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Anne M. Hofmeister

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EDUCATION

California Institute of Technology, Pasadena, CA (Ph.D. in Geology, 1984; M.S., 1981)
University of Illinois, Urbana, IL (M.S. in Physics, 1978)
Harvey Mudd College, Claremont, CA (B.S., Highest Honors in Physics and Literature, 1976)

HONORS

Fellow, Mineralogical Society of America, 1997
David and Lucile Packard Fellowship in Science and Engineering, 1989-1994
Humboldt Fellowship, 1992-1993
H.O. Wood Postdoctoral Fellowship at the Geophysical Laboratory, 1984-1985
Honorable mention, Geological Society of Washington's best paper competition, 1984
Fellowship in Applied Physics at Cal Tech, 1978-1979
Bausch and Lomb Science Award, 1972

RESEARCH INTERESTS

- Heat transport and how this affects thermodynamic laws
- Interaction of light with matter (diffusive vs ballistic transfer)
- Newtonian gravitation (perturbations and non-centrality)
- Applications of the above to Astronomy, Earth, Materials, and Planetary Sciences

EMPLOYMENT

July 1999-present *Research Professor, Dept. of Earth and Planetary Science, Washington U.*
July 1994-July 1999 *Associate Research Professor, Dept. of Earth and Planetary Science,
Washington University*
July 1992-June 1994 *Associate Professor, Dept. of Geology, U. C. Davis*
July 1988-June 1992 *Assistant Professor, Dept. of Geology, U. C. Davis*
Oct. 1987-June 1988 *Unemployed - maternity leave*
Oct. 1983-Oct. 1987 *Postdoctoral Fellow/Research Associate at the Geophysical Laboratory,
Carnegie Institution of Washington*
1979-1983 *Graduate Research Assistant at Cal Tech in Geology*
1978-1979 *Graduate Fellow at Cal Tech in Applied Physics*
Summer, 1978 *Physicist at Hughes Aircraft Research Center, Malibu*
1976-1978 *Graduate Teaching or Research Assistant at University of Illinois*

FUNDING

- 2019-2020 "Acquisition of a Laser Flash Apparatus to simultaneously measure thermal diffusivity and heat capacity from 173 to 773 K" NSF-EAR \$97,573
- 2015-2018 "Collaborative Research: Thermal structure of continental lithosphere through time" with A.G. Whittington NSF-EAR \$65,423
- 2014-2015 "Ascertaining the gravitation potential of disks and oblate spheroids for use in planetary and astronomical models" NASA-EPSCor \$14,254
- 2013-2018 "Measurements of Thermal Transport Properties of Melts vs. Temperature and Composition: Theoretical Implications" NSF-EAR \$242,891
- 2013-2014 "Acquisition of a dilatometer for accurate measurement of thermal expansivity of geologically relevant materials over -180 to 2000°C" NSF-EAR \$122,610
- 2010-2013 "Collaborative Research: A Laboratory Experimental Study of Astronomical Dust Analogs at Ultraviolet-Visible Wavelengths" with K.M. Pitman and A.K. Speck NSF-AST \$47,050
- 2009-2012 "Collaborative Research: An integrated experimental and observational study of cosmic silicate astromineralogy" with A.K. Speck and A.G. Whittington NSF-AST \$121,646
- 2009-2012 Collaborative Research: Incorporating Temperature-dependent Physical Properties Into Numerical Models of Magmatic and Related Hydrothermal Systems" with P. I. Nabelek and A.G. Whittington NSF-EAR \$74,939
- 2008-2013 "Collaborative Research: First principles calculations and measurements of thermal diffusivity for application to the Earth's Interior " with J.J. Dong NSF-CSEDI \$187,362
- 2008-2009 "Probing the Effect of Volatiles and Temperature on Thermal Diffusivity: Implications for Upper Mantle and Lithospheric Processes" NSF-EAR \$199,201
- 2006-2009 "Collaborative research: Dust Formation Around Carbon Stars: Astromineralogy and the Condensation Sequence" with A.K. Speck NSF-AST \$45,715
- 2005-2009 "Distinguishing grain-size and temperature effects on the infrared fingerprints of astrominerals: a quantitative laboratory approach" NASA-APRA \$273,000
- 2005-2008 "Collaborative research: Measurement of transport properties of silicate melts with application to crustal anatexis" with A.G. Whittington NSF-PG \$66,737
- 2002-2005 "Collaborative research: The influence of thermal conductivity on stabilization and feedback in mantle convection" with D.A. Yuen NSF-CSEDI \$150,806
- 2002-2004 "Acquisition of a laser-flash apparatus for measurement of thermal diffusivity to 2000 C" NSF \$130,260
- 2002-2003 "Thermal conductivity of quartz and feldspars: application to continental heat flow" NSF \$30,800
- 1998-2001 "POWRE: Construction of an IR spectroscopic data base for direct comparison with astronomical observations of stardust. NSF-Astronomy \$74,061
- 1997-2000 "Collaborative research: Laboratory, Seismological and Geodynamical study of the transition zone within and near subducting slabs" NSF \$199,779
- 1995-1997 "Upgrade of software and computer for a FTIR spectrometer" NSF \$16,490
- 1992-1995 "Thermodynamic properties of perovskites and MgSiO₃ polymorphs from infrared spectroscopy" NSF \$158,000
- 1992-1995 "REU amendment" NSF \$2,640
- 1992-1993 Research Fellowship Alexander Von Humboldt Foundation DM 24,000
- 1992 Support for disadvantaged high school students ACS- SEED \$4,700
- 1991 "Thermodynamic properties of mantle minerals" NSF: U.S.- France \$2,050
- 1990 "REU amendment" NSF \$2,640
- 1989-1994 "Fellowship" The David and Lucile Packard Foundation \$500,000

