

James Ashton Van Orman
Curriculum Vitae

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Planetary Sciences
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EDUCATION

- Ph.D., Massachusetts Institute of Technology, Cambridge, MA, USA (2000)
- B.S., Florida State University, Tallahassee, FL, USA (1994)

APPOINTMENTS

- Professor, Case Western Reserve University (2012-)
- Associate Professor, Case Western Reserve University (2008-2012)
- Visiting Professor, ETH-Zürich (2007)
- Assistant Professor, Case Western Reserve University (2002-2008)
- Postdoctoral Fellow, Carnegie Institution of Washington (2000-2002)

HONORS AND AWARDS

- Fellow, Mineralogical Society of America (2012)
- COMPRES Distinguished Lecturer (2010-2011)
- F.W. Clarke Medal, Geochemical Society (2005)
- National Science Foundation Postdoctoral Fellowship (2000-2002)
- National Science Foundation Graduate Research Fellowship (1994-1997)

RESEARCH AWARDS

PENDING

NASA: “Experimental investigations of lunar iron isotope fractionation” \$498,943 (PI; pending)

ACTIVE

- NSF: “Collaborative research: Helium diffusion in lower mantle minerals” \$220,851 (PI)
- NASA: “Experimental investigations of trace element and iron isotope fractionation in planetary cores” \$324,000 (PI)
- NSF: “Grain boundary diffusion in the mantle: An integrated theoretical and experimental study of MgO” \$320,000 (PI; Co-PI Dan Lacks)
- NASA: “High-pressure experimental constraints on the viability of iron snow as a driver for terrestrial planetary dynamos” (Co-PI) \$421,000
- NSF: “Collaborative research: Integrated investigations of isotopic fractionation in magmatic systems.” (PI; Co-PI Dan Lacks) \$70,000 (08/01/2010-07/31/2013)

PAST

- National Science Foundation: “Experimental investigations of chemical interaction at the core-mantle boundary.” (PI) \$270,980 (01/01/2009-12/31/2012)
- NASA: “Experimental and numerical modeling studies applied to understanding isotopic evolution in early solar system materials.” (PI) \$301,000 (01/01/2009-12/31/2012)
- National Science Foundation: “EAGER: Collaborative investigations of isotopic fractionation by thermal diffusion and thermal migration.” (PI; Co-PI Dan Lacks) \$59,713 (08/15/2009-07/31/2010; extended through 7/31/2011)
- National Science Foundation: “Molecular simulation of silicate melts: structure-property relations and the influence of volatiles.” (PI; Co-PI Dan Lacks) \$219,791 (2007-2009)
- National Science Foundation: “Acquisition of a multi-anvil high-pressure apparatus” (PI), \$149,640 (2006-2008)
- Case Presidential Research Initiatives: “Molecular simulation of silicate melts” (PI; Co-PI Dan Lacks), \$80,000 (2005-2007)
- National Science Foundation: “Diffusion in lower mantle minerals” (PI) \$249,236 (2003-2006; extended through 12/2008).
- National Science Foundation: “Collaborative research: Experimental constraints on dynamic processes in Earth’s core” (PI) \$162,496 (2002-2004)
- National Science Foundation Postdoctoral Fellowship (PI) \$72,000 (2000-2002)

REFEREED PUBLICATIONS

- Goodrich C.A., Harlow G.E., Van Orman J.A., Sutton S.R., Jercinovich M.J., Mikouchi T. (2013) Petrology of chromite in ureilites: Implications for primary petrogenesis and secondary processes. *Geochimica et Cosmochimica Acta*, in revision.
- Roszjar J., Whitehouse M.J., Srinivasan G., Mezger K., Scherer E.E., Van Orman J.A., Bischoff A. (2013) Prolonged magmatism on 4 Vesta inferred from Hf-W analyses of eucrite zircon. *Earth and Planetary Science Letters*, in revision.
- Cherniak D.J., Van Orman J.A. (2013) Tungsten diffusion in olivine. *Geochimica et Cosmochimica Acta*, accepted.
- Mueller T., Watson E.B., Trail D., Wiedenbeck M., Van Orman J., Hauri E. (2013) Diffusive fractionation of carbon isotopes in γ -Fe: experiments, models and implications for early solar system processes. *Geochimica et Cosmochimica Acta*, accepted.
- Van Orman J.A., Cherniak D.J., Kita N.T. (2014) Magnesium diffusion in plagioclase: dependence on composition and implications for thermal resetting of the ^{26}Al - ^{26}Mg early solar system chronometer. *Earth and Planetary Science Letters* 385, 79-88.
- Goodrich C.A., Wilson L., Van Orman J.A., Michel P. (2013) Comment on “Parent body depth-pressure-temperature relationships and the style of the ureilite anatexis” by P.H. Warren (MAPS 47, 209-227). *Meteoritics and Planetary Science* 48, 1096-1106.
- Saal A.E., Hauri E.H., Van Orman J.A., Rutherford M.C. (2013) Hydrogen isotopes in lunar volcanic glasses and melt inclusions: a carbonaceous chondrite heritage revealed. *Science* 340, 1317-1320.
- Goodrich C.A., Ash R.D., Van Orman J.A., Domanik K., McDonough W.F. (2013) Metallic phases and siderophile elements in main group ureilites. *Geochimica et Cosmochimica Acta* 112, 340-373.

