmidt 2023 Conference*.
- Matthews, S., Ghiorso, M. S., Sverjensky, D. A., Huang, F., & Siron, G. (2023). "Pydew: A python interface for calculations with the deep earth water model." *Goldschmidt 2023 Conference*.
- Spiegelman, M., Evans, O., Ghiorso, M., Tweed, L., & Wilson, C. (2023). "Thermocodegen: A python/c++ package for the generation of custom thermodynamic models." *Journal of Open Source Software*, 8(86), 4874.
- Spiegelman, M. W., Wilson, C. R., Evans, O., Ghiorso, M. S., & Tweed, L. E. (2023). "Consistent integration of thermodynamics and geodynamics using thermocodegen." *AGU23*.

- Sverjensky, D. A., Matthews, S., & Ghiorso, M. S. (2023). “New activity coefficients & standard state properties for CO₂ in aqueous fluids in the extended deep earth water (dew) model.” *Goldschmidt 2023 Conference*.
- Gualda, G., Ghiorso, M., Hurst, A., Allen, M., & Bradshaw, R. (2022). “A complex patchwork of magma bodies that fed the Bishop Tuff supereruption (Long Valley Caldera, CA, United States): Evidence from matrix glass major and trace-element compositions.” *FRONTIERS IN EARTH SCIENCE*, 10.
- Johnson, C. M., Ghiorso, M. S., Spiegelman, M., Wolf, A. S., Adams, J., & Myhill, R. (2022). “Thermoengine: Thermodynamic properties estimator and phase equilibrium calculator.” *Astrophysics Source Code Library*, ascl-2208.
- Leong, J. A. M., Kelemen, P. B., Evans, O., Ghiorso, M. S., Mustard, J. F., Ehlmann, B. L., Spiegelman, M. W., Debaille, V., & Kaufman, S. (2022). “Did (some) carbonate & serpentine alteration of ultramafic rocks on Mars occur via ambient weathering over billions of years?” *AGU Fall Meeting Abstracts, 2022*, P52C-1551.
- Spiegelman, M. W., Evans, O., Ghiorso, M. S., Tweed, L. E., & Wilson, C. R. (2022). “Thermocodegen: New software for consistent integration of thermodynamics and geodynamics.” *AGU Fall Meeting Abstracts, 2022*, DI45A-0019.
- Wilson, C. R., Spiegelman, M. W., Ghiorso, M. S., & van Keken, P. E. (2022). “Thermodynamically-consistent reactive disequilibrium models of mantle convection.” *AGU Fall Meeting Abstracts, 2022*, DI45A-0020.
- Ghiorso, M. (2021). “Why be a member of the MSA?” *Elements*, 17(3), 208.
- Huggins, E. G., Ruprecht, P., & Ghiorso, M. S. (2021). “Using chemical affinities to understand disequilibrium textures of plagioclase preserved in magmatic systems.” *Geophysical Research Letters*, 48(10).
- Gualda, G. A. R., Gravelly, D. M., Deering, C. D., & Ghiorso, M. S. (2019). “Magma extraction pressures and the architecture of volcanic plumbing systems.” *Earth And Planetary Science Letters*, 522, 118–124.
- Gualda, G. A. R., Begue, F., Pamukcu, A. S., & Ghiorso, M. S. (2019). “Rhyolite-MELTS vs DERP - Newer does not make it better: A comment on ‘The effect of anorthite content and water on quartz-feldspar cotectic compositions in the rhyolitic system and implications for geobarometry’ by Wilke et al. (2017; *Journal of Petrology*, 58, 789–818).” *Journal Of Petrology*, 60(4), 855–863.
- Ghiorso, M. S. (2018). The encyclopedia of geochemistry. In W. M. White (Ed.). Springer-Verlag.
- Gualda, G. A. R., Gravelly, D. M., Connor, M., Hollmann, B., Pamukcu, A. S., Begue, F., Ghiorso, M. S., & Deering, C. D. (2018). “Climbing the crustal ladder: Magma storage-depth evolution during a volcanic flare-up.” *Science Advances*, 4(10).
- Harmon, L. J., Cowlyn, J., Gualda, G. A. R., & Ghiorso, M. S. (2018). “Phase-equilibrium geobarometers for silicic rocks based on rhyolite-MELTS. Part 4: Plagioclase, orthopyroxene, clinopyroxene, glass geobarometer, and application to Mt. Ruapehu, New Zealand.” *Contributions To Mineralogy And Petrology*, 173(1).
- VanTongeren, J. A., Watson, E. B., & Ghiorso, M. S. (2018). “Foreword.” *American Journal Of Science*, 318(1), III–VIII.
- Sack, R. O., & Ghiorso, M. S. (2017). “Ti³⁺- and Ti⁴⁺-rich fassaites at the birth of the solar system: Thermodynamics and applications.” *American Journal Of Science*, 317(7), 807–845.
- Creon, L., Rouchon, V., Youssef, S., Rosenberg, E., Delpech, G., Szabo, C., Remusat, L., Mostefaoui, S., Asimow, P. D., Antoshechkina, P. M., Ghiorso, M. S., Boller, E., & Guyot, F. (2017). “Highly CO₂-supersaturated melts in the Pannonian lithospheric mantle - A transient carbon reservoir?” *Lithos*, 286, 519–533.