Rand B. Schaal, Ph.D., U.C. Davis, 1991
Thomas E. Young, M.S., U.C. Davis, 1992 (joint with H.W. Green II)
Brian P. McAloon, M.S., U.C. Davis, 1993
Ren Lu, Ph.D., U.C. Davis, 1994
Paul Geisting, M.A., Washington U., 2002
Joy Branlund, Ph.D., Washington U., 2008

POSTDOCTORAL ASSOCIATES SUPERVISED

Hyunchae Cynn and Thomas Fiske (U.C. Davis)
Adrian Corman, Maik Pertermann, Karly M. Pittman, Alain Wang, and Xueyang Yu (WU)

COMMITTEES

U. C. Davis Regents Lectureship committee, 1989-1992
Mineralogical Society of America (MSA) Committee on Research Grants, 1991
MSA Nominating Committee, 1992
Chair, MSA Award Committee, 1993 and 1995
University of California President's Postdoctoral Fellowship Program Review committee, 1993
Chair, MSA Mineralogy/Petrology Grant Committee, 1994
University of California President's Postdoctoral Fellows Applicant Evaluation committee, 1994
U. C. Davis Ad Hoc Promotion Committee, 1994
Study of the Earth's Deep Interior Committee, American Geophysical Union, 1998-2002
MSA Committee on Short Courses, 2004-2006 (Chair in 2006)
Phone-in member of Review panel for the Laboratory Astrophysics part of the NASA
Astrophysics Research and Analysis Program (APRA), June 2013.

BIBLIOGRAPHY (peer-reviewed, mostly journal papers)

- 1 1983 Hofmeister, A. M.: Effect of a Hadean terrestrial magma ocean on crust and mantle evolution. *Journal Geophysical Research* 88, 4963-4983.
- 2 1983 Hofmeister, A. M. and G.R. Rossman, Color in Feldspar: in *Feldspar Mineralogy, 2nd Edition, Reviews of Mineralogy Vol 2*, P.H. Ribbe, Ed. (Min. Soc. Amer.), p. 271-280. [Invited]
- 3 1984 Hofmeister, A. M. and G.R. Rossman: Determination of Fe³⁺ and Fe²⁺ concentrations in feldspar by optical and EPR spectroscopy. *Physics and Chemistry of Minerals* 11, 213-224.
- 4 1985 Hofmeister, A. M. and G.R. Rossman: A spectroscopic study of irradiative coloring of Amazonite: structurally hydrous, Pb-bearing feldspar. *American Mineralogist* 70, 794-804.
- 5 1985 Hofmeister, A. M. and G.R. Rossman: Exsolution of metallic copper from Lake County Laboradorite. *Geology* 13, 644-647.
- 6 1985 Hofmeister, A. M. and G.R. Rossman: The inhibiting role of water in irradiative coloring of smoky feldspar, *Physics and Chemistry of Minerals* 12, 324-332.
- 7 1986 Hofmeister, A. M. and G.R. Rossman: A spectroscopic study of blue radiation coloring in plagioclase. *American Mineralogist* 71, 95-98.
- 8 1986 Finger, L.W., R. M. Hazen, and A. M. Hofmeister: High-pressure crystal chemistry of spinel (MgAl₂O₄) and magnetite (Fe₃O₄) : comparisons with silicate spinels. *Physics and Chemistry of Minerals* 13, 215-220.
- 9 1987 Hofmeister, A. M., T.C. Hoering, and D. Virgo: Vibrational spectroscopy of beryllium aluminosilicates: heat capacity calculations from band assignments. *Physics and Chemistry of Minerals* 14, p. 205-224.
- 10 1987 Hofmeister, A. M.: Single-crystal absorption and reflection infrared spectroscopy of forsterite and fayalite. *Physics and Chemistry of Minerals* 14, 499-513.

