

Curriculum Vitae Lars Stixrude

Professor, Department of Earth Sciences, University College London
Gower Street, London, WC1E 6BT, UK

Education

B. S.: University of Delaware, 1985 (Geology and Physics)
Ph.D.: University of California at Berkeley, 1991 (Geophysics)

Positions Held

<i>Professor</i> , Dept. of Earth Sciences, University College London	2007-present
<i>Visiting Professor</i> , Dept. of Geological Sciences, University of Michigan	2007-present
<i>Visiting Miller Professor</i> , Miller Institute, UC Berkeley	2005
<i>Professor</i> , Dept. of Geological Sciences, University of Michigan	2003-2007
<i>Associate Professor</i> , Dept. of Geological Sciences, University of Michigan	2000-2003
<i>Assistant Professor</i> , Dept. of Geological Sciences, University of Michigan	1997-2000
<i>Visiting Investigator</i> , Carnegie Institution of Washington	1993-present
<i>Assistant Professor</i> , Earth & Atmospheric Sciences, Georgia Tech	1992-1997
<i>Humboldt Foundation Fellow</i> , Institut für Geophysik, Universität Göttingen	1994
<i>Postdoctoral Associate</i> , Carnegie Institution of Washington	1991-1992

Awards and Honors

Cozzarelli Prize, U. S. National Academy of Sciences	2009
Fellow, American Association for the Advancement of Science	2006
Visiting Miller Professorship, Miller Institute, UC Berkeley	2005
Fellow, Mineralogical Society of America	2002
James B. Macelwane Medal, American Geophysical Union	1998
Fellow, American Geophysical Union	1998
Sigma Xi Junior Faculty Award, Georgia Institute of Technology	1995
Alexander von Humboldt Foundation Fellowship	1993
Achievement Rewards for California Scientists (A.R.C.S. Foundation) Award	1989

Professional Society Membership

Mineralogical Society of America	1996-present
American Physical Society	1994-present
American Association for the Advancement of Science	1990-present
American Geophysical Union	1985-present

Professional Service

Committee of Visitors, U. S. Dept. of Energy Chemistry Program	2008
Editor, <i>Earth and Planetary Science Letters</i>	2008-present
Editorial Board, <i>Earth and Planetary Science Letters</i>	2007
Macelwane Medal Committee, American Geophysical Union (AGU)	2006-present
U. S. National Research Council Committee: Earth, Grand Research Questions	2006

Council on Earth Sciences, U. S. Department of Energy	2005-2008
Chair, Gordon Research Conference on the Interior of the Earth	2003-2005
Cooperative Institute for Deep Earth Research Steering Committee	2003-present
Lehmann Medal Committee, American Geophysical Union	2002-2006
Vice-Chair, Gordon Research Conference on the Interior of the Earth	2001-2003
U. S. National Science Foundation Committee of Visitors (EAR I&F)	2001
AGU Spring Meeting Program Committee	2000-2002
AGU Tectonophysics Executive Committee	2000-2002
Mineral and Rock Physics Committee, AGU	1999-2003
Planning Session for Fall Meeting of AGU	1999
U. S. National Science Foundation Panel: POWRE Program	1997
Associate Editor, <i>American Mineralogist</i>	1996-2000
Associate Editor, <i>Journal of Geophysical Research</i>	1994-1997
Co-organizer of more than 10 Special Sessions at AGU Meetings	1993-present

Community Outreach

Presentation to The Science Research Club of Ann Arbor: *Secrets from Earth's center: Physics of dense iron and the Earth's inner core*, Ann Arbor, 2001.
 Founder, UCL branch of the UK School Seismology Project, www.bgs.ac.uk/schoolSeismology, 2009.

