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Education

1999-2003 Ph.D., Geophysics
University of California, Berkeley
Thesis advisor: Raymond Jeanloz
Thesis: Exploring planetary interiors: Experiments at extreme conditions

1995-1999 BS, Physics, *Cum Laude*
University of San Francisco

Appointments

July 2014 – present Associate Professor (*without tenure*)
Department of Geology & Geophysics
Yale University

September 2014 – September 2015 Honorary Research Associate
Department of Earth Sciences
University College London

July 2008 – June 2014 Assistant Professor
Department of Geology & Geophysics
Yale University

January 2006 - June 2008 Assistant Professor
Department of Physics
New Mexico State University

January 2004 - December 2005 O. K. Earl Postdoctoral Fellow
Division of Geological and Planetary Sciences
California Institute of Technology

Selected Awards and Honors

2015 - 2016 COMPRES Distinguished Lecturer
2010 NSF CAREER award recipient
2010 University of San Francisco's Arthur Furst Award for Outstanding Research Advancing
Science for the Betterment of Humanity
2005 - 2008 Alexander von Humboldt Summer Fellow, Bayerisches Geoinstitut
2000 - 2003 National Science Foundation Graduate Research Fellow

Selected Proposals Funded (Principal Investigator on all grants listed)

Jan 2016 – Dec 2018	NSF: “Experimental studies on melting (Mg, Fe)O ferropericlase;” renewal \$336,787 total (\$111,110 <i>indirect</i> costs)
July 2013 – June 2016	NSF: “Experimental studies on melting (Mg, Fe)O ferropericlase;” \$208,850 total (\$82,704 <i>indirect</i> costs), 1-year NCE
June 2010 – May 2017	NSF: “CAREER: Chemical Heterogeneity in Earth’s Lower Mantle;” \$619,600 total (\$217,008 <i>indirect</i> costs), 2-year NCEs
March 2009 – Feb 2016	Carnegie/DOE Alliance Center (CDAC): “High-pressure investigation of transition-metal oxides,” 2009, \$21,740; “High-pressure melting of dense potassium,” 2010, \$77,875; “Structure and strength of cold-compressed graphite,” 2011, \$85,004; “Homogeneous starting materials for high-pressure experiments,” 2012, \$63,323; “High-temperature melting at high pressures,” 2013, \$75,219. “High-temperature melting at high pressures,” 2014, \$75,687. “High-temperature melting at high pressures,” 2015, \$79,005. (\$153,056 <i>indirect</i> costs)
March 2006 – Feb 2009	Carnegie/DOE Alliance Center (CDAC): Funding at NMSU at ~\$90,000/year total

Courses Taught

Spring 2006	PHYS 451: Intermediate Mechanics, Asst. Professor, NMSU
Fall 2006	PHYS 451: Intermediate Mechanics, Asst. Professor, NMSU
Spring 2007	PHYS 214: Introduction to Electricity & Magnetism, Asst. Professor, NMSU
Fall 2007	PHYS 213: Mechanics, Asst. Professor, NMSU
Spring 2008	PHYS 350G: The Search for Water in the Solar System, Asst. Professor, NMSU (co-taught with Professors Boris Kiefer and Jacob Urquidi)
Spring 2009	G&G 326/526: Introduction to Earth & Planetary Physics, Asst. Professor, Yale students taught: 5 undergraduate students, 6 graduate students Thirty-six 50-minute lectures, 1 midterm, 1 take-home final exam (MWF 10:30-11:20am)
Fall 2009	G&G 326/526: Introduction to Earth & Planetary Physics, Asst. Professor, Yale students taught: 4 graduate students, 1 auditor Thirty-six 50-minute lectures, 1 midterm, 1 take-home final exam, 1 3-hour field trip, 1 lab (MWF 10:30-11:20am)
Fall 2009	G&G 744: Seminar in Mantle and Core Processes, Asst. Professor, Yale (co-taught with Professor Maureen Long) students taught: 11 graduate students, 3 auditors/guests (M 4:00-5:30pm)
Spring 2010	G&G 207: The Science of Water, Asst. Professor, Yale students taught: 9 undergraduate students Seven 75-minute lectures, remainder student-led discussions (MW 9:00-10:15am)
Fall 2010	<i>on leave</i>
Spring 2011	<i>on leave</i>
Fall 2011	<i>on maternity leave</i>
Spring 2012	G&G 207: The Science of Water, Asst. Professor, Yale students taught: 12 undergraduate students Sixteen 75-minute lectures, remainder student-led discussions (MW 9:00-10:15am)
Fall 2012	G&G 319/519: Physics and Chemistry of Earth Materials I, Asst. Professor, Yale students taught: 1 undergraduate student, 3 graduate students, 1 auditor Twenty-four 75-minute lectures, 1 take-home final exam (TR 9:00-10:15am)
Spring 2013	G&G 207: The Science of Water, Asst. Professor, Yale students taught: 15 undergraduate students Fifteen 75-minute lectures, remainder student-led discussions (MW 9:00-10:15am)