- Crispin K.L., Saha S., Morgan D., Van Orman J.A. (2012) Diffusion of transition metals in periclase by experiment and first-principles, with implications for core-mantle equilibration during metal percolation. *Earth and Planetary Science Letters* 357-358, 42-53.
- Goel G., Zhang L., Lacks D.J., Van Orman J.A. (2012) Isotope fractionation by diffusion in silicate melts: Insights from molecular dynamics simulations. *Geochimica et Cosmochimica Acta* 93, 205-213.
- Lacks D.J., Van Orman J.A., Leshner C.E. (2012) Isotope fractionation in silicate melts. *Nature* 482, E1.
- Lacks D.J., Goel G., Bopp C.J., Van Orman J.A., Leshner C.E., Lundstrom C.C. (2012) Isotope fractionation by thermal diffusion in silicate melts. *Physical Review Letters* 108, 065901.
- Goel G., Van Orman J.A., Lacks D.J. (2011) Transport coefficients in silicate melts from structural data via a structure-thermodynamics-dynamics relationship. *Physical Review E* 84, 051506.
- Saha S., Bengtson A., Crispin K.L., Van Orman J.A., Morgan D. (2011) Effects of spin transition on diffusion of Fe²⁺ in ferropiclase in Earth's lower mantle. *Physical Review B* 84, 184102.
- Hayden L.A., Van Orman J.A., McDonough W.F., Ash R.D., Goodrich C.A. (2011) Trace element partitioning in the Fe-S-C system and its implications for planetary differentiation and the thermal history of ureilites. *Geochimica et Cosmochimica Acta* 75, 6570-6583.
- Hauri E.H., Weinreich T., Saal A.E., Rutherford M.C., Van Orman J.A. (2011) High pre-eruptive water contents preserved in lunar melt inclusions. *Science* 333, 213-215.
- Van Orman J.A., Crispin K.L. (2010) Diffusion in Oxides. *Reviews in Mineralogy and Geochemistry* 72, 757-825.
- Zhang L., Van Orman J.A., Lacks D.J. (2010) Molecular dynamics investigation of MgO-CaO-SiO₂ liquids: Influence of pressure and composition on density and transport properties. *Chemical Geology* 275, 50-57.
- Van Orman J.A. (2010) Our planet's internal weakness. *Nature* 465, 432-433.
- Crispin K.L., Van Orman J.A. (2010) Influence of the crystal field effect on chemical transport in Earth's mantle: Cr³⁺ and Ga³⁺ diffusion in periclase. *Physics of the Earth and Planetary Interiors* 180, 159-171.
- Zhang L., Van Orman J.A., Lacks D.J. (2009) The influence of atomic size and charge of dissolved species on the diffusivity and viscosity of silicate melts. *American Mineralogist* 94, 1735-1738.
- Zhang L., Lacks D.J., Van Orman J.A. (2009) Diffusivity calculation on noble gas silica systems using first principles molecular simulations. *Molecular Simulation* 35, 942-952.
- Van Orman J.A., Saal A.E. (2009) Influence of crustal cumulates on ²¹⁰Pb disequilibria in basalts. *Earth and Planetary Science Letters* 284, 284-291.
- Touboul M., Kleine T., Bourdon B., Van Orman J.A., Maden C., Zipfel J. (2009) Hf-W thermochronometry: II. Accretion and thermal history of the acapulcoite-lodranite parent body. *Earth and Planetary Science Letters* 284, 168-178.
- Goodrich C.A., Fioretti A.M., Van Orman J. (2009) Petrogenesis of augite-bearing ureilites Hughes 009 and FRO 90054/93008 inferred from melt inclusions in olivine, augite and orthopyroxene. *Geochimica et Cosmochimica Acta* 73, 3055-3076.
- Zhang L., Van Orman J.A., Lacks D.J. (2009) Effective radii of noble gas atoms in silicates from first principles molecular simulation. *American Mineralogist* 94, 600-608.