Invited Lectures

Molten Earth: Magma in the Deep Mantle, University of Texas, Austin, TX, September, 2010.
Protons to Planets: First Principles Materials Simulation as a Window into Earth and Planetary Processes, University of Texas, Austin, TX, September, 2010.
Molten Earth: Magma in the Deep Mantle, Princeton University, Princeton, NJ, March, 2010.
Molten Earth: Magma in the Deep Mantle, University of Durham, Durham, UK, February, 2010.
Materials Physics in Giant Planetary Interiors, Dept. of Physics, University of Muenster, Muenster, Germany, February, 2010.
Mantle Heterogeneity: Origins and Observables, American Geophysical Union Fall Meeting, San Francisco, December 2009.
Thermodynamics of Silicate Liquids in the Deep Earth, American Geophysical Union Fall Meeting, San Francisco, December 2009.
Molten Earth: Magma in the Deep Mantle, Conference: "From Crust to Core", International Center for Theoretical Physics, Trieste, Italy, July, 2009.
Origins of Mantle Heterogeneity, Gordon Research Conference, Mt. Holyoke, MA, June, 2009.
Minerals to Mantles: The Planetary Mosaic, Bullard Laboratory, Cambridge, UK, May, 2009.
Protons to Planets: Advances and Perspectives in Computational Mineral Physics, Workshop on Long-Range Plan for High Pressure Earth Sciences, Temp, AZ, March, 2009.
Molten Earth: Silicate liquids in Planetary Interiors, University of Cambridge, Cambridge, UK, January, 2009.
Minerals to Mantles: The Planetary Mosaic, American Geophysical Union Fall Meeting, San Francisco, December, 2008.
Minerals to Mantles: The Planetary Mosaic, University College London, October, 2008.
Minerals to Mantles: The Planetary Mosaic, British Geophysical Association, Durham, UK, September, 2008.
Silicate liquids in Planetary Interiors, International Geological Congress, Oslo, August, 2008.

- Minerals to Mantles: The Planetary Mosaic*, International Geological Congress, Oslo, August, 2008.
- Minerals to Mantles: The Planetary Mosaic*, Rice University, Houston, February, 2008.
- Silicate liquids in Planetary Interiors*, University of Bayreuth, Bayreuth, Germany, September, 2007.
- Minerals to Mantles: The Planetary Mosaic*, Wilhelm and Else Heraeus Seminar, Munich, Germany, September, 2007.
- Silicate liquids in Planetary Interiors*, High Pressure Mineral Physics Symposium, Matsushima, Japan, May, 2007.
- Fluids in Planetary Interiors*, Wes Huntress Symposium, Carnegie Institution of Washington, Washington, DC, October, 2007.
- Is the Asthenosphere Partially Molten?*, Gordon Research Conference on Interior of the Earth, Mt. Holyoke, June, 2007.
- Silicate liquids in Planetary Interiors*, Case Western Reserve University, Cleveland, March, 2007.
- Silicate liquids in Planetary Interiors*, Dept. of Physics, University of Colorado, Boulder, March, 2007.
- Minerals to Mantles: The Planetary Mosaic*, c2c Marie Curie Research Training Network Kickoff Meeting, Bergamo, Italy, February, 2007.
- Mineral Physics: Modeling from the Atomic to the Global Scale*, Short course (series of 9 lectures), Dipartimento di Scienze della Terra, Università degli Studi di Milano, February 19-23, 2007.
- Subduction as a Source of Major Element Heterogeneity and Consequences for Earth Structure*, American Geophysical Union Fall Meeting, San Francisco, December, 2006.
- Physical properties of multi-phase mantle assemblages*, International Mineralogical Association Meeting, Kobe, Japan, July, 2006.
- Structure and Freezing of MgSiO₃ liquid in Earth's Interior*, International Mineralogical Association Meeting, Kobe, Japan, July, 2006.
- Magma In Earth's Deep Interior*, Dept. of Earth and Planetary Science, Johns Hopkins University, March, 2006.
- Fluids in Planetary Interiors*, Dept. of Physics, University of Michigan, February, 2006.
- Magma In Earth's Deep Interior*, Dept. of Earth, Atmospheric, and Planetary Science, Harvard University, February, 2006.
- From Minerals to Mantles: The Planetary Mosaic*, Dept. of Geological Sciences, Brown University, November, 2005.
- Silicate Liquids in Earth's Deep Interior*, Division of Geological and Planetary Sciences, California Institute of Technology, October, 2005.
- Magma In Earth's Deep Interior*, Dept. of Geophysical Sciences, University of Chicago, September, 2005.
- Ab initio molecular dynamics simulations of silicate liquids at high pressure*, Goldschmidt Conference, Moscow, Idaho, May, 2005.
- Magma in Earth's Deep Interior*, Lawrence Livermore National Laboratory, Livermore CA, May, 2005.
- Minerals and Melts in Earth's Interior*, Dept. of Physics, University of California at Berkeley, May, 2005.
- Minerals to Mantles*, Dept. of Earth and Planetary Science, University of California at Berkeley, February, 2005.
- Physics of Iron in the Earth's Interior*, Dept. of Geology, University of Illinois, November, 2003.