Fall 2013 G&G 319/519: Physics and Chemistry of Earth Materials I, Asst. Professor, Yale
students taught: 1 undergraduate student, 1 graduate student
Twenty-four 75-minute lectures, 1 take-home final exam (TR 9:00-10:15am)

Spring 2014 G&G 207: The Science of Water, Asst. Professor, Yale
students taught: 6 undergraduate students
Nineteen 75-minute lectures, remainder student-led discussions (MW 9:00-10:15am)

Spring 2014 G&G 719: Topics in Mineral Physics, Asst. Professor, Yale (co-taught with Professor
Shun-ichiro Karato)
students taught: 2 graduate students, 8 auditors/guests
Six introduction lectures, five by Professor Karato, remainder by students (R 4:00-
5:30pm)

Fall 2014 *on leave*

Spring 2015 *on leave*

Fall 2015 *on maternity leave*

Spring 2016 G&G 719: Topics in Mineral Physics, Assoc. Professor, Yale
students taught: 6 graduate students, 5 auditors/guests
Fourteen introduction lectures, remainder by students (R 3:30-5:00pm)

Spring 2016 G&G 207: The Science of Water, Assoc. Professor, Yale
students taught: 4 undergraduate students, 1 auditor/guest
Twenty-one 75-minute lectures, remainder student-led discussions (MW 9:00-10:15am)

Fall 2016 G&G 319/519: Physics and Chemistry of Earth Materials I, Assoc. Professor, Yale
students taught: 2 undergraduate students, 2 graduate students, 1 auditor
Twenty-five 75-minute lectures, 1 take-home final exam (TR 9:00-10:15am)

Spring 2017 G&G 207: The Science of Water, Assoc. Professor, Yale
students taught: 10 undergraduate students, 1 auditor/guest
Sixteen 75-minute lectures, remainder student-led discussions (TR 9:00-10:15am)

Fall 2017* G&G 326/526: *Introduction to Earth & Planetary Physics*, Assoc. Professor, Yale

Fall 2017* G&G 744: *Seminar in Mantle and Core Processes*, Assoc. Professor, Yale

*expected

Additional Teaching, Advising and Contributions to Yale

Fall 2008 Two Guest Lectures G&G 319/519

Fall 2009 Girls Science Investigations (GSI): Geophysical World

Fall 2009 Guest Lecture G&G 319/519

Fall 2013 Guest Lecture G&G 010

Fall 2014 Guest Lecture G&G 010

Fall 2016 Guest Lecture G&G 010

2008 – 2010 G&G Colloquium Committee

2008 – 2010 G&G Postdoctoral Fellows Committee

2012 – 2014 G&G Von Damm Undergraduate Fellowship Selection Committee

2012 – 2014 G&G Laboratory Facilities and Safety Committee

2012 G&G Graduate Admissions and Recruiting Committee

2012 G&G Program Review and Exam Committee (PREComm)

2012 - 2014 G&G Director of Postdoctoral Affairs

2016 – present G&G Director of Postdoctoral Affairs

2016 – present G&G Colloquium Committee

Spring 2017 G&G Program Review and Exam Committee (PREComm)

2016 – 2017 G&G Graduate Admissions and Recruiting Committee

Pierson College Advising

Freshmen Advising: Class of 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021* (2-3 students per year)

Senior Theses/Essays

- 2009 Abigail Fraeman, Yale G&G/Physics double major, “Detecting Earth-Like Planets with Kepler: Implications for future studies on habitability and habitable zones”
- 2013 Ilya Uts, Yale Physics/Astronomy double major, “Exploring the phases and densities of water up to 1 TPa and 24,000 K”
- 2014 Marjorie Hirs, Yale G&G major, “Experimental studies in melting pyroxenite”
- 2015 Yusu Liu, Yale Chemistry major, “High-pressure melting of iron alloys: Towards an understanding of Earth’s core”
- 2016 Vasilije Dobrosavljevic, Yale Physics major, “Melting behavior of pyroxenite in the lower mantle”

PhD Committees (other than my own advisees, see below)

- 2009 Zhicheng Jing: PhD Dissertation Reading Committee, *Equation of State of Liquids*, Yale G&G, December 2009
- 2010 Erik Thomson: PhD Dissertation Reading Committee, *Through a Wetting-Film: An Optic and Thermodynamic Study of Grain Boundaries in Polycrystalline Ice*, Yale G&G, May 2010
- 2012 Kazuhiko Otsuka: PhD Dissertation Reading Committee, *Point Defects and Transport Properties of Ferropericlase in the Lower Mantle*, Yale G&G, May 2015

Current and Former Advisees

Undergraduate Students

- Vasilije Dobrosavljevic Yale Physics, 2015 – 2016; presently GPS graduate student, Caltech
- Marjorie Hirs Yale G&G, 2014
- Yusu Liu Yale Chemistry, 2014 – 2015; presently DMSE graduate student, MIT
- Joseph O’Rourke Yale Physics, 2009 – 2010; presently GPS postdoctoral researcher, Caltech; soon to be SESE Exploration Postdoctoral Fellow, Arizona State University
- Shannon Pitcher NMSU Physics, 2007 – 2008; presently a PharmD in Albuquerque, NM
- Cecilia Sanchez Yale, 2010 – 2011; presently graduate student, University of Georgia
- Philippa Stoddard Yale G&G, 2012 – 2013
- Ilya Uts Yale Physics & Astronomy, 2012 – 2013; presently at E2 Expert Engineer JP Morgan