- Tramontano, S., Gualda, G. A. R., & Ghiorso, M. S. (2017). “Internal triggering of volcanic eruptions: Tracking overpressure regimes for giant magma bodies.” *Earth And Planetary Science Letters*, 472, 142–151.
- Pamukcu, A. S., Ghiorso, M. S., & Gualda, G. A. R. (2017). “High-Ti, bright-Cl rims in volcanic quartz: A result of very rapid growth (vol 171, 105, 2016).” *Contributions To Mineralogy And Petrology*, 172(1).
- Pamukcu, A. S., Ghiorso, M. S., & Gualda, G. A. R. (2016). “High-Ti, bright-Cl rims in volcanic quartz: A result of very rapid growth.” *Contributions To Mineralogy And Petrology*, 171(12).
- Neilson, R. T., Spera, F. J., & Ghiorso, M. S. (2016). “Thermodynamics, self-diffusion, and structure of liquid NaAlSi₃O₈ to 30 GPa by classical molecular dynamics simulations.” *American Mineralogist*, 101(9-10), 2029–2040.
- Ghiorso, M. S., & Gualda, G. A. R. (2015). The encyclopedia of volcanoes. In H. Sigurdsson, B. Houghton, H. Rymer, J. Stix, & S. McNutt (Eds.). Cambridge University Press.
- Ghiorso, M. S., & Gualda, G. A. R. (2015). “An H₂O-CO₂ mixed fluid saturation model compatible with rhyolite-MELTS.” *Contributions To Mineralogy And Petrology*, 169(6).
- Ghiorso, M. S. (2015). “Presentation of the Dana Medal of the Mineralogical Society of America for 2015 to Marc Hirschmann.” *American Mineralogist*, 100(5-6), 1315.
- Pamukcu, A. S., Gualda, G. A. R., Ghiorso, M. S., Miller, C. F., & McCracken, R. G. (2015). “Phase-equilibrium geobarometers for silicic rocks based on rhyolite-MELTS-Part 3: Application to the Peach Spring Tuff (Arizona-California-Nevada, USA).” *Contributions To Mineralogy And Petrology*, 169(3).
- Gualda, G. A. R., & Ghiorso, M. S. (2015). “MELTS_Excel: A Microsoft Excel-based MELTS interface for research and teaching of magma properties and evolution.” *Geochemistry Geophysics Geosystems*, 16(1), 315–324.
- Begue, F., Gualda, G. A. R., Ghiorso, M. S., Pamukcu, A. S., Kennedy, B. M., Gravley, D. M., Deering, C. D., & Chambefort, I. (2014). “Phase-equilibrium geobarometers for silicic rocks based on rhyolite-MELTS. Part 2: Application to Taupo Volcanic Zone rhyolites.” *Contributions To Mineralogy And Petrology*, 168(5).
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- Gardner, J. E., Befus, K. S., Gualda, G. A. R., & Ghiorso, M. S. (2014). “Experimental constraints on rhyolite-MELTS and the Late Bishop Tuff magma body.” *Contributions To Mineralogy And Petrology*, 168(2).
- Gualda, G. A. R., & Ghiorso, M. S. (2014). “Phase-equilibrium geobarometers for silicic rocks based on rhyolite-MELTS. Part 1: Principles, procedures, and evaluation of the method.” *Contributions To Mineralogy And Petrology*, 168(1).
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- Ghiorso, M. S., Moore, G., & Wallace, P. J. (2013). “An issue honoring Ian S. E. Carmichael.” *Contributions To Mineralogy And Petrology*, 166(3), 655–663.
- Gualda, G. A. R., & Ghiorso, M. S. (2013). “The Bishop Tuff giant magma body: An alternative to the standard model.” *Contributions To Mineralogy And Petrology*, 166(3), 755–775.
- Gualda, G. A. R., & Ghiorso, M. S. (2013). “Low-pressure origin of high-silica rhyolites and granites.” *Journal Of Geology*, 121(5), 537–545.