- Physics of Iron in the Earth's Interior*, Dept. of Geology and Geophysics, Yale University, February, 2002.
- Thermoelasticity of dense iron and Earth's inner core*, CECAM/Psi-k Workshop, Lyon, France, July, 2001.
- The origin of lateral heterogeneity in the mantle*, American Geophysical Union Spring Meeting, Boston, May, 2001.
- Elasticity of iron at high pressure and temperature - Implications for the earth's inner core*, Goldschmidt Conference, Hot Springs, Virginia, May, 2001.
- Talc under tension and compression: spinodal instability and structure at high pressure*, Goldschmidt Conference, Hot Springs, Virginia, May, 2001.
- First principles theory of mantle and core phases*, MSA Short Course on Molecular Modeling Theory: Applications in the Geosciences, Roanoke, Virginia, May, 2001.
- Origin of Lateral Heterogeneity in the Earth's Mantle*, Dept. of Geophysical Sciences, University of Chicago, April, 2001.
- Is there partial melt in the earth's upper mantle?*, American Geophysical Union Fall Meeting, San Francisco, December, 2000.
- Phase transitions and lateral heterogeneity in the mantle*, American Geophysical Union Spring Meeting, Washington, DC, May, 2000.
- Causes and consequences of lateral heterogeneity in the earth's mantle*, Institut de Physique du Globe de Paris, Paris, France, November, 1999.
- Physics and chemistry of the earth's inner core*, International Union of Geodesy and Geophysics General Assembly, Birmingham, United Kingdom, July, 1999.
- New probes of the dynamics of earth's deep mantle*, International Union of Geodesy and Geophysics General Assembly, Birmingham, United Kingdom, July, 1999.
- Unified description of phase equilibria and physical properties of mantle assemblages*, IRIS Workshop, Yosemite, California, July, 1999.
- New probes of the dynamics of earth's deep mantle*, Princeton University, Department of Geological and Geophysical Sciences, Princeton, New Jersey, April, 1999.
- Origin of anisotropy in the earth's inner core*, American Geophysical Union Fall Meeting, San Francisco, California, December, 1998.
- The earth's inner core: significance and role in geochemical and geophysical processes*, Studies of the Earth's Deep Interior, Tours, France, July, 1998.
- First principles investigation of the elasticity of earth materials at high pressure*, Materials Research Society Spring Meeting, Boston, Massachusetts, March, 1998.
- New Windows into the Earth's Deep Interior*, Department of Geophysical Sciences, University of Chicago, Chicago, Illinois, January, 1998.
- Anisotropy in the deep earth: Elastic constants of major constituents*, Fall Meeting of the American Geophysical Union, San Francisco, California, December, 1997.
- Elastic Anisotropy of Major Materials of the Earth's Mantle*, Geophysical Laboratory, Carnegie Institution of Washington, Washington, DC, April, 1997.
- First Principles Investigations of Earth's Inner Core*, Fall Meeting of the American Geophysical Union, San Francisco, California, December, 1996.
- Probing the Earth's Deep Interior: New Discoveries from the Heart of our Planet*, Dept. of Geological Sciences, University of Michigan, Ann Arbor, Michigan, June, 1996.
- Probing the Earth's Deep Interior: New Discoveries from the Heart of our Planet*, Dept. of Geological Sciences, University of Minnesota, Minneapolis, Minnesota, May, 1996.
- Physics of Iron in the Earth's inner core*, US-Japan Conference on High Pressure-Temperature Research: Properties of the Earth and Planetary Materials, Hawaii, U.S.A., Jan. 1996.