Graduate Students

- Yahya Al-Khatatbeh PhD, NMSU Physics, July 2010; *High-Pressure Behavior of Transition-Metal Dioxides TiO₂, ZrO₂ and HfO₂ as Determined by Synchrotron X-ray Diffraction and Density-Functional Theory*; presently Assistant Professor of Physics, Princess Sumaya University for Technology
- Sarah Arveson PhD candidate, Yale G&G, 2015 – present
- Neala Creasy (co-advised) PhD candidate, Yale G&G, 2015 – present
- Kierstin Daviau PhD candidate, Yale G&G, 2013 – present

Jie Deng	PhD candidate, Yale G&G, 2015 – present
Zhixue Du	PhD, Yale G&G, December 2015; <i>Melting and rheology of (Mg,Fe)O ferropericlase at high pressures</i> ; presently Carnegie Postdoctoral Fellow, Geophysical Laboratory
Jeffrey Montgomery	MS, NMSU Physics, 2008; <i>High-pressure resistivity measurements in graphite</i> ; presently postdoc, LLNL

Postdoctoral Researchers advised (8 total)

Dr. Yahya Al-Khatatbeh	(September 2010 – August 2011) presently Assistant Professor of Physics, Princess Sumaya University for Technology
Dr. Konstantin Glazyrin	(January 2012 – April 2013) presently beamline scientist, DESY
Dr. Tingting Gu	(September 2013 – February 2014) presently Postdoc, Gemological Institute of America
Dr. Stefanie Japel	(January 2006 – August 2007) presently knitwear designer, New Mexico
Dr. Nikku Madhusudhan	(January 2012 – October 2013) presently Reader in Astrophysics, Institute of Astronomy, University of Cambridge
Dr. Lowell Miyagi	(November 2009 – December 2011) presently Assistant Professor of Geology & Geophysics, University of Utah
Dr. Kaveh Pahlevan	(July 2011 – September 2013) presently Research Scientist, School of Earth and Space Exploration, Arizona State University
Dr. Yuejian Wang	(July 2009 – July 2011) presently Assistant Professor of Physics, Oakland University

Awards and Honors won by current & previous advisees

Undergraduate Advisees

Vasilije Dobrosavljevic	Caltech First-Year Graduate Student Fellowship, 2016-2017 Yale College Dean's Research Fellowship, 2015
Marjorie Hirs	Karen L. Von Damm '77 Undergraduate Research Fellowship, Yale University, 2014
Yusu Liu	MIT Department of Materials Science and Engineering Research Image Contest First Place, Spring 2016 Dow Graduate Fellowship, September 2015 – May 2016 Karen L. Von Damm '77 Undergraduate Research Fellowship, Yale University, 2014-2015 American Geophysical Union Student Travel Grant 2014 Charles A. Brautlecht Scholarship, Yale University, 2014-2015 Robert B. Dodds Scholarship, Yale University, 2012 - 2015
Joseph O'Rourke	SESE Exploration Postdoctoral Fellowship, Arizona State University, 2017 Outstanding Student Presentation Award, AGU Planetary Science, 2016 Graduate Research Award, AGU Study of Earth's Deep Interior, 2016 Antarctica Service Medal, National Science Foundation, 2016 Hertz Foundation Fellowship Finalist, 2013 Beckwith Prize for excellence in astronomy, Yale University, 2012 Belknap Prize for excellence in geological studies, Yale University, 2012 Bateman Science Prize for academic excellence in Silliman College, Yale University, 2012 Hammer Prize for excellence in the oral presentation of the senior thesis, Yale University, 2012 Penfield Prize for proficiency in mineralogy, Yale University, 2011
Cecilia Sanchez	Odum School of Ecology Frank Golley Memorial Award, 2017

ARCS (Achievement Rewards for College Scientists) scholar, 2016-2019
University of Georgia, Athens Graduate Student Diversity Engagement Award, 2016
Odum School of Ecology Graduate Diversity Award, 2015
NSF Graduate Research Fellowship, 2014-2017
Phillipa Stoddard Penfield Prize for proficiency in mineralogy, Yale University, 2013

Graduate Advisees

Sarah Arveson CT Space Grant Graduate Research Fellowship, 2017
Geological Society of America Student Research Grant, 2017
Neala Creasy (co-advised) NSF Graduate Research Fellowship, 2016 - present
Estwing Hammer Prize for excellent research in geology, 2017
Kierstin Daviau CT Space Grant Graduate Research Fellowship, 2017
Ford Prize for excellence in mineralogical studies, Yale University, 2017
Jie Deng Estwing Hammer Prize for excellent research in geology, 2017
Zhixue Du William E. Ford Award for significant contributions to Mineralogy, 2013
Estwing Hammer Prize for excellent research in geology, 2015
Carnegie Postdoctoral Fellow, Geophysical Laboratory, 2015-present
Jeffrey Montgomery Lindau Fellow, <http://www.mediatheque.lindau-nobel.org/meetings/2012>