- Bourdon B., Van Orman J.A. (2009) Melting of enriched mantle beneath Pitcairn seamounts: Unusual U-Th-Ra systematics provide insights into melt extraction processes. *Earth and Planetary Science Letters* 277, 474-481.
- Van Orman J.A., Li C., Crispin K.L. (2009) Aluminum diffusion and Al-vacancy association in periclase. *Physics of the Earth and Planetary Interiors* 172, 34-42.
- Wilson L., Goodrich C.A., Van Orman J.A. (2008) Thermal evolution and physics of melt extraction on the ureilite parent body. *Geochimica et Cosmochimica Acta* 72, 6154-6176.
- Van Orman J.A., Keshav S., Fei Y. (2008) High-pressure solid/liquid partitioning of Os, Re and Pt in the Fe-S system. *Earth and Planetary Science Letters* 274, 250-257.
- Saal A.E., Hauri E.H., Lo Cascio M., Van Orman J.A., Rutherford M.C., Cooper R.F. (2008) Volatile content of lunar volcanic glasses and the presence of water in the Moon's interior. *Nature* 454, 192-195.
- Kleine T., Touboul M., Van Orman J.A., Bourdon B., Maden C., Mezger K., Halliday A. (2008) Hf-W thermochronometry: Closure temperature and constraints on the accretion and cooling history of the H chondrite parent body. *Earth and Planetary Science Letters* 270, 106-118.
- Goodrich C.A., Van Orman J.A., Wilson L. (2007) Fractional melting and smelting on the ureilite parent body. *Geochimica et Cosmochimica Acta* 71, 2876-2895.
- Lacks D.J., Van Orman J.A. (2007) Molecular dynamics investigation of viscosity, chemical diffusivities and partial molar volumes of liquids along the MgO-SiO₂ join as functions of pressure. *Geochimica et Cosmochimica Acta* 71, 1312-1323.
- Yunker M.L., Van Orman J.A. (2007) Interdiffusion of solid iron and nickel at high pressure. *Earth and Planetary Science Letters* 254, 203-213.
- Van Orman J.A., Saal A.E., Bourdon B., Hauri E.H. (2006) Diffusive fractionation of U-series radionuclides during mantle melting and shallow level melt-cumulate interaction. *Geochimica et Cosmochimica Acta* 70, 4797-4812.
- Koch-Müller M., Dera P., Fei Y., Hellwig H., Liu Z., Van Orman J., Wirth R. (2005) Polymorphic phase transition in Superhydrous Phase B. *Physics and Chemistry of Minerals* 32, 349-361.
- van Westrenen W., Li J., Fei Y., Frank M.R., Hellwig H., Komabayashi T., Mibe K., Minarik W.G., Van Orman J.A., Watson H.C., Funakoshi K.-i., Schmidt M.W. (2005) Thermoelastic properties of (Mg_{0.64}Fe_{0.36})O ferropericlase based on in situ X-ray diffraction to 26.7 GPa and 2173 K. *Physics of the Earth and Planetary Interiors* 151, 163-176.
- Van Orman J.A. (2004) On the viscosity and creep mechanism of Earth's inner core. *Geophysical Research Letters* 31, Art. No. L20606.
- Fei Y., Li J., Hirose K., Minarik W., Van Orman J., Sanloup C., van Westrenen W., Komabayashi T., Funakoshi K.-I. (2004) A critical evaluation of pressure scales at high temperatures by in situ X-ray diffraction measurements. *Physics of the Earth and Planetary Interiors* 143-144, 515-526.
- Saal A.E., Van Orman J.A. (2004) The ²²⁶Ra enrichment in oceanic basalts: Evidence for diffusive interaction processes within the crust-mantle transition zone. *Geochemistry, Geophysics, Geosystems* 5, Art. No. Q02008.
- Fei Y., Van Orman J.A., Li J., van Westrenen W., Sanloup C., Minarik W., Hirose K., Komabayashi T., Walter M., Funakoshi K. (2004) In situ X-ray diffraction measurements of the postspinel transition boundary in Mg₂SiO₄ using MgO as an internal pressure standard and its geophysical implications. *Journal of Geophysical Research* 109, Art. No. B02305.

- Koga K.T., Van Orman J.A., Walter M.J. (2003) Diffusive relaxation of carbon and nitrogen isotope heterogeneity in diamond: A new thermochronometer. *Physics of the Earth and Planetary Interiors* 139, 35-43.
- van Westrenen W., Van Orman J.A., Watson H., Fei Y., Watson E.B. (2003) Assessment of temperature gradients in multi-anvil assemblies using spinel layer growth kinetics. *Geochemistry, Geophysics, Geosystems* 4, Art. No. 1036.
- Van Orman J.A., Fei Y., Hauri E.H., Wang J. (2003) Diffusion in MgO at high pressures: Constraints on deformation mechanisms and chemical transport at the core-mantle boundary. *Geophysical Research Letters* 30, 1056-1059. (Editors' Choice, *Science*, 299:981)
- Van Orman J.A., Grove T.L. and Shimizu N. (2002) Diffusive fractionation of trace elements during production and transport of melt in Earth's upper mantle. *Earth and Planetary Science Letters* 198, 93-112.
- Tanton L.T.E., Van Orman J.A., Hager B.H. and Grove T.L. (2002) Reexamination of the lunar magma ocean cumulate overturn hypothesis: melting or mixing is required. *Earth and Planetary Science Letters* 196, 239-249.
- Watson E.B., Wark D.A., Price J.D. and Van Orman J.A. (2002) Mapping the thermal structure of solid-media pressure assemblies. *Contributions to Mineralogy and Petrology* 142, 640-652.
- Van Orman J.A., Grove T.L., Shimizu N. and Layne G.D. (2002) Rare earth element diffusion in a natural pyrope single crystal at 2.8 GPa. *Contributions to Mineralogy and Petrology* 142, 416-424.
- Van Orman J.A., Grove T.L. and Shimizu N. (2001) Rare earth element diffusion in diopside: Influence of temperature, pressure and ionic radius, and an elastic model for diffusion in silicates. *Contributions to Mineralogy and Petrology* 141, 687-703.
- Van Orman J.A. and Grove T.L. (2000) Origin of lunar high-Ti ultramafic glasses: Constraints from phase relations and dissolution kinetics of clinopyroxene-ilmenite cumulates. *Meteoritics and Planetary Science* 35, 783-794.
- Van Orman J.A., Grove T.L., and Shimizu N. (1998) Uranium and thorium diffusion in diopside. *Earth and Planetary Science Letters* 160, 505-519.
- Ragland P.C., Conley J.F., Parker W.C., and Van Orman J.A. (1997) Use of principal components analysis in petrology: an example from the Martinsville igneous complex, Virginia, U.S.A. *Mineralogy and Petrology* 60, 165-184.
- Van Orman J., Cochran J.R., Weissel J.K., and Jestin F. (1995) Distribution of shortening between the Indian and Australian plates in the central Indian Ocean. *Earth and Planetary Science Letters* 133, 35-46.