- From Electrons to Planets: Theoretical Study of Planetary Interiors*, Department of Physics, University of Toronto, Toronto, Canada, October, 1995.
- Mantle Composition and Structure of Mantle Discontinuities*, International Union of Geodesy and Geophysics Meeting, Boulder, Colorado, July, 1995.
- The Depths of Schrödinger's Equation: Investigation of Planetary Interiors from First Principles*, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, July, 1995.
- The Depths of Schrödinger's Equation*, Dept. of Earth and Planetary Science, Harvard University, Cambridge, Massachusetts, March, 1995.
- Density Functional Theory: New Windows into Planetary Interiors*, International Mineralogical Association, Pisa, Italy, July, 1994.
- First Principles Investigations of Earth Materials*, International Mineralogical Association, Pisa, Italy, July, 1994.
- The Depths of Schrödinger's Equation*, Fachbereich für Physik, Universität Göttingen, Göttingen, Germany, June, 1994.
- First Principles Study of the Electronic Band Structure of Iron at High Pressure*, 14th AIRAPT Conference on High Pressure Science and Technology, Colorado Springs, Colorado, July, 1993.
- Stability of Orthorhombic MgSiO₃ Perovskite in the Lower Mantle from First Principles*, Spring Meeting of the American Geophysical Union, Baltimore, Maryland, May, 1993.
- First Principles Investigation of the Band Structure and Physical Properties of Iron at Core Pressures*, Spring Meeting of the American Geophysical Union, Baltimore, Maryland, May, 1993.
- Composition of the transition zone and the lower mantle*, Fall Meeting of the American Geophysical Union, San Francisco, California, December, 1992.
- The Atomic Structure of Liquid, Crystalline and Vitreous Tectosilicates and their Response to Pressure*, Geophysical Laboratory, Carnegie Institute of Washington, Washington, DC, January, 1991.
- Melting of MgSiO₃ Perovskite: Bounds on the Temperature in the Deep Earth*, Gordon Research Conference on Research at High Pressure, Meridan, New Hampshire, June, 1990.
- Rings, Topology and the Density of Tectosilicates: Implications for the Compression of Silicate Liquids*, Department of Geological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, March, 1990.
- Compression Mechanisms in Liquid SiO₂*, High Pressure Physics Group, Lawrence Livermore National Laboratory, Livermore, California, May, 1988.

Research Grants

<i>Date</i>	<i>Source</i>	<i>Amount (FEC)</i>	<i>Responsibility (%)</i>	<i>Duration</i>
2/10	NERC	£512,906	20	3 years
The thermal conductivity of lower mantle minerals				
2/09	NERC	£363,567	100	3 years
Magma generation and transport throughout the Earth's mantle: ab initio simulation of silicate melts				
11/06	NSF	\$360,000	100	3 years
Collaborative Research: Quantum Mechanical Modeling of Major Mantle Materials				
4/05	NSF	\$96,390	50	3 years
CSEDI Collaborative Research: 3D Temperature and Composition Structure of the Upper Mantle Using Seismological and Mineral Physics Constraints				

8/04	NSF	\$197,967	100	3 years
Collaborative Research: First Principles Investigation Of Silicate Liquids At Mantle Conditions				
11/02	NSF	\$381,541	100	4 years
Collaborative research: Quantum Mechanical Modeling of Major Mantle Materials				
8/02	NSF	\$22,650	100	5 years
Collaborative research: Elasticity Grand Challenge of the COMPRES Initiative				
12/99	NSF	\$279,398	100	4 years
Collaborative research: Theoretical Investigation of Core Materials				
7/99	NSF	\$205,402	100	3 years
In situ Characterization of Hydrous Silicate Melts				
7/99	NSF	\$124,749	100	3 years
Collaborative research: Quantum Mechanical Modeling of Major Mantle Materials				
7/97	NSF	\$45,238	100	3 years
Collaborative research: Redox state of the earth's interior				
7/97	NSF	\$79,725	100	2 years
Collaborative research: Theoretical Investigation of Core Materials from First Principles				
7/96	NSF	\$119,033	100	3 years
Collaborative research: Quantum Mechanical Modeling of Major Mantle Materials				
7/93	NSF	\$187,214	100	3 years
Collaborative research: Theoretical Investigation of Core Materials from First Principles				