- 11 1987 Hofmeister, A. M.: Book Review of *Chemical bonding and spectroscopy in mineral chemistry* by F. J. Berry and D. J. Vaughan (eds.) *Chemical Geology* 63, p. 355-356. [Invited]
- 12 1987 Hazen, R.M., T. C. Hoering, and A.M. Hofmeister: Compressibility and high-pressure phase transition of a metalloporphyrin: (5,10,15,20- tetraphenyl-21H, 23H-porphinato) Cobalt (II). *Journal of Physical Chemistry* 91, 5042-5045.
- 13 1988 McMillan, P. and A. M. Hofmeister: Infrared and Raman spectroscopy of minerals, in *Spectroscopy in Mineralogy and Geology, Reviews of Mineralogy Vol. 18* p. 99-159. [Invited]
- 14 1989 Hofmeister, A. M., J. Xu, H. K. Mao, P. M. Bell, and T. C. Hoering: Thermodynamics of Fe-Mg olivines at mantle pressures: Mid- and far-infrared spectroscopy at pressure. *American Mineralogist* 74, 281-306.
- 15 1990 Hofmeister, A. M. J. Xu, and S. Akimoto: Infrared spectroscopy of synthetic and natural stishovite. *American Mineralogist* 75, 951-955.
- 16 1990 Hofmeister, A. M., J. Horigan, and J. A. Campbell: Infrared spectra of GeO₂ with the rutile structure and prediction of inactive modes for isostructural compounds. *American Mineralogist* 75, 1238-1248.
- 17 1991 Hofmeister, A. M. and A. Chopelas: Vibrational spectra of end-member silicate garnets. *Physics and Chemistry of Minerals* 17, 503-526.
- 18 1991 Criss, R. E. and A. M. Hofmeister: Application of fluids dynamics principles in tilted permeable media to terrestrial hydrothermal systems. *Geophysical Research Letters* 18, 199-202.
- 19 1991 Hofmeister, A. M. and A. Chopelas: Thermodynamic properties of pyrope and grossular from vibrational spectra. *American Mineralogist (J. B. Thompson issue)* 76, 880-891.
- 20 1991 Hofmeister, A. M.: Vibrational spectroscopy of minerals at pressure: application to the mantle. *GSA Today* 1, 117-119,122. [Invited]
- 21 1991 Hofmeister, A. M.: Calculation of bulk moduli and their pressure derivatives from vibrational frequencies and mode Gruneisen parameters: Solids with high symmetry or one nearest-neighbor distance. *Journal of Geophysical Research* 96, 16181-16203.
- 22 1991 Hofmeister, A. M. and K. Billips: Comparison of infrared reflectance spectra of KXF₃ perovskites. *Spectrochim. Acta* 47a, 1607-1617.
- 23 1991 Hofmeister, A. M.: Pressure derivatives of the bulk modulus. *Journal of Geophysical Research*, 96, 21893-21908.
- 24 1991 Hofmeister, A. M.: Comment on "Infrared spectroscopy of the polymorphic series (enstatite, ilmenite, and perovskite) of MgSiO₃, MgGeO₃, and MnGeO₃" by M. Madon and G. D. Price. *Journal of Geophysical Research*, 96, 21959-21964.
- 25 1991 Chopelas, A. and A. M. Hofmeister: Vibrational spectroscopy of aluminate spinels at 1 atm and of MgAl₂O₄ to over 200 kbar. *Physics and Chemistry of Minerals*, 18, 279-293.
- 26 1992 Kubiki, J., R.J. Hemley, and A.M. Hofmeister: Raman and infrared study of pressure-induced structural changes in MgSiO₃, CaMgSi₂O₆, and CaSiO₃ glasses. *American Mineralogist*, 77, 258-269.
- 27 1992 Hofmeister, A. M. and E. Ito: Thermodynamic properties of MgSiO₃ ilmenite from vibrational spectra. *Physics and Chemistry of Minerals* 18, 423-432.
- 28 1992 Hofmeister, A. M. and K. R. Campbell: Infrared spectroscopy of yttrium aluminum, yttrium gallium, and yttrium iron garnets. *Journal of Applied Physics* 72, 638-646.
- 29 1992 Hofmeister, A. M.: Book review of " The incomplete guide to the art of discovery" by Jack E. Oliver. *GSA Today* . [Invited]
- 30 1992 Hofmeister, A. M.: Reply to Comment on "The pressure derivatives of the bulk modulus" by R. Jeanloz. *Journal of Geophysical Research* 97, 15275.

- 31 1992 Hofmeister, A. M., T. P. Rose, T. C. Hoering, and I. Kushiro: Infrared spectroscopy of natural, synthetic, and ^{18}O substituted α -tridymite: structural implications. *Journal of Physical Chemistry* 96, 10213-10218.
- 32 1993 Young, T. E., H. W. Green, A. M. Hofmeister, and D. Walker: Infrared spectroscopic investigation of OH in β -(Mg,Fe) $_2$ SiO $_4$ and coexisting olivine: implications for mantle evolutions and dynamics. *Physics and Chemistry of Minerals* 19, 409-422.
- 33 1993 Hofmeister, A. M.: IR reflectance spectra of natural ilmenite: comparison with isostructural compounds and calculation of thermodynamic properties. *European Journal of Mineralogy* 5, 281-295.
- 34 1993 Hofmeister, A. M.: Interatomic Potentials Calculated from Equations of State: Limitation of Finite Strain to Moderate K'. *Geophys. Res. Lett.* 20, 635-638.
- 35 1993 Lu, R., K. D. Jackson, and A. M. Hofmeister: Thin-film infrared spectra from solid solutions of spessartine and yttrium aluminum garnet. *The Canadian Mineralogist* 31, 381-390.
- 36 1993 McAloon, B. P. and A. M. Hofmeister: Symmetry of birefringent garnets from infrared spectroscopy. *American Mineralogist* 78, 957-967.
- 37 1994 Lu, R., A.M. Hofmeister, and Y. Wang: Thermodynamic properties of ferromagnesium silicate perovskites from vibrational spectroscopy. *Journal of Geophysical Research* 99, 11795-11804
- 38 1994 Lu, R. and A. M. Hofmeister: Infrared spectroscopy of CaGeO $_3$ perovskite to 24 GPa and thermodynamic implications. *Physics and Chemistry of Minerals*, 78-84.
- 39 1994 Gehring, A. U. and A. M. Hofmeister: The transformation of lepidocrocite during heating: a magnetic and spectroscopic study. *Clays and Clay Minerals* 42, 409-415.
- 40 1994 Cynn, H. and A.M. Hofmeister: High-pressure IR spectra of lattice modes and OH vibrations in hydrous Fe-bearing wadsleyite. *Journal of Geophysical Research* 99, 17717-17728.
- 41 1995 White, W. B. and A. M. Hofmeister: Applications of infrared spectroscopy to structure and bonding in minerals and glasses and to speciation of hydrous components. *Higher Mineralogy* (A. S. Marfunin, editor). Ch 10.6.3. [Invited]
- 42 1995 Hofmeister, A. M. IR Microspectroscopy in Earth Science. In *A Practical Guide to Infrared Microspectroscopy*. (H. J. Humecki, editor). p. 377-416. [Invited]
- 43 1995 Lu, R. and A.M. Hofmeister. Infrared fundamentals and phase transitions in CO $_2$ up to 50 GPa. *Physical Review B* 52, 3985-3992
- 44 1995 McAloon, B. P. and A. M. Hofmeister: Single-crystal IR spectroscopy of the grossular-andradite binary. *American Mineralogist* 80, 1145-1156.
- 45 1996 Burns, P., Hawthorne, F.C. Hofmeister, A. M., and S. L. Moret: A ferroelastic phase transition in K(Mg $_{1-x}$ Cu $_x$)F $_3$ perovskite. *Phys. Chem. Minerals* 23, 141-150.
- 46 1996 Hofmeister, A.M., T.J. Fagan, K.M. Campbell, and R.B. Schaal: Single-crystal IR spectroscopy of pyrope-almandine garnets with minor amounts of Mn and Ca. *American Mineralogist* 81, 418-428.
- 47 1996 Hofmeister, A. M.: Thermodynamic properties of stishovite at mantle conditions determined from pressure variations of vibrational modes. *Mineral Spectroscopy: A tribute to Roger G. Burns: GCA Special Publication No. 5*, p. 215-227. [Invited]
- 48 1996 Cynn, H., A. M. Hofmeister, P.C. Burnley, and A. Navrotsky: Thermodynamic properties and hydrogen speciation from vibrational spectra of dense hydrous magnesium silicates. *Phys. Chem. Minerals* 23, 361-376.
- 49 1997 Hofmeister, A. M.: Infrared reflectance spectra of fayalite, and absorption Data from assorted olivines, including pressure and isotope effects. *Physics and Chemistry of Minerals* 24, 535-546.
- 50 1997 Hofmeister, A. M.: IR spectroscopy of alkali halides at very high pressures: calculation of equations of state and of the response of bulk modulus to the B1-B2 phase transition. *Phys. Rev. B* 56, 5835-5855.