Postdoc Advisees

Dr. Nikku Madhusudhan Vainu Bappu Gold Medal, Astronomical Society of India, 2014
Dr. Lowell Miyagi NSF CAREER award recipient, 2017
Dr. Yuejian Wang New Investigator Research Excellence Award, Oakland University, 2014

Other Professional Service (since 2008)

2008

- Consortium for Materials Properties Research in Earth Sciences (COMPRES): NMSU Elector, Yale Alternate
- AGU Study of the Earth's Deep Interior (SEDI) Focus Group Executive Committee Member
- 2008 Fall AGU Meeting, "Ins and Outs of the Earth's Core," SEDI special session co-convener
- *Senior Participant* in the Cooperative Institute for Dynamic Earth Research (CIDER) conference held at the Kavli Institute of Theoretical Physics (KITP) at UC Santa Barbara (July 2008)
- Workshop on *Ab initio* Calculations in Geosciences, Krakow, Poland, October 22-25, 2008, Steering Committee

2009

- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
- AGU Study of the Earth's Deep Interior (SEDI) Focus Group Executive Committee Member
- Mineral Physics Planning Workshop: Tempe, AZ, March 2-5, 2009, Breakout Session Leader

2010

- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Annual Meeting Planning Committee, 2010-2011
- AGU Study of the Earth's Deep Interior (SEDI) Focus Group Executive Committee Member, in charge of Outstanding Student Presentation Awards
- 2010 Fall AGU Meeting, "Superhard Materials: Synthesis and Systematics," MRP special session co-convener

2011

- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - 2011 APS Shock Conference Technical Committee, Geophysics and Planetary Science
 - Consortium for Materials Properties Research in Earth Sciences (COMPRES): 2011 Annual Meeting Planning Committee
 - 2011 Goldschmidt Conference, Co-convenor for session 19h, "High Pressure Behavior from Impacts to Interiors," in the "Frontiers in Computational Geochemistry" scientific theme.
 - NSF CSEDI Spring Panel, Washington, D. C., February 2011.
 - 2011 Fall AGU Meeting, "Earth's heterogeneous mantle," SEDI special session co-convenor
- 2012
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - Gordon Research Conference: Research at High Pressure, University of New England, June 2012, *Discussion Leader*
- 2013
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - Consortium for Materials Properties Research in Earth Sciences (COMPRES) Facilities Committee Member
- 2014
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - Consortium for Materials Properties Research in Earth Sciences (COMPRES) Facilities Committee Member
 - Nominating Committee of the APS Topical Group on Shock Compression of Condensed Matter (2014-2016)
 - *Lecturer* in the Cooperative Institute for Dynamic Earth Research (CIDER) conference held at the Kavli Institute of Theoretical Physics (KITP) at UC Santa Barbara (July 2014)
- 2015
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - Consortium for Materials Properties Research in Earth Sciences (COMPRES) Facilities Committee Member
 - Nominating Committee of the APS Topical Group on Shock Compression of Condensed Matter
- 2016
- Consortium for Materials Properties Research in Earth Sciences (COMPRES): Yale Alternate
 - Consortium for Materials Properties Research in Earth Sciences (COMPRES) Facilities Committee Member
 - Nominating Committee of the APS Topical Group on Shock Compression of Condensed Matter
 - *Senior Participant* in the Cooperative Institute for Dynamic Earth Research (CIDER) conference held at the Kavli Institute of Theoretical Physics (KITP) at UC Santa Barbara (July 2016)
 - Elected Secretary of the Study of Earth's Deep Interior (SEDI) focus group of the American Geophysical Union (<http://sites.agu.org/leadership/sections-focus-groups/sedi/>).
- 2017
- Secretary of the Study of Earth's Deep Interior (SEDI) focus group of the American Geophysical Union (<http://sites.agu.org/leadership/sections-focus-groups/sedi/>).
 - Lecturer, Yale Young Global Scholars Program, Frontiers in Math & Science, (<http://globalscholars.yale.edu/sessions/frontiers-math-science-new>)
 - Organizing Committee, Cooperative Institute for Dynamic Earth Research (CIDER) 2018

Volunteer and other nonprofessional activities locally, nationally and internationally (since 2008)