BOOKS AND BOOK CHAPTERS

- Dosseto A., Turner S.P., Van Orman J.A. (2010) Timescales of Magmatic Processes: From Core to Atmosphere, Wiley-Blackwell, 264 pp.
- Van Orman J.A., Saal A.E. (2010) Diffusion constraints on rates of melt production in the mantle, in "Timescales of Magmatic Processes: From Core to Atmosphere", A. Dosseto, S.P. Turner, J.A. Van Orman, Eds., Wiley-Blackwell, p. 52-67.

OTHER PUBLICATIONS

- Van Orman J.A. (2007) Acceptance of the 2005 F.W. Clarke Medal. *Geochimica et Cosmochimica Acta* 71, S20-S21.

van Westrenen W., Van Orman J.A., Editors (2003) Special Issue: Diffusion and partitioning in planetary interiors. *Physics of the Earth and Planetary Interiors* 139, 1-169.

CONFERENCE ABSTRACTS (2002-present; *Denotes Invited; †Denotes Keynote)

- 2012 – Van Orman J.A., Cherniak D.J., Kita N.T. (2012) Magnesium diffusion in plagioclase. 43rd Lunar and Planetary Science Conference, #1467.
- 2012 – Saal A.E., Hauri E.H., Van Orman J.A., Rutherford M. (2012) D/H ratios of the lunar volcanic glasses. 43rd Lunar and Planetary Science Conference, #1327.
- 2011 – Saal A.E., Hauri E.H., Van Orman J.A., Rutherford M. (2011) D/H ratios of the lunar volcanic glasses. AGU Fall Meeting, Abstract MR12A-04.
- 2011 – *Van Orman J.A., Hayden L.A., Chabot N. (2011) Modeling trace element partitioning in multi-component iron alloy systems. AGU Fall Meeting, Abstract P14A-03.
- 2011 – Hauck S.A., Van Orman J.A. (2011) Core petrology: Implications for the dynamics and evolution of planetary interiors. AGU Fall Meeting, Abstract DI41B-03.
- 2011 – Watson E.B., Mueller T., Trail D., Van Orman J.A., Papineau D. (2011) C diffusion in Fe: Isotope effects and other complexities. AGU Fall Meeting, Abstract MR54A-05.
- 2011 – †Van Orman J.A., Crispin K.L. (2011) A predictive model for cation diffusion in periclase. Goldschmidt Conference, Prague.
- 2011 – Goel G., Lacks D., Van Orman J., Leshner C., Lundstrom C. (2011) Isotope fractionation due to temperature gradients: Molecular dynamics simulations. Goldschmidt Conference, Prague.
- 2011 – Hauri E., Saal A., Rutherford M., Van Orman J. (2011) The volatile content of primitive lunar volcanic glasses. Goldschmidt Conference, Prague.
- 2011 – Van Orman J.A., Hayden L.A. (2011) A model for trace element partitioning in metallic systems containing multiple light elements. 42nd Lunar and Planetary Science Conference, #2367.
- 2011 – Weber A., Saal A.E., Hauri E., Rutherford M.J., Van Orman J. (2011) The volatile content and D/H ratios of the lunar picritic glasses. 42nd Lunar and Planetary Science Conference, #2571.
- 2011 – Sprung P., Gopel C., Kleine T., Van Orman J., Maden C. (2011) The high-temperature history and primary structure of the L-chondrite parent body. 42nd Lunar and Planetary Science Conference, #1850.
- 2010 – *Van Orman J.A., Crispin K.L., Saha S., Morgan D. (2010) Controls on cation diffusion in periclase. AGU Fall Meeting, Abstract MR44A-01.
- 2010 – Hauri E.H., Saal A.E., Van Orman J.A., Rutherford M.J. (2010) Juvenile water in the moon's interior: New constraints from Apollo 15 glasses. AGU Fall Meeting, Abstract P41A-01.
- 2010 – Saha S., Morgan D., Bengtson A.K., Van Orman J.A., Crispin K.L. (2010) Pressure induced spin transition and its influence on diffusion of Fe²⁺ in ferropericlase. AGU Fall Meeting, Abstract MR13A-1903.
- 2010 – Crispin K.L., Van Orman J.A. (2010) Influence of electronic structure on diffusion of Mn, Co, Ni and Fe in periclase. AGU Fall Meeting, Abstract MR13A-1902.
- 2010 – Watson H.C., Crispin K.L., Van Orman J.A., Roberts J.J. (2010) Electrical conductivity of Al³⁺-doped MgO. AGU Fall Meeting, Abstract DI23A-1971.
- 2010 – †Van Orman J.A. (2010) Experimental constraints on the chemical evolution of the outer core. SEDI Conference Abstracts (Santa Barbara, CA).