- 51 1998 Dymek, R.F. and A.M. Hofmeister: The American Mineralogist in transition. *Amer. Mineral.* 83, 1-1.
- 52 1998 Hofmeister, A.M., R.B. Schaal, K.M. Campbell, S.L. Berry, and T.J. Fagan: Prevalence and origin of birefringence in 48 garnets from the pyrope-almandine-grossular-spessartine quarternary. *American Mineralogist* 83, 1293-1301
- 53 1999 Speck, A.K., Hofmeister, A.M., and Barlow, M.J.: Resolution of the SiC problem: astronomical and meteoritic evidence reconciled. *Astrophysical J. Lett.* 513, L87-L90.
- 54 1999 Hofmeister, A. M., H. Cynn, P.C. Burnley, and C. Meade: Vibrational spectra of dense hydrous magnesium silicates at pressure: importance of the hydrogen bond angle. *American Mineralogist* 84, 454-464.
- 55 1999 Hofmeister, A.M.: Mantle values of thermal conductivity and a geotherm from phonon lifetimes. *Science* 283, 1699-1706.
- 56 1999 Hauck, S.A. II, R.J. Phillips and A. M. Hofmeister: Variable conductivity: Effects on the thermal structure of subducting slabs. *Geophysical Research Letters* 26, 3257-3260.
- 57 1999 Guan Y., A. Hofmeister, S. Messenger, and R.M. Walker (1998) Two types of deuterium-rich carriers in Renazzo matrix. *Lunar and Planet Sci XXIX (CD-ROM)*, abstract 1760.
- 58 2000 Speck, A.K., Barlow, M.J., Sylvester, R.J., and Hofmeister, A.M. Dust features in the 10-micron infrared spectra of oxygen-rich evolved stars. *Astronomy and Astrophysics Supplement Series*, 146, 437-464.
- 59 2000 Hofmeister, A.M., Rosen, L., Speck, A.K. and Barlow, M.J.: Infrared spectra of nanocrystals of SiC, AlN and TiN: implications for scattering theory. *Thermal emissions spectroscopy and analysis of dust, disks and regoliths* (Edited by M. Sitko, A.L. Sprague, and D.K. Lynch), ASP Conference Series, vol. 196, p.292-300.
- 60 2000 Speck, A.K., Hofmeister, A.M., & Barlow, M.J.: Silicon carbide: the problem with laboratory spectra.. *Thermal Emission Spectroscopy of Dust, Disks, and Regoliths* (Eds Sitko M.L., Sprague A.L. & Lynch D.K.), ASP Conference Series, vol. 196, 281-290.
- 61 2000 Hofmeister, A.M., Keppel E., Bowey, J.E., and Speck, A.K. Causes of artifacts in the infrared spectra of powders. *ISO beyond the peaks: The 2nd ISO workshop on analytical spectroscopy* (ed. A. Salama, M.F. Kessler, K. Leech, B. Schulz), 343-346.
- 62 2001 Hofmeister, A.M. and Mao H.K.: Evaluation of shear moduli and other properties of silicates with the spinel structure form IR spectroscopy. *American Mineralogist* 86, 622-639.
- 63 2001 Bowey, J.E., Lee, C., Tucker, C., Hofmeister, A.M., Ade, P.A.R., and Barlow, M.J.: Temperature effects on the 15-85 μm spectra of olivines and pyroxenes. *Monthly Notices of the Royal Astronomical Society* 325, 886-896.
- 64 2001 Hofmeister, A.M.: Thermal conductivity of spinels and olivines from vibrational spectroscopy at ambient conditions. *American Mineralogist* 86, 1188-1208.
- 65 2001 Criss, R.E. and Hofmeister, A.M.: Thermodynamic cosmology. *Geochimica et Cosmochimica Acta* 65, 4077-4085.
- 66 2002 Hofmeister, A.M. and Mao, H.K.: Redefinition of the mode Gruneisen parameter for polyatomic substances and thermodynamic implications. *Proceedings of the National Academy of Science* 99, 559-564.
- 67 2002 Giesting, P.A.. and Hofmeister, A.M.: Thermal conductivity of disordered garnets from infrared spectroscopy. *Physical Review B*, 65, #144305.
- 68 2002 Bowey, J.E., Barlow. M.J., Molster, F.J., Hofmeister, A.M., Lee, C., Tucker, C., Lim, T., Ade, P.A.R., Waters, L.B.F.M.: The 69- μm forsterite band as a dust temperature indicator. *Monthly Notices of the Royal Astronomical Society*, 331, L1-L6.
- 69 2002 Koch-Muller, M., Hofmeister, A.M., Fei, Y., and Liu, Z.: High-pressure IR spectra and the thermodynamic properties of chloritoid. *American Mineralogist* 87, 609-622.