2008

- Faculty advisor to Society of Physics Students, New Mexico State University (since 2006)
- 2009
- Mentor students at August Lewis Troup School for the 2008-2009 Science Fair
 - New Haven Science Fair: May 12-14, 2009, judge
 - American Institute of Physics (AIP) Adopt-A-Physicist: <http://www.adoptaphysicist.org/>
 - Lab tour for Blind Brook High School (Rye Brook, NY) freshmen: <http://earth.geology.yale.edu/~kk12/index.cgi?page-selection=10>
- 2010
- Mentor students at Columbus Family Academy for the 2009-2010 Science Fair
 - New Haven Science Fair: May 12, 2010, judge
- 2011
- American Institute of Physics (AIP) Adopt-A-Physicist: <http://www.adoptaphysicist.org/>
 - Mentor students at Columbus Family Academy for the 2010-2011 Science Fair
 - New Haven Science Fair: May 11, 2011, judge
- 2012
- Published “The Adventures of GEO: Plate Tectonics!” comic as part of my outreach portion of my NSF CAREER grant and used in the New Haven Public Schools. Also available online at www.adventuresofgeo.com
 - Mentoring students at Columbus Family Academy for the 2011-2012 Science Fair
 - New Haven Science Fair: May 15-16, 2012, judge coordinator
- 2013
- American Institute of Physics (AIP) Adopt-A-Physicist: <http://www.adoptaphysicist.org/>
 - Mentor students at Columbus Family Academy for the 2012-2013 Science Fair
- 2014
- American Institute of Physics (AIP) Adopt-A-Physicist: <http://www.adoptaphysicist.org/>
 - New Haven Science Fair: May 12-13, 2014, judge coordinator
- 2015
- Published “The Adventures of GEO: To the Moon!” comic as part of my outreach portion of my NSF CAREER grant. Also available online at www.adventuresofgeo.com
 - COMPRES Distinguished Lecturer for the 2015-2016 academic year <http://compres.us/events/lecture-series/distinguished-lecturer-series-2015-2016>
- 2016
- Volunteer science teacher/mentor, Alphabet Academy pre-K class, Hamden, CT, March 2016.
- 2017
- “Science Rocks” volunteer teacher, Ridge Hill School Rocks Afterschool Program K-2nd grade, Hamden, CT, April – May 2017.

Referee

- US National Science Foundation, Earth Science Directorate, Geophysics
- US National Science Foundation, Earth Science Directorate, Petrology & Geochemistry
- US National Science Foundation, Earth Science Directorate, CSEDI
- US Department of Energy
- Science
- Nature
- Nature Geoscience
- Nature Communications

- Proceedings of the National Academy of Sciences
- Science Advances
- Geophysical Research Letters
- Journal of Geophysical Research, Solid Earth
- Earth and Planetary Science Letters
- Physics of the Earth & Planetary Interiors
- Physics Chemistry of Minerals
- G cubed
- Geochimica Cosmochimica Acta
- AGU Monograph
- American Mineralogist
- Encyclopedia of Solid Earth Geophysics (Springer)
- Journal of Applied Physics
- Journal of Chemical Physics
- Journal of Superhard Materials

Publications (undergraduate advisee^{*}, graduate student advisee[^], and postdoc advisee[#])

Under Review

37. Z. Du[^], C. Jackson, N. Bennett, P. Driscoll, Y. Fei, J. Deng[^], K. K. M. Lee, E. Greenberg and V. B. Prakapenka, “Insufficient energy by MgO exsolution to power early geodynamo,” *under review at Science*, (2017).
36. K. Daviau[^] and K. K. M. Lee, “Dissociation of SiC at high pressures and temperatures,” *under review at Physical Review B*, (2017).
35. S. Arveson[^], B. Kiefer, Z. Liu, and K. K. M. Lee, “Thermally-induced coloration of KBr at high pressures,” *under review at Physical Review Letters*, (2017).
34. J. Deng[^] and K. K. M. Lee, “Viscosity jump in the lower mantle inferred from melting curves of (Mg, Fe)O ferropericlase,” *under review at Nature*, (2017).

Published

33. K. Daviau[^] and K. K. M. Lee, “Zinc-blende to rocksalt transition in SiC in a laser-heated diamond-anvil cell,” *Physical Review B*, **95**, 134108, doi: 10.1103/PhysRevB.95.134108 (2017).
32. J. Deng[^], Z. Du, L. R. Benedetti and K. K. M. Lee, “Wavelength-dependent absorption and temperature correction in the laser-heated diamond-anvil cell,” *Journal of Applied Physics*, 121(1), doi: 10.1063/1.4973344 (2017).
31. T. Gu[#], M. Li, C. McCammon and K. K. M. Lee, “Redox-induced lower mantle density contrast and effect on mantle structure and primitive oxygen,” *Nature Geoscience*, 9, doi:10.1038/ngeo2772 (2016).
30. K. Glazyrin[#], N. Miyajima, J. Smith and K. K. M. Lee, “Compression of a multiphase mantle assemblage: Effects of undesirable stress and stress annealing on the iron spin state crossover in ferropericlase,” *Journal of Geophysical Research: Solid Earth*, 121, doi:10.1002/2015JB012321 (2016).