- 2010 – Hayden L.A., Van Orman J.A., McDonough W.F., Ash R.D. (2010) Trace element partitioning in the Fe-S-C-(P) system. Goldschmidt Conference Abstracts, A388.
- 2010 – †Van Orman J.A. (2010) Keynote: Experimental and theoretical constraints on the chemical evolution of the outer core. Goldschmidt Conference Abstracts, A1073.
- 2010 – Sprung P., Göpel C., Kleine T., Van Orman J.A., Bourdon B., A Hf-W perspective on the thermal evolution of the L chondrite parent body. 41st Lunar and Planetary Science Conference, #1921.
- 2010 – Hayden L.A., Van Orman J.A., McDonough W.F., Ash R.D., Goodrich C.A., Trace element partitioning in the Fe-S-C system. 41st Lunar and Planetary Science Conference, #1520.
- 2010 – Ash R.D., Goodrich C.A., Van Orman J.A., McDonough W.F., Petrography and siderophile geochemistry of metal and sulphide in ureilites. 41st Lunar and Planetary Science Conference, #1302.
- 2009 – *Van Orman J.A., Crispin K.L., Watson H.C., The influence of defect associates on diffusion in periclase (MgO), AGU Joint Assembly, Toronto, Canada.
- 2009 – Crispin K.L., Van Orman J.A., Cr³⁺-vacancy and Ga³⁺-vacancy defect pairs in MgO: binding energy, mobility and the influence of electronic structure, AGU Joint Assembly, Toronto, Canada.
- 2009 – Hauri E.H., Saal A.E., Van Orman J.A., Rutherford M.J., Stable isotope systematics of volatiles in Apollo 15 lunar volcanic glasses, Goldschmidt Conference, Davos, Switzerland.
- 2009 – Fitoussi C., Van Orman J.A., Bourdon B., Kleine T., Metal-silicate silicon isotope fractionation in enstatite chondrites, Goldschmidt Conference, Davos, Switzerland.
- 2009 – Parman S.W., Kelley S.P., Ballentine C.J., Van Orman J.A., Partitioning and diffusion of noble gases in olivine at mantle pressures, Goldschmidt Conference, Davos, Switzerland.
- 2009 – Van Orman J.A., Goodrich C.A., Wilson L., Metal and siderophile elements in ureilites: reconciliation with smelting? 40th Lunar and Planetary Science Conference, Houston, #1986.
- 2009 – Ash R.D., Goodrich C.A., McDonough W.F., Van Orman J.A., Metal in ureilites: Siderophile elements from LA-ICP-MS. 40th Lunar and Planetary Science Conference, Houston, #1422.
- 2009 – Huang S., Humayun M., Downes H., Singletary S., Van Orman J.A., Jacobsen S.B., Petrogenesis of augite-bearing ureilites: A LA-ICP-MS approach. 40th Lunar and Planetary Science Conference, Houston, #1330.
- 2009 – Hauri E.H., Saal A.E., Van Orman J., Rutherford M.J., Friedman B., New estimates of the water content of the Moon from Apollo 15 picritic glasses. 40th Lunar and Planetary Science Conference, Houston, #2344.
- 2009 – Friedman B., Saal A.E., Hauri E.H., Van Orman J., Rutherford M.J., The volatile content of the Apollo 15 picritic glasses. 40th Lunar and Planetary Science Conference, Houston, #2444.
- 2009 – Goodrich C.A., Van Orman J.A., Dominik K., Berkley J.L., Metal in ureilites: Petrologic characterization. 40th Lunar and Planetary Science Conference, Houston, #1132.
- 2008 – Zhang L., Lacks D.J., Van Orman J.A., First-principles simulations of noble gases dissolved in liquid silica. AICHE 2008, Abstract #596a.