- 70 2003 Hofmeister, A.M. and Mao, H.K.: Pressure derivatives of shear and bulk moduli from the thermal Gruneisen parameter and volume-pressure data. *Geochemica Cosmochimica Acta* 66, 1207-1227.
- 71 2003 Hofmeister, A.M., Keppel, E., and Speck, A.K.: Absorption and reflection IR spectra of MgO and other diatomic compounds. *Monthly Notices of the Royal Astronomical Society* 345, 16-38.
- 72 2004 Hofmeister, A. M., P. A. Giesting, B. Wopenka, G. D. Gwanmesia, and B. L. Jolliff: Vibrational spectroscopy of pyrope-majorite garnets: structure and order. *American Mineralogist* 89, 132-146.
- 73 2004 Giesting, P.A., Hofmeister, A. M., Wopenka, B., Gwanmesia, G. D. , and Jolliff, B. L.: Thermal conductivity and thermodynamics of majoritic garnets: Implications for the transition zone. *Earth and Planetary Science Letters* 218, 45-56.
- 74 2004 Speck, A.K. and A.M., Hofmeister, Processing of Presolar Grains around post-AGB Stars: Silicon Carbide as the Carrier of the "21" Micron Feature. *The Astrophysical Journal* 600, 986-991.
- 75 2004 Chaudhary, L., Hofmeister, A.M., and Hruska, K. Differential growth factor control of bone formation thorough osteoprogenitor differentiation. *Journal of Bone and Mineral Research* 34, 402-411.
- 76 2004 Hofmeister, A.M. Thermal conductivity and thermodynamic properties from infrared spectroscopy. In: *Infrared Spectroscopy in Geochemistry, Exploration Geochemistry, and Remote Sensing*, edited by P. King, M. Ramsey, and G. Swayze (Mineralogical Association of Canada, Short course volume 33), 135-154. [Invited]
- 77 2004 Hofmeister, A.M. Enhancement of radiative transfer in the mantle by OH- in minerals. *Physics of the Earth and Planetary Interiors*, 146, 483-485.
- 78 2004 Hofmeister, A.M., Wopenka, B, and Locock, A. Spectroscopy and structure of hibonite, grossite, and CaAl₂O₄: implications for astronomical environments. *Geochimica Cosmochimica Acta* 68, 4485-4503
- 79 2004 Hofmeister, A.M. Physical properties of calcium aluminates from vibrational spectroscopy. *Geochimica Cosmochimica Acta* 68, 4721-4726
- 80 2005 Hofmeister, A.M and Criss, R.E. Earth's heat flux revisited and linked to chemistry. *Tectonophysics* 395, 159-177.
- 81 2005 Bowey, J.E. and Hofmeister, A.M. Overtones and the 5-8 μm spectra of deeply embedded objects. *Monthly Notices of the Royal Astronomical Soc.* 358, 1383-1393.
- 82 2005 Hofmeister, A.M and Criss, R.E. Mantle convection and heat flow in the triaxial Earth. In: *Melting anomalies: Their Nature and Origin*, edited by G. R. Foulger, J.H. Natland, D.C. Presnall, and D.L. Anderson (Geological Society of America, Boulder CO) pp 289-302.
- 83 2005 Hofmeister, A.M. The dependence of radiative transfer on grain-size, temperature, and pressure: implications for mantle processes. *Journal of Geodynamics* 40, 51-72
- 84 2005 Speck, A.K., Thompson, G.D., and Hofmeister, A.M. The effect of stellar evolution on dust grain sizes. *Astrophysical Journal*, 634, 426-435
- 85 2005 Hofmeister, A.M and Criss, R.E. Re: Reply to "Comments on Earth's heat flux revised and linked to chemistry" by R. Von Herzen, E.E. Davis, A. Fisher, C.A. Stein and H.N. Pollack. *Tectonophysics* 409, 193-198.
- 86 2006 Hofmeister, A.M. Thermal diffusivity of garnets to high temperature. *Physics and Chemistry of Minerals* 33, 45-62
- 87 2006 Hofmeister, A.M. and Bowey, J.E. Quantitative IR spectra of hydrosilicates and related minerals *Monthly Notices Royal Astronomical Society* 367, 577-591
- 88 2006 Hofmeister, A.M. Thermodynamic and structural evidence that low-spin Fe²⁺ is absent from Earth's mantle. *Earth and Planetary Science Letters* 243, 44-52.