29. Z. Du[^], T. Gu[#], V. Dobrosavljevic^{*}, S. T. Weir, S. Falabella and K. K. M. Lee, “Using stepped anvils to make even insulation layers in laser-heated diamond-anvil cell samples,” *Review of Scientific Instruments*, 86, 09513, doi:10.1063/1.4929667 (2015).
28. T. Duffy, N. Madhusudhan and K. K. M. Lee, “Mineralogy of Super-Earth Planets,” *Treatise of Geophysics*, volume 2, ed. G. Schubert, Elsevier, (2015).
27. Z. Du[^] and K. K. M. Lee, “High-pressure melting of MgO from (Mg,Fe)O solid solutions,” *Geophysical Research Letters*, 41, doi:10.1002/2014GL061954 (2014).
26. Y. Al-Khatatbeh^{^#} and K. K. M. Lee, “From superhard to hard: A review of transition metal dioxides TiO₂, ZrO₂ and HfO₂ hardness,” *Journal of Superhard Materials*, 36(4), 231-245, (2014).
25. I. Uts^{*}, K. Glazyrin[#] and K. K. M. Lee, “Effect of Laser Annealing of Common Solid Pressure Media on Pressure Gradients in a Diamond-Anvil Cell,” *Review of Scientific Instruments*, 84, 103904 (2013).
24. Z. Du[^], G. Amulele, L. R. Benedetti and K. K. M. Lee, “Mapping Temperatures and Temperature Gradients during Flash Heating in a Diamond-Anvil Cell,” *Review of Scientific Instruments*, 84, 075111 (2013).
23. Z. Du[^], L. Miyagi[#], G. Amulele and K. K. M. Lee, “External resistively-heated diamond-anvil cell to temperatures up to 1300 K,” *Review of Scientific Instruments*, 84, 024502 (2013).
22. N. Madhusudhan[#], K. K. M. Lee and O. Mousis, “Evidence for a Carbon-rich Interior in Super-Earth 55 Cancri e,” *Astrophysical Journal Letters*, 759: L1 (2012).
21. Y. Al-Khatatbeh[#], K. K. M. Lee and B. Kiefer, “Compressibility of nanocrystalline TiO₂ anatase,” *Journal of Physical Chemistry C*, 116, 21635 (2012).
20. Y. Wang[#] and K. K. M. Lee, “From Soft to Superhard: Fifty years of experiments on cold-compressed graphite,” *Journal of Superhard Materials*, 34(6), 25-39 (2012).
19. Y. Wang[#], J. E. Panzik[^], B. Kiefer and K. K. M. Lee, “Crystal structure of graphite under room-temperature compression and decompression,” *Scientific Reports*, 2, 520 (2012).
18. J. M. Montgomery[^], B. Kiefer and K. K. M. Lee, “Determining the phase transition boundary in highly-ordered pyrolytic graphite with time-dependent resistance measurements,” *Journal of Applied Physics*, 110, 047325 (2011).
17. L. Miyagi[#], W. Kanitpanyacharoen, P. Kaercher, K. K. M. Lee, H.-R. Wenk, “Slip Systems in MgSiO₃ Post-Perovskite: Implications for D” Anisotropy,” *Science*, 329, 1639 (2010).
16. Y. Al-Khatatbeh[^], K. K. M. Lee and B. Kiefer, “Phase diagram up to 105 GPa and mechanical strength of HfO₂,” *Physical Review B*, 82, 144106 (2010).
15. Y. Al-Khatatbeh[^], K. K. M. Lee and B. Kiefer, “Phase relations and hardness trends of ZrO₂ phases at high pressure,” *Physical Review B*, 81, 214102 (2010).
14. K. K. M. Lee, “The Enigma of D,” *Nature*, 462, 731 (2009).