- 2008 – Toboul M., Kleine T., Bourdon B., Van Orman J.A., Maden C., Zipfel J., Irving A.J., Bunch T.E., Hf-W thermochronometry of the acapulcoite-lodranite parent body. *Meteoritics and Planetary Science* 43, A156.
- 2008 – Crispin K.L., Van Orman J.A., Diffusion of trivalent cations in MgO: Implications for diffusion in Earth's lower mantle. Goldschmidt Conference, Vancouver. *Geochim. Cosmochim. Acta* 72, A189.
- 2008 – Van Orman J.A., Kleine T., Bourdon B., Closure temperature of the ^{182}Hf - ^{182}W system in chondrites: A model. 39th Lunar and Planetary Science Conference, Houston.
- 2008 – Saal A.E., Hauri E.H., Lo Cascio M., Van Orman J., Rutherford M., Cooper R., The Apollo 15 Very Low-Ti glasses, evidence for the presence of indigenous water in the Moon's interior. 39th Lunar and Planetary Science Conference, Houston.
- 2007 – *Van Orman J.A., Crispin K.L., Li C., Defect interaction and diffusion in periclase (MgO), EOS Trans. AGU 88(52) Fall Meet. Suppl., Abstract MR33A-04.
- 2007 – Saal A.E., Hauri E.H., Lo Cascio M., Van Orman J., Rutherford M., Cooper R., Volatiles in the lunar volcanic glasses, evidence for the presence of indigenous water in the Moon's interior, EOS Trans. AGU 88(52) Fall Meet. Suppl., Abstract U13C-02.
- 2007 – Lacks D.J., Van Orman J.A., Molecular dynamics simulation of isotope fractionation in a temperature gradient, EOS Trans. AGU 88(52) Fall Meet. Suppl., Abstract V51E-0834.
- 2007 – †Van Orman J.A., Saal A.E., Reconciling ^{210}Pb deficits with the physics of melt extraction, *Geochim Cosmochim Acta* 71:A1058.
- 2007 – Van Orman J.A., Crispin K.L., Li C., Aluminum diffusion and Al-vacancy association in MgO, *Geochim Cosmochim Acta* 71:A1057.
- 2006 – Crispin K.L., Van Orman J.A., Li C., Diffusion of trivalent cations in MgO at 1 atm and high temperature (1473-1775 K), EOS Trans. AGU 87(52) Fall Meet. Suppl., Abstract V33A-0632.
- 2006 – Lacks D.J., Rear D., Van Orman J.A., Molecular dynamics investigation of melts in the MgO-CaO-SiO₂ system at high pressures. EOS Trans. AGU 87(52) Fall Meet. Suppl. Abstract MR32A-03.
- 2006 - *Van Orman J.A., Keshav S., Fei Y. (2006) High pressure solid-metal/liquid-metal partitioning of Os, Re and Pt in the Fe-S system. Goldschmidt Conference, Melbourne, Australia.
- 2006 - Bourdon B., Van Orman J. (2006) ^{226}Ra deficits in OIB: a key to the rate of melt extraction in the mantle. Goldschmidt Conference, Melbourne, Australia.
- 2005 - *Van Orman J.A. (2005) Chemical exchange between Earth's core and mantle, 3rd Workshop on Earth's Mantle Composition, Structure, and Phase Transitions, Saint Malo, France.
- 2005 - Van Orman J.A. (2005) On the viscosity and creep mechanism of Earth's inner core. Poster presented at Gordon Conference on Interior of the Earth, June 2005.
- 2005 - Saal A.E., Van Orman J.A. (2005) Diffusive fractionation of ^{226}Ra - ^{230}Th during shallow level interaction, Goldschmidt Conference, *Geochim Cosmochim Acta* 69:A337.
- 2005 - *Van Orman J.A. (2005) Diffusion in mantle and core materials, Goldschmidt Conference, *Geochim Cosmochim Acta* 69:A176
- 2004 - *Van Orman J.A., Saal A.E., Bourdon B., Hauri E.H. (2004) Diffusive fractionation of U-series nuclides during MORB production, EOS Trans. AGU 85(47), Fall Meet. Suppl., Abstract V51E-02.

- 2004 - Yunker M.L., Van Orman J.A. (2004) Interdiffusion of iron and nickel at high pressure, EOS Trans. AGU 85(47), Fall Meet. Suppl., Abstract MR43A-0866.
- 2004 - Li J., van Westrenen W., Komabayashi T., Hellwig H., Van Orman J., Fei Y., Minarik W., Funakoshi K. (2004) Experimental constraints on silicon in the Earth's core. EOS Trans. AGU 85(47), Fall Meet. Suppl., Abstract MR41A-06.
- 2004 - Keshav S., Van Orman J.A. (2004) Diffusion in zinc at high pressure and rheology of the Earth's inner core. EOS Trans. AGU 85(47), Fall Meet. Suppl., Abstract MR43A-0868.
- 2003 - Koch-Muller M., Dera P., Fei Y., Hellwig H., Liu Z., Van Orman J., Wirth R. (2003) Polymorphic phase transition in superhydrous phase B. 10th International Symposium on Experimental Mineralogy, Petrology and Geochemistry, Lithos 73(1-2), S59.
- 2003 - van Westrenen W., Li J., Fei Y., Frank M.R., Hellwig H., Komabayashi T., Mibe K., Minarik W.G., Van Orman J.A., Watson H.C., Funakoshi K.-i., Schmidt M.W. (2003) Extension of $(\text{Mg}_{0.64}\text{Fe}_{0.36})\text{O}$ ferropericlasite equation of state measurements to 25 GPa and 2173 K. EOS Trans. AGU 84(46), Fall Meet. Suppl., Abstract S21E-0369.
- 2002 - Van Orman J., Saal A., Bourdon B., Hauri E. (2002) A new model for U-series isotope fractionation during igneous processes, with finite diffusion and multiple solid phases. EOS Trans. AGU 83(47), Fall Meet. Suppl., Abstract V71C-02.
- 2002 - Saal A.E., Van Orman J.A., Hauri E.H., Langmuir C.H., Perfit M.R. (2002) An alternative hypothesis for the origin of high ^{226}Ra excess in MORBs. EOS Trans. AGU 83(47), Fall Meet. Suppl., Abstract V71C-01.
- 2002 - van Westrenen W., Li J., Fei Y., Minarik W.G., Komabayashi T., Van Orman J.A., Funakoshi K. (2002) Magnesiowüstite $(\text{Mg}_{0.64}\text{Fe}_{0.36})\text{O}$ thermal equation of state to 25 GPa and 2073 K. EOS Trans. AGU 83(47), Fall Meet. Suppl., Abstract MR62B-1073.
- 2002 - Koch-Muller M., Dera P., Fei Y., Hellwig H., Liu Z., Van Orman J. (2003) Superhydrous phase B; a structural and spectroscopic study. Geol Soc Amer Abstracts with Programs 35(6), 621.
- 2002 - Mao H.-k., Van Orman J., Fei Y., Hemley R.J., Loveday J., Nelmes R., Smith R.I. (2002) Neutron diffraction study of silicate perovskites. EOS Trans. AGU 83(47), Fall Meet. Suppl., Abstract MR71A-02.
- 2002 - Fei Y., Van Orman J., van Westrenen W., Li J., Sanloup C., Komabayashi T., Funakoshi K. (2002) In situ x-ray diffraction measurements of the postspinel transition in a peridotitic composition. EOS Trans. AGU 83(47), Fall Meet. Suppl., Abstract S52C-09.
- 2002 - Murray J., Van Orman J.A., Fei Y. (2002) An investigation of diffusion rates in wadsleyite at 21 GPa and 1500-1900 °C. EOS Trans. AGU 83(19), Spring Meet. Suppl., Abstract V51B-03.
- 2002 - Van Orman J.A., Fei Y., Hauri E.H., Wang J. (2002) Cation and oxygen diffusion in periclasite crystals and grain boundaries measured to 25 GPa and 2273 K. EOS Trans. AGU 83(19), Spring Meet. Suppl., Abstract V52B-04.
- 2002 - Saal A.E., Van Orman J.A., Hauri E.H., Langmuir C.H., Perfit M.R. (2002) An alternative hypothesis for the origin of the high Ra-226 excess in mid-ocean ridge basalts. 12th Annual V.M. Goldschmidt Conference, Geochim Cosmochim Acta 66(15A):A659.