- 89 2006 Hofmeister A.M., Pertermann, M., Branlund, J. and Whittington, A.G. Geophysical implications of reduction in thermal conductivity due to hydration. *Geophysical Research Letters* 33, doi: 10.1029/2006GL026036
- 90 2006 Pitman, K.M., Hofmeister, A.M., and Speck, A.K. Is silicon nitride dust present in extreme carbon stars? *Monthly Notices of the Royal Astronomical Society* 371, 1744-1754
- 91 2006 Pertermann, M. and Hofmeister A.M. Thermal diffusivity of olivine-group minerals. *American Mineralogist* 91, 1747-1760
- 92 2006 Hofmeister, A.M and Criss, R.E. Comment on "Estimates of heat flow from Cenozoic seafloor using global depth and age data" by M. Wei and D. Sandwell. *Tectonophysics* 428, 95-100
- 93 2007 Hofmeister, A.M. Pressure dependence of thermal transport properties. *Proceedings of the National Academy of Science* 104, 9192-9197.
- 94 2007 Hofmeister, A.M. Thermal conductivity of Earth's deepest Mantle. *Superplume: Beyond Plate Tectonics*. D.A. Yuen, S. Maruyama, S.I. Karato, and B.F. Windley, eds. (Springer, Dordrecht, the Netherlands) pp 269-292.
- 95 2007 Hofmeister, A.M. and Pitman, K.M. Evidence for kinks in structural and thermodynamic properties across the forsterite-fayalite binary from thin-film IR spectra. *Physics and Chemistry of Minerals* 34, 319-333.
- 96 2007 Hofmeister, A.M. and Criss, R.E. Comment on "John Perry's neglected critique of Kelvin's age for the Earth. A missed opportunity in geodynamics by P. England, P. Molnar, and F. Richter". *GSA Today* 17,10.
- 97 2007 Hofmeister, A.M. and D. A. Yuen. Critical phenomena in thermal conductivity: Implications for lower mantle dynamics. *Journal of Geodynamics* 44, 186-199
- 98 2007 Hofmeister, A.M., Pertermann, M. and Branlund, J. M. Thermal conductivity of the Earth. *Treatise in Geophysics* (G. Schubert, Ed. In Chief) V. 2 Mineral Physics (G.D. Price, ed.). Elsevier, The Netherlands, pp 543-578.
- 99 2007 Branlund J.M. and Hofmeister A.M. Thermal diffusivity of quartz to 1000 degrees C: Effects of impurities and the α - β phase transition. *Phys Chem. Minerals*. 34, 581-595.
- 100 2007 Hofmeister, A.M. Thermal diffusivity of aluminous spinels and magnetite at elevated temperature with implications for heat transport in Earth's transition zone. *American Mineralogist* 92, 1899-1911
- 101 2008 Hofmeister, A.M. and Criss, R.E. Model or Measurements? A discussion of the key issue in Chapman and Pollack's critique of Hamza et al.'s re-evaluation of oceanic heat flux and the global power. *International Journal of Earth Sciences: Bykov Special Issue* 97, 241-244.
- 102 2008 Pertermann M., Whittington A.G., Hofmeister A.M., Spera F.J., and Zayak J. Thermal diffusivity of low-sanidine single-crystals, glasses and melts at high temperatures. *Contrib. Mineralogy and Petrology* 155, 689-702 DOI: 10.1007/s00410-007-0265-x
- 103 2008 Pitman, K.M., Hofmeister, A.M., Corman, A.B., and Speck, A.K. Optical properties of silicon carbide for astrophysical environments I. New laboratory infrared reflectance spectra and optical constants. *Astronomy and Astrophysics* Vol. 483 No. 2 (May IV 2008), p. 661-672. DOI: 10.1051/0004-6361:20078468
- 104 2008 Hofmeister A.M. and Pertermann, M. Thermal diffusivity of clinopyroxenes at elevated temperature. *European Journal of Mineralogy* 20, 537-549.
- 105 2008 Hofmeister, A.M.. Inference of high thermal transport in the lower mantle from laser-flash experiments and the damped harmonic oscillator model. *PEPI special issue "Frontiers and Grand Challenges in Mineral physics of the Deep Mantle"* 170, 201-206.
- 106 2008 Branlund J.M. and Hofmeister A.M. Factors affecting heat transfer in SiO₂ solids. *American Mineralogist* 93, 1620-1629.
- 107 2009 Whittington AG, Hofmeister AM, Nabelek PI Temperature-dependent thermal diffusivity of Earth's crust: Implications for crustal anatexis. *Nature* 458, 319-321.