Summary of Courses Taught

<i>Course #</i>	<i>Title</i>	<i>Format</i>	<i>Type</i>	<i>Credits</i>
<i>University College London</i>				
GEOL 3037	Deep Earth Modeling	Lecture/Lab	Year 3	1.0 unit
<i>University of Michigan</i>				
GS 113	Planets and Moons	Lecture	Non-Majors	1
GS 115	Geologic Time	Lecture	Non-Majors	1
GS 157	History of Earth Science	Seminar	Freshman	3
GS 201	Introduction to Geography	Lecture/Lab	Non-Majors	4
GS 232	Earth Materials	Lecture/Lab	Majors	4
GS 426	Mineral Physics	Lecture	Majors/Grad	3
GS 525	Tectonophysics (team taught)	Lecture	Majors/Grad	4
GS 534	Advanced Thermodynamics Seminar		Grad	1
<i>Georgia Tech</i>				
EAS 1101	Intro. to Earth & Atmo. Sci.	Lecture	Non-Majors	3
EAS 3400	Mineralogy	Lecture/Lab	Majors	4
EAS 3513	Geophysics	Lecture	Majors	3
EAS 6052	Geomagnetism	Lecture	Grad	3

Student and Post-Doctoral Supervision

Name	Date*	Responsibility	Current Position
<i>Masters Students</i>			
Boris Kiefer	1998	100%	Assistant Professor, New Mexico State University
Gerd Steinle-Neumann	1998	100%	Staff Scientist, Bayerisches Geointitut
Jianlong Chen	2002	100%	Ph.D. student, University of Texas
Sun Ni	2006	100%	Operations Analyst, HSBC Bank, Chicago
<i>Doctoral Students</i>			
Bijaya Karki (U. Edinburgh)	1997	30%	Associate Professor, Louisiana State University
Gerd Steinle-Neumann	2001	100%	Staff Scientist, Bayerisches Geointitut
Boris Kiefer	2002	100%	Associate Professor, New Mexico State University
M. Kathleen Davis	2005	100%	Geoscientist, Shell Exploration & Production
Sun Ni	2008	100%	Operations Analyst, HSBC, Chicago
Nico de Koker	2008	100%	Post-Doc, University of Bayreuth
Kirsty Nicholson	2012	50 %	Ph.D. student, University College London
Adam Martin	2013	100 %	Ph.D. student, University College London

Post-Doctoral Scholars

Evgeny Wasserman	1994-1996	100%	Research Scientist, Battelle Pacific Northwest Labs
Donald Snyder	1997-2000	100%	Senior Scientist, Rand Corporation
Bijaya Karki	1997-2002	50%	Associate Professor, Louisiana State University
Patrizia Fumagalli	2000-2001	100%	Assistant Professor, Univ. Milan, Italy
Wendy Panero	2001-2004	50%	Assistant Professor, Ohio State University
Mainak Mookherjee	2003-2005	100%	Post-Doc, University of Bayreuth
Stephen Stackhouse	2006-2008	100%	Post-Doc, University of California at Berkeley
David Muñoz Ramo	2009-present	100%	Post-Doc, University College London

*Date of degree or expected date of degree for students, dates of supervision for post-docs.

Publications

96. Stackhouse, S., L. Stixrude, and B. B. Karki, Thermal conductivity of periclase (MgO) from first principles, *Physical Review Letters*, *104*, 208501, 2010.
95. Karki, B. B. and L. Stixrude, First principles study of enhancement of transport properties of silica melt by water, *Physical Review Letters*, *104*, 215901, 2010.
94. Karki, B. B. and L. Stixrude, Viscosity of MgSiO₃ liquid at mantle conditions – implications for early magma ocean, *Science*, *328*, 740-742, 2010.
93. de Koker, N. and L. Stixrude, Theoretical computation of diffusion in minerals and melts, *Reviews in Mineralogy and Geochemistry*, in press, 2010.
92. Stixrude, L. and C. Lithgow-Bertelloni, Thermodynamics of the Earth's mantle, *Reviews in Mineralogy and Geochemistry*, *71*, 465-483, 2010.
91. Stackhouse, S. and L. Stixrude, Theoretical methods for calculating the lattice thermal conductivity of minerals, *Reviews in Mineralogy and Geochemistry*, *71*, 253-270, 2010.
90. Stackhouse, S., L. Stixrude, and B. B. Karki, Determination of the high pressure properties of fayalite from first principles calculations, *Earth and Planetary Science Letters*, *289*, 449-456, 2010.