13. K. K. M. Lee, G. Steinle-Neumann and S. Akber-Knutson, "Ab-initio predictions of potassium partitioning between Fe and Al-bearing MgSiO₃ perovskite and post-perovskite," *Physics of the Earth and Planetary Interiors*, 174, 247-253 (2009).
12. Y. Al-Khatatbeh, K. K. M. Lee and B. Kiefer, "High-pressure behavior of TiO₂ as determined by experiment and theory," *Physical Review B*, 79, 134114 (2009).
11. K. K. M. Lee and G. Steinle-Neumann, "Ab-initio study of the effects of pressure and chemistry on the electron-capture radioactive decay constants of ⁷Be, ²²Na and ⁴⁰K," *Earth & Planetary Science Letters*, 267, 628-636 (2008).
10. R. Jeanloz, P. M. Celliers, G. W. Collins, J. H. Eggert, K. K. M. Lee, R. S. McWilliams, S. Brygoo, P. Loubeyre, "Achieving novel states through shock-wave loading of pre-compressed samples," *Proceedings of the National Academy of Sciences*, doi/10.1073/pnas.0608170104 (2007).
9. K. K. M. Lee, L. R. Benedetti, R. Jeanloz, P. M. Celliers, J. H. Eggert, D. G. Hicks, S. J. Moon, A. Mackinnon, L. B. DaSilva, D. K. Bradley, W. Unites, G. W. Collins, E. Henry, M. Koenig, A. Benuzzi-Mounaix, J. Pasley, D. Neely, "Forming conducting water: Implications for magnetic field generation in Icy Giant planets," *Journal of Chemical Physics*, 125, 014701, doi: 10.1063/1.2207618 (2006).
8. K. K. M. Lee and G. Steinle-Neumann, "High-pressure alloying of iron and xenon: 'Missing' Xe in the Earth's Core," *Journal of Geophysical Research: Solid Earth*, 111, B02202, doi:10.1029/2005JB003781 (2006).
7. K. K. M. Lee, B. O'Neill, W. R. Panero, S.-H. Shim, L. R. Benedetti and R. Jeanloz, "Equations of state of the high-pressure phases of a natural peridotite and implications for the Earth's Lower Mantle," *Earth & Planetary Science Letters*, 223(3-4), 381-393, (2004).
6. K. K. M. Lee, B. O'Neill, R. Jeanloz, "Limits to resolution in composition and density in ultra high-pressure experiments on natural mantle-rock samples," *Physics of the Earth and Planetary Interiors*, 143-144, 241 (2004).
5. K. K. M. Lee, G. Steinle-Neumann and R. Jeanloz, "Ab-initio high-pressure alloying of iron and potassium: Implications for the Earth's Core," *Geophysical Research Letters*, 31(11), L11603 (2004).
4. P. Loubeyre, P. M. Celliers, D. G. Hicks, E. Henry, A. Dewaele, J. Pasley, J. H. Eggert, M. Koenig, F. Occelli, K. K. M. Lee, R. Jeanloz, D. Neely, A. Benuzzi-Mounaix, D. Bradley, M. Bastea, S. Moon and G.W. Collins, "Coupling static and dynamic compressions: First measurements in dense hydrogen," *High Pressure Research*, 24(1), 25 (2004).
3. P. M. Celliers, G. W. Collins, D. G. Hicks, M. Koenig, E. Henry, A. Benuzzi-Mounaix, D. Batani, D. K. Bradley, L. B. DaSilva, R. J. Wallace, S. J. Moon, J. H. Eggert, K. K. M. Lee, L. R. Benedetti, R. Jeanloz, I. Masclet, N. Dague, B. Marchet, M. Rabec Le Gloahec, Ch. Reverdin, J. Pasley, O. Willi, D. Neely and C. Danson, "Electronic conduction in shock-compressed water," *Physics of Plasmas*, 11(8), L41 (2004).
2. K. K. M. Lee and R. Jeanloz, "High-pressure alloying of potassium and iron: Radioactivity in the Earth's Core?" *Geophysical Research Letters*, 30(23), 2212 (2003).

1. K. K. M. Lee, L. R. Benedetti, A. Mackinnon, D. Hicks, S. J. Moon, P. Loubeyre, F. Occelli, A. Dewaele, G. W. Collins, and R. Jeanloz, "Taking thin diamonds to their limit: Coupling static-compression and laser-shock techniques to generate dense water," *AIP Conference Proceedings* 620, 1363 (2002).

Selected Seminars and Colloquia (since 2008)

"Pressure- and chemistry-dependent electron capture radioactive decay," Los Alamos Neutron Science Center, Los Alamos National Laboratory, April 9, 2008.

"Potassium in the deep Earth: Radioactivity under pressure," CIDER Workshop, Kavli Institute of Theoretical Physics, UC Santa Barbara, June 30, 2008.

"Interface between Experiment and Computation," Workshop on *ab initio* Calculations in Geosciences, Krakow, Poland, INVITED, October 23, 2008.

"Potassium in the deep Earth: Radioactivity under pressure," Department of Geological Sciences, Brown University, INVITED, October 30, 2008.

"Other Experimental Techniques for the Study of Phase Transitions," 2009 LANSCE Neutron School: INVITED, July 15, 2009.

"Laser Heating at Yale," COMPRES LHDAC Workshop, December 13, 2009.

"Figuring out the Earth from the inside out," Arthur Furst Award Luncheon, University of San Francisco, INVITED, April 21, 2010.

"Interface between experiments and computations," COMPRES Computational Workshop, University of Minnesota, Minneapolis, INVITED, August 30, 2010.

"Pressure- and chemistry-dependent electron capture radioactivity: Aren't decay constants, constant?," Society of Physics Students Lunch Seminar, Yale University, INVITED, September 29, 2010

"Phase assemblage, stability and density of pyroxenite at Lower-Mantle conditions," Fall AGU Meeting, December 13, 2010.

"Melting at High Pressures," Dynamic Phenomena Under Extremes Workshop, Jackson School of Geosciences, University of Texas, Austin, INVITED, January 26, 2011.

"Figuring out the Earth from the inside out," Colloquium, Department of Physics, Montana State University, INVITED, April 15, 2011.

"Measuring high temperatures (at high pressures)," Faculty Seminar, Department of Geology & Geophysics, Yale University, July 13, 2011.

"Phase assemblage, stability and density of pyroxenite at Lower Mantle conditions," Faculty Seminar, Department of Geology & Geophysics, Yale University, July 20, 2011.

"Figuring out the Earth from the inside out," Colloquium, Department of Geology & Geophysics, Yale University, November 16, 2011.