INVITED LECTURES

- Wayne State University, Department of Geology (Apr. 10, 2013)
- Columbia University, Lamont-Doherty Earth Observatory (Mar. 13, 2013)
- UC-Davis, Department of Geology (Feb. 1, 2012)

- Illinois State University, Department of Geography and Geology (Apr. 29, 2011)
- College of Wooster, Department of Geology (Apr. 21, 2011)
- Australian Academy of Science, Canberra, White Conference Keynote Lecture (Apr. 13, 2011)
- Louisiana State University, Department of Geology and Geophysics (Mar. 25, 2011)
- Washington University, Department of Earth and Planetary Sciences (Mar. 22, 2011)
- Indiana University – South Bend, Department of Physics (Feb. 3, 2011)
- University of Toronto, Department of Geology (Jan. 13, 2011)
- Vanderbilt University, Department of Earth and Environmental Science (Dec. 3, 2010)
- University of Northern Illinois, Department of Geology and Environmental Geosciences (Oct. 22, 2010)
- University of Houston, Department of Earth and Atmospheric Sciences (Oct. 15, 2010)
- Workshop on Transport Properties of the Lower Mantle, Yunishigawa, Japan, Keynote Talk (Oct. 22, 2008)
- University of Chicago, Department of Geophysical Sciences (May 23, 2008)
- Yale University, Department of Geology and Geophysics (Feb. 5, 2007)
- Brown University, Department of Geological Sciences (Mar. 10, 2006)
- University of Illinois, Department of Geology (Sep. 16, 2005)
- 3rd Workshop on Earth's Mantle Composition, Structure, and Phase Transitions, Saint Malo, France (Sep. 3, 2005)
- Plenary Address, Goldschmidt Conference, Moscow ID (May 25, 2005)
- Yale University, Department of Geology (Feb. 18, 2004)
- Northern Ohio Geological Society (Dec. 4, 2002)
- University of Chicago, Department of Geophysical Sciences (Oct. 4, 2002)
- Brown University, Department of Geological Sciences (Apr. 29, 2002)
- George Washington University, Department of Geology (Feb. 21, 2002)
- Case Western Reserve University, Department of Geological Sciences (Jan. 11, 2002)
- Brown University, Department of Geological Sciences (May 10, 2001)
- Florida State University, Department of Geological Sciences (Apr. 5, 2001)
- Case Western Reserve University, Department of Chemical Engineering (Jan. 25, 2001)
- Carnegie Institution of Washington, Geophysical Laboratory (Jul. 31, 2000)
- Shimizu Symposium, Woods Hole Oceanographic Inst. (Mar. 7, 2000)
- Columbia University, Lamont-Doherty Earth Observatory (Feb. 28, 2000)
- Brown University, Department of Geological Sciences (Nov. 12, 1999)
- California Institute of Technology, Department of Earth and Planetary Sciences (Oct. 6, 1999)
- University of Wisconsin, Madison, Department of Geology (1997)
- Woods Hole Oceanographic Institution, Department of Geology & Geophysics (1997)

PROFESSIONAL SERVICE

- Associate Editor, Journal of Geophysical Research – Solid Earth (2012-)
- Organizing Committee and Session Chair, 2013 Goldschmidt Conference, Florence, Italy.
- Program Committee, 2012 Lunar and Planetary Science Conference
- Review Panel, NSF CSEDI program (2011).
- Review Panel, NASA Cosmochemistry program (2010, 2013).
- Executive Committee, COMPRES, 2009-2012; Vice-Chair 2010-2012.