- 108 2009 Hofmeister, A.M., Pitman, K.M., Goncharov, A.F., and Speck, A.K. Optical constants of silicon carbide for astrophysical applications. II. Extending optical functions from IR to UV using single-crystal absorption spectra. *Astrophysical Journal* 696, 1502-1511.
- 109 2009 Hofmeister A.M., Whittington A.G., and Pertermann, M. Transport properties of high albite crystals and near-endmember feldspar and pyroxene glasses and melts to high temperature. *Contributions to Mineralogy and Petrology* 158, 381-400.
- 110 2009 Hofmeister A.M. Comment on “Measurement of thermal diffusivity at high pressure using a transient heating technique” in [Applied Physics Letters 91, #181914] *Applied Physics Letters* 95, 096101.
- 111 2010 Hofmeister, A.M. Scale aspects of heat transport in the diamond anvil cell, in spectroscopic modeling, and in Earth’s mantle. *Physics of the Earth and Planetary Interiors* 180, 138-147.
- 112 2010 Hofmeister, A.M. Thermal diffusivity of perovskite-type compounds at elevated temperature. *Journal of Applied Physics* 107, 103532
- 113 2010 Pitman, K.M., Dijkstra, C.R., Hofmeister, A.M., and Speck, A.K. Using classical dispersion analysis to extract peak parameters and optical constants from infrared laboratory absorbance spectra: Application to olivine. *Monthly Notices of the Royal Astronomical Society* 406, 460-481.
- 114 2010 Nabelek, P. I., A. G. Whittington, and A. M. Hofmeister. Strain heating as a mechanism for partial melting and ultrahigh temperature metamorphism in convergent orogens: Implications of temperature-dependent thermal diffusivity and rheology, *J. Geophys. Res.*, 115, B12417, doi:10.1029/2010JB007727.
- 115 2011 Yu, X. and Hofmeister A.M., Thermal diffusivity of alkali and silver halides. *Journal of Applied Physics* J. Appl. Phys. **109**, locator number 033516
- 116 2011 Pitman, K.M., Angela K. Speck, Anne M. Hofmeister and Adrian B. Corman. Optical Properties and Applications of Silicon Carbide in Astrophysics, In: Silicon Carbide - Materials, Processing and Applications in Electronic Devices, Moumita Mukherjee (Ed.), ISBN: 978-953-307-968-4, InTech, 257-282. Available from: <http://www.intechopen.com/articles/show/title/optical-properties-and-applications-of-silicon-carbide-in-astrophysics>
- 117 2011 Speck, A.K., A.G. Whittington, and A.M. Hofmeister. Disordered silicates in space: a study of laboratory spectra of “amorphous” silicates. *Astrophys. J.* **740** 93 doi:10.1088/0004-637X/740/2/93
- 118 2012 Nabelek, PI., AM Hofmeister, and AG. Whittington. The influence of temperature-dependent thermal diffusivity on the conductive cooling rates of plutons and temperature-time paths in contact aureoles. *Earth Planet. Sci. Lett.* 317-318, 157-164.
- 119 2012 Hofmeister, A.M. and Criss, R.E. A thermodynamic model for formation of the Solar System via 3-dimensional collapse of the dusty nebula. *Planetary and Space Science*.62, 111-131.
- 120 2012 Hofmeister A.M., and Whittington A.G., Effect of hydration and annealing on thermal diffusivity of fused quartz, fused silica, and their melts at high temperature from laser-flash analysis *Journal of Non-Crystalline Solids* 358, 1072-1082.
- 121 2012 Hofmeister, A.M. and Criss, R.E. Origin of HED meteorites from the spalling of Mercury: implications for the formation and composition of the inner planets. In: *New Achievements in Geoscience*, Lim Hwee-San. (Ed.), ISBN 978-953-51-0263-2 InTech, 153-178. <http://www.intechopen.com/articles/show/title/the-case-for-hed-meteorites-originating-in-deep-spalling-of-mercury-implications-for-composition-and>
- 122 2012 Branlund J.M. and A.M. Hofmeister. Heat transfer in plagioclase feldspars. *American Mineralogist*, **97**, 1145-1154.

- 123 2012 Hofmeister A.M, Thermal diffusivity of orthopyroxenes at elevated temperature. *European Journal of Mineralogy*. **24**, 669-681.
- 124 2012 Romine, W.L., Alan G. Whittington, Peter I. Nabelek, A.M. Hofmeister. Thermal Diffusivity of Rhyolitic Glasses and Melts: Effects of Temperature, Crystals and Dissolved Water. *Bulletin of Volcanology***74**, 2273-2287.
- 125 2013 Pitman, K.M., Hofmeister, A.M. Speck, A.K. (2013) Revisiting Astronomical Crystalline Forsterite in the UV to Near-IR. *Earth Planets Space*, **65**, 129–138.
- 126 2013 Hofmeister, A.M. and Criss R.E. Earth’s interdependent thermal, structural, and chemical evolution, *Gondwana Research*,**24**, 490–500
- 127 2013 Merriman J.D., Alan G. Whittington, Anne M. Hofmeister, Peter I. Nabelek, Keith Benn. Thermal Transport Properties of Major Archean Rock Types to High Temperature and Implications for Cratonic Geotherms.. *Precambrian Research* **233**, 358-372
- 128 2013 Hofmeister, A.M. Heat transport properties of cristobalite and discussion of “snowflake” formation. *Canadian Mineralogist* **51**, 705-714.
- 129 2014 Hofmeister, A.M. Carryover of Sampling Errors and Other Problems in Far-Infrared to Far-Ultraviolet Spectra to Associated Applications. *Reviews in Mineralogy and Geochemistry* **71**, 481-508.
- 130 2014 Hofmeister, A.M. Jonas Goldsand, Alan G. Whittington and Reinhardt G. Criss. Effects of chemical composition and temperature on transport properties of silica-rich glasses and melts. *American Mineralogist* **99**, 564-577.
- 131 2014 Hofmeister, A.M. Thermal diffusivity and thermal conductivity of single-crystal MgO and Al₂O₃ as a function of temperature. *Physics and Chemistry of Minerals* **41**, 361-371.
- 132 2014 Hofmeister, A.M., Dong, J.J., and Branlund J.M. Thermal diffusivity of electrical insulators at high temperatures: evidence for diffusion of phonon-polaritons at infrared frequencies augmenting phonon heat conduction, *Journal of Applied Physics***115**, 163517 (2014); <http://dx.doi.org/10.1063/1.4873295>
- 133 2014 Hofmeister, A.M. Thermodynamic and optical thickness corrections to diffusive radiative transfer formulations with application to planetary interiors. *Geophysical Research Letters* **41**, 3074-3080.
- 134 2014 Hofmeister, A.M., Sehlke, A. and Whittington, A.G. Thermal diffusivity of Fe-rich pyroxene glasses and their melts. *Chemical Geology* **384**, 1-9.
- 135 2015 Hofmeister, A.M. and Criss R.E. Evaluation of the heat, entropy, and rotational changes produced by gravitational segregation during core formation. *Journal of Earth Science* **26**, 124–133.
- 136 2015 Criss, R.E. and Hofmeister, A.M. Analytical representations for simple and composite polytropes and their moments of inertia, *New Astronomy* **36**, 26-31.
- 137 2015 Hofmeister, A.M., and Branlund, J. M. Thermal conductivity of the Earth. *Treatise in Geophysics, 2nd Edition* (G. Schubert, Ed. In Chief) V. 2 Mineral Physics (G.D. Price, ed.). Elsevier, The Netherlands. Pp. 584-608.
- 138 2015 Hofmeister, A.M. and Ke, R. Thermal diffusivity of feldspathoids and zeolites as a function of temperature. *Physics and Chemistry of Minerals* **42**, 693-706.
- 139 2015 Speck, A.K., Pitman, K.M. and Hofmeister A.M. Better alternatives to “astronomical silicate”: laboratory-based optical functions of chondritic/solar abundance glass with application to HD 161796, *Astrophysical Journal* **809**, No. 65, 12 pp, <http://stacks.iop.org/0004-637X/809/65>
- 140 2015 Hofmeister, A.M., and Carpenter P. Heat transport of micas, *Canadian Mineralogist* **53**, 557-570.