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- Ghiorso, M. S. (2013). “A globally convergent saturation state algorithm applicable to thermodynamic systems with a stable or metastable omni-component phase.” *Geochimica Et Cosmochimica Acta*, 103, 295–300.
- Ghiorso, M. S., & Gualda, G. A. R. (2013). “A method for estimating the activity of titania in magmatic liquids from the compositions of coexisting rhombohedral and cubic iron-titanium oxides.” *Contributions To Mineralogy And Petrology*, 165(1), 73–81.
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Submitted/In Progress Papers

Software Resources

MELTS website	https://melts.ofm-research.org
ENKI portal	http://enki-portal.org/index.html
MELTS source	https://gitlab.com/ENKI-portal/xMELTS
ENKI repositories	https://gitlab.com/ENKI-portal
ThermoEngine source	https://gitlab.com/ENKI-portal/ThermoEngine
ENKI cluster server	https://server.enki-portal.org/

Awards, Fellowships, and Honors

1984	Presidential Young Investigator Award, National Science Foundation
1987	International Association Mathematical Geologists Best Paper Award for 1983
1993	Elected Fellow of the Mineralogical Society of America
1996	Distinguished Lecturer, Mineralogical Society of America, 1996-1997 term
1997	Elected Fellow of the Geological Society of America
1997	Elected Councilor of the Mineralogical Society of America, 1997-2001 term
1999	Elected Fellow of the American Geophysical Union
2003	Dana Medal, Mineralogical Society of America
2010	Bunsen Medal, European Geosciences Union
2014	Bowen Award, VGP Section, American Geophysical Union
2020	Elected Vice President of the Mineralogical Society of America
2021	Elected President of the Mineralogical Society of America

Synergistic Activities

1988-1991	Mineralogical Society of America representative to the Joint Technical Program Committee of the Geological Society of America
1988	Representative to the National Science Foundation advisory panel on Presidential Young Investigator Awards
1990-2022	Associate editor, American Journal of Science
1990-1993	Associate editor, American Mineralogist
1991-2002	Associate editor, Geochimica et Cosmochimica Acta
1992-1995	Joint Technical Program Committee (JTTC) for Annual Meetings, Geological Society of America. 1994 Chair for the Seattle meeting
1994	Mineralogical Society of America, ad hoc committee on the American Mineralogist
1994-1995	Mineralogical Society of America, Committee on Committees
1995-1997	Mineralogical Society of America, Short Course Committee (1996-7, Chair)
1997-2000	American Geophysical Union, VGP Executive Committee
1998-1999	Mineralogical Society of America, Roebling Medal Committee (Chair)
2010-2013	Mineralogical Society of America, MSA award committee
2011-2013	European Geosciences Union, Bunsen Medal selection committee
2015-2022	Associate Editor, Contributions to Mineralogy and Petrology
2016-present	Editorial Advisory Board, ACS Earth and Space Chemistry