- Session Convener, 2011 Goldschmidt Conference, Prague, “Physics and Chemistry of the Deep Earth”
- Organizing Committee, 2011 Goldschmidt Conference, Prague, “Mantle to Crust: Ocean Ridge and Intraplate Volcanism” Theme.
- Chair, Program Committee for COMPRES Annual Meeting, June 2010.
- Tri-Chair, Mineral Physics Long Range Science Planning Workshop, Tempe, Arizona, March 2-5, 2009.
- Organizing Committee, 2009 Goldschmidt Conference, Davos, Switzerland, “The Deep Earth: Formation, Evolution, and Dynamics” Theme.
- Review Panel, NSF EAR Petrology & Geochemistry program (2007).
- Ad-hoc proposal review, NASA Cosmochemistry program; NASA Planetary Geology and Geophysics program; NSF EAR Petrology and Geochemistry program; NSF EAR Geophysics program; NSF EAR Instrumentation and Facilities program; Natural Environment Research Council (UK); Agence Nationale de la Recherche (France); Deutsche Forschungsgemeinschaft (Germany).
- Ad-hoc manuscript review, *Acta Geophysica*; *American Mineralogist*; *Chemical Geology*; *Contributions to Mineralogy and Petrology*; *European Journal of Mineralogy*; *Geochemistry, Geophysics, Geosystems*; *Geochimica et Cosmochimica Acta*; *Geophysical Research Letters*; *Journal of Geophysical Research*; *Journal of Petrology*; *Lithos*; *Meteoritics and Planetary Science*; *Nature*; *Nature Geoscience*; *Physics and Chemistry of Minerals*; *Physics of the Earth and Planetary Interiors*; *Proceedings of the National Academy of Sciences*; *Reviews in Mineralogy and Geochemistry*; *Science*; *Swiss Journal of Geosciences*.
- Education & Outreach Committee, American Geophysical Union, 2004-2006.
- Special session convener, “Composition and evolution of iron-rich cores in the Earth and other planets”, American Geophysical Union Fall Meeting, San Francisco, Dec. 2008.
- Special session convener, “Structure and properties of silicate melts”, American Geophysical Union Fall Meeting, San Francisco, Dec. 2007.
- Special session convener, “Transport properties of Earth materials”, American Geophysical Union Fall Meeting, San Francisco, Dec. 2006.
- Special session convener, "The Core-Mantle Boundary: Theoretical, Experimental, and Observational Constraints", American Geophysical Union Fall Meeting, San Francisco, Dec. 2003.
- Guest editor, *Physics of the Earth and Planetary Interiors* v. 39/1-2, “Diffusion and Partitioning in Planetary Interiors” (2003).
- Session convener, “Element Partitioning and Diffusion in the Earth’s Deep Interior”, American Geophysical Union Spring Meeting, Washington DC, May 2002.

UNIVERSITY SERVICE

Faculty Senate Graduate Studies Committee (2010-)

Graduate Education Task Force, College of Arts & Sciences Strategic Plan Steering Committee (2008)

University Honorary Degrees Committee (2006)

Graduate Committee, College of Arts and Sciences (2006 – 2009; Chair 2008-2009)

Chair of the Graduate Admissions Committee, Department of Geological Sciences (2004 – present)

Faculty Search Committees, Department of Geological Sciences (2003-4, 2004-5, 2009-2010)

COURSES TAUGHT (EXCLUDING SEMINARS)

Course #	Title	Format	Type	# Terms Taught
EEPS110	Intro to Physical Geology	Lecture	Non-Majors/Majors	6
EEPS317	Introduction to Field Methods (Co-instructor)	Field (Death Valley)	Majors	2
EEPS341	Mineralogy	Lecture/Lab	Majors	5
EEPS344	Igneous & Met. Petrology	Lecture/Lab	Majors	1
EEPS350/450	Geochemistry	Lecture	Majors/Grad	4
EEPS390	Intro to Geological Research	Lecture	Majors	5
EEPS392	Senior Project		Majors	5

POSTDOC/STUDENT SUPERVISION

Postdoctoral Researchers Supervised:

- Audrey Martin (Aug. 2013 – present)
- Michael Krawczynski (Oct. 2011 – present)
- Katherine Crispin (Jul.-Aug. 2011; now technical staff at Carnegie Institution of Washington)
- Gaurav Goel (Aug. 2009 – Jun. 2011; now Chemical Engineering faculty at IIT-Delhi)
- Leslie Hayden (Nov. 2008 – Aug. 2010; now staff at USGS-Menlo Park)
- Liqun Zhang (January 2008 – June 2009; now a postdoc at Case Medical School)
- Shantanu Keshav (August 2003 – Feb 2005; now CNRS at Montpellier)

Graduate Students Supervised:

- Rob Moore (PhD; Aug. 2013 – present)
- Nan Sun (PhD; Aug. 2013 – present)
- Jian Han (PhD; Aug. 2009 – present)
- Timothy O'Brien (Summer research 2009; now a PhD student at Stanford University)
- Katherine Crispin (PhD July 2011; now staff at Carnegie Institution of Washington)
- David Rear (co-advisor (50%) with Prof. Dan Lacks; Aug. 2005 – Dec. 2007)
- Chen Li (M.S. August 2005)
- Molly Yunker (M.S. June 2005)

Undergraduate Students Supervised:

- Rachel Kokoska (Summer 2012 – present)
- John Henry (Summer 2011)
- Rebecca Steely (Summer-Fall 2011)
- Rita Cabral (Fall 2009 – Summer 2010)
- Clark Short (Spring 2007 – Spring 2009)
- Zach Newman (Spring 2007)
- Everett Criss (Summer 2006)

- Molly Yunker (Fall 2002 – Summer 2004)
- David Bonner (Summer 2003)
- Catherine Shirvell (Summer 2002)
- Jeffrey Murray (Summer 2001)