- 141 2016 Hofmeister, A.M. and Criss, R.E. Spatial and symmetry constraints as the basis of the virial theorem and astrophysical implications. *Canadian Journal of Physics* **94**, 380-388.
- 142 2016 Criss, R.E. and Hofmeister, A.M. Conductive cooling of spherical bodies with emphasis on the Earth. *Terra Nova* **28**, 101-109.
- 143 2016 Hofmeister, A.M., Alexander Sehlke, Geoffroy Avard, Anthony J. Bollasina, Geneviève Robert and Alan G. Whittington Transport properties of glassy and molten lavas as a function of temperature and composition. *Journal of Volcanology and Geothermal Research* **327**, 380-388.
- 144 2017 Hofmeister, A.M. and Criss, R.E. The physics of galactic spin. *Canadian Journal of Physics* **95**, 156-166. <http://www.nrcresearchpress.com/doi/abs/10.1139/cjp-2016-0625>.
- 145 2017 Criss, E.M. and Hofmeister, A.M. Isolating lattice from electronic contributions in thermal transport measurements of metals and alloys and a new model. *International Journal of Modern Physics: B* **31** (75 pp) (<http://www.worldscientific.com/doi/pdf/10.1142/S0217979217502058>)
- 146 2017 Hofmeister, A.M. and Criss, R.E. Implications of Geometry and the Theorem of Gauss on Newtonian Gravitational Systems and a Caveat Regarding Poisson's Equation. *Galaxies* **5**, 89-100. <http://www.mdpi.com/2075-4434/5/4/89>
- 147 2018 Hofmeister, A.M. and Everett M. Criss. How properties that distinguish solids from fluids and constraints of spherical geometry suppress lower mantle convection. *Journal of Earth Science* **29**, 1-20. <https://doi.org/10.1007/s12583-017-0819-4>
- 148 2018 Hofmeister, A.M., Criss, R.E., and Criss, E.M. Verified solutions for the gravitational attraction to an oblate spheroid: implications for planet mass and satellite orbits. *Planets and Space Science*. **152**, 68-81. <https://www.sciencedirect.com/science/article/pii/S003206331730257X>
- 149 2018 Merriman, J.M., Hofmeister, A.M., Whittington, A.G., Roy, D.J. Temperature-dependent thermal transport properties of carbonate minerals and rocks. *Geophere* **27**, No. 4 (27 pp) <https://doi.org/10.1130/GES01581.1>
- 150 2018 Criss, R.E. and Anne M. Hofmeister. Galactic density and evolution based on the virial theorem, energy minimization, and conservation of angular momentum. *Galaxies* **6** **2018**, 6(4), 115-135; <https://doi.org/10.3390/galaxies6040115>

Manuscripts in Press

Hofmeister, A.M. and Whittington, A.G. Thermal diffusivity and thermal conductivity of glasses and melts. *Encyclopedia of Glass Science, Technology, History and Culture* (P. Richet, ed.)

Books

- 2019 Hofmeister, A.M. *Measurements, Mechanisms, and Models of Heat Transport*. Amsterdam, New York. 427 pp. <https://www.elsevier.com/books/measurements-mechanisms-and-models-of-heat-transport/hofmeister/978-0-12-809981-0>
- In press Hofmeister, A.M. *Heat Transport and Energetics of the Earth and Rocky Planets*. Elsevier, Amsterdam.: <https://www.elsevier.com/books/heat-transport-and-energetics-of-the-earth-and-rocky-planets/hofmeister/978-0-12-818430-1>

PERSONAL

Divorced, three children (ages 35, 32, and 25).
Hobbies: master's swimming