“Impact ejecta, lunar volcanism and glassy spheres”, Society of Physics Students Lunch Seminar, Yale University, INVITED, November 9, 2012

“Planetary diversity: Diamond planets to hot Jupiters,” Geophysics Brown Bag Seminar, Princeton University, INVITED, November 16, 2012.

“Comparative characterization of extrasolar super-Earths,” 2012 Fall AGU Meeting, San Francisco, CA, December 3, 2012.

“Planetary chemical diversity: Within and beyond the Solar System,” NIF Workshop, Lawrence Livermore National Laboratory, INVITED, December 7, 2012.

“Planetary diversity: Diamond planets to hot Jupiters,” Planetary Science Seminar, University of Hawaii, INVITED, December 12, 2012.

“Mapping temperatures, textures and composition in a laser-heated diamond-anvil cell: Melting iron at high pressures,” 2013 GSA Annual Meeting, INVITED, October 28, 2013.

“Mapping temperatures, textures and composition in a laser-heated diamond-anvil cell: Melting iron at high pressures,” 2013 Fall AGU Meeting, December 9, 2013.

“Sinking deep in to a C-rich planet: Using experiments to constrain planetary interiors,” YCAA Seminar, February 18, 2014, INVITED, Yale University.

“Melting in the Deep Earth,” Geophysical Laboratory seminar, Carnegie Institution of Washington, INVITED, March 10, 2014.

“Melting in the Deep Earth,” Marine Geology & Geophysics Lecture Series, Graduate School of Oceanography, University of Rhode Island, INVITED, April 11, 2014.

“Static to dynamic: Experimental constraints to melting in planetary interiors,” Z Meeting, Santa Fe, New Mexico, INVITED, July 22, 2015.

“The mantle-atmosphere connection: Detangling the oxidation of the atmosphere through mantle convection,” Department of Earth Sciences Research Seminar Series, University College London, INVITED, March 13, 2015.

“The mantle-atmosphere connection: Detangling the oxidation of the atmosphere through mantle convection,” Geochemistry Seminar, Yale University, April 10, 2015.

“Sinking deep in to a C-rich planet: Using experiments to constrain planetary interiors,” Comparative Tectonics and Geodynamics of Venus, Earth, and Rocky Exoplanets Meeting, USRA, Caltech, INVITED, May 5, 2015.

“Figuring out the Earth from the inside out,” COMPRES Distinguished Lecture in the School of Earth and Climate Sciences Colloquium Series, University of Maine, October 2, 2015.

“Planetary Diversity: From Diamond Planets to Hot Jupiters,” COMPRES Distinguished Lecture in the School of Earth and Climate Sciences, University of Maine, October 2, 2015.

“Figuring out the Earth from the inside out,” COMPRES Distinguished Lecture in the Department of

Geology Colloquium Series, University of Maryland, October 16, 2015.

“Effect of redox on lower mantle assemblages: Implications for mantle dynamics and atmosphere composition,” BiSEPPS lecture, Harvard University, INVITED, October 28, 2015.

“Figuring out the Earth from the inside out,” COMPRES Distinguished Lecture in the Department of Earth & Climate Sciences Colloquium Series, San Francisco State University, December 8, 2015.

“Planetary Diversity: From Diamond Planets to Hot Jupiters,” COMPRES Distinguished Lecture in the Department of Earth & Planetary Sciences Colloquium Series, UC Davis, December 9, 2015.

“The mantle-atmosphere connection: Oxidation of the atmosphere through mantle convection,” 2015 Fall AGU Meeting, December 17, 2015.

“Figuring out the Earth from the inside out,” COMPRES Distinguished Lecture in the Department of Physics Colloquium Series, Oakland University, March 10, 2016.

“Volcanoes!”, Alphabet Academy, Hamden, CT, March 23, 2016.

“Figuring out the Earth from the inside out,” guest lecture in short seminar course "Physical Sciences and Physical Chemistry" as part of the Yale-New Haven Teachers Institute, May 17, 2016.

“Redox-induced lower mantle density contrast and the effect on mantle structure and primitive oxygen,” CIDER seminar, July 18, 2016.

“Making Metallic Salts at Ultra-High Pressures and Temperatures,” YINQE Seminar, INVITED, September 30, 2016.

“Planetary Diversity: From Diamond Planets to Hot Jupiters,” G&G 010, guest lecture, November 29, 2016.

“Experiments at Extreme Conditions: Earth, Exoplanets, et cetera,” Women in Earth Science Symposium, Yale University, February 28, 2017.

“Planetary Diversity: From Diamond Planets to Hot Jupiters,” Department of Physics Colloquium, University of Connecticut, INVITED, April 7, 2017.

“Planetary Diversity: From Diamond Planets to Hot Jupiters,” Yale Young Global Scholars Program, Frontiers in Math & Science, Yale University, INVITED, June 22, 2017. (*upcoming*)

“Facilitating atmosphere oxidation through mantle convection,” 2017 Goldschmidt Conference, Paris, France, INVITED, August 18, 2017. (*upcoming*)

“Facilitating atmosphere oxidation through mantle convection,” 2017 Fall AGU Meeting, New Orleans, INVITED, December, 2017. (*upcoming*)