89. Karki, B. B., D. Bhattarai, M. Mookherjee, and L. Stixrude, Visualization-based analysis of structural and dynamical properties of simulations hydrous silicate melt, *Physics and Chemistry of Minerals*, *37*, 103-117, 2010.
88. Cammarano, F., B. Romanowicz, L. Stixrude, C. Lithgow-Bertelloni, and W. Xu, Inferring the thermochemical structure of the upper mantle from seismic data, *Geophysical Journal International*, *179*, 1169-1185, doi: 10.1111/j.1365-246X.2009.04338.x, 2009.
87. Capitani, G. C., L. Stixrude, and M. Mellini, First principles energetics and structural relaxation of antigorite, *American Mineralogist*, *94*, 1271-1278, doi: 10.2138/am.2009.3218, 2009.
86. De Koker, N. and L. Stixrude, Self-consistent thermodynamic description of silicate liquids, with application to the shock melting of MgO periclase and MgSiO₃ perovskite, *Geophysical Journal International*, *178*, 162-179, doi: 10.1111/j.1365-246X.2009.04142.x, 2009. *Erratum Ibid.*, doi: 10.1111/j.1365-246X.2010.04739.x
85. Mookherjee, M. and L. Stixrude, Structure and elasticity of serpentine at high pressure, *Earth and Planetary Science Letters*, *279*, 11-19, doi: 10.1016/j.epsl.2008.12.018, 2009.
84. Stixrude, L., N. de Koker, N. Sun, M. Mookherjee, B. B. Karki, Thermodynamics of silicate liquids in the deep Earth, *Earth and Planetary Science Letters*, *278*, 226-232, doi: 10.1016/j.epsl.2008.12.006, 2009.
83. Ritsema, J., P. Cupillard, B. Tauzin, W. Xu, L. Stixrude, and C. Lithgow-Bertelloni, Joint mineral physics and seismic modeling of upper mantle temperature, *Geology*, *37*, 363-366, 2009.
82. Ritsema, J., W. Xu, L. Stixrude, and C. Lithgow-Bertelloni, Estimates of the transition zone temperature in a mechanically mixed upper mantle, *Earth and Planetary Science Letters*, *277*, 244-252, doi: 10.1016/j.epsl.2008.10.024, 2009.
81. Xu, W., C. Lithgow-Bertelloni, L. Stixrude, and J. Ritsema, The effect of bulk composition and temperature on mantle seismic structure, *Earth and Planetary Science Letters*, *275*, 70-79 doi:10.1016/j.epsl.2008.08.012, 2008.
80. Stixrude, L. and R. Jeanloz, Fluid helium at conditions of giant planetary interiors, *Proceedings of the National Academy of Sciences of the United States of America*, *105*, 11071-11075, 2008.
79. Mookherjee, M., L. Stixrude, and B. Karki, Hydrous silicate melt at high pressure, *Nature*, *452*, 983-986, doi: 10.1038/nature06918, 2008.
78. de Koker, N. P., L. Stixrude, and B. B. Karki, Thermodynamics, structure, dynamics, and freezing of Mg₂SiO₄ liquid at high pressure, *Geochimica et Cosmochimica Acta*, *72*, 1427-1441, doi:10.1016/j.gca.2007.12.019, 2008.
77. Courtier, A. M., M. G. Jackson, J. F. Lawrence, Z. Wang, C. T. A. Lee, R. Halama, J. M. Warren, R. Workman, W. Xu, M. M. Hirschmann, A. M. Larson, S. R. Hart, C. Lithgow-Bertelloni, L. Stixrude, and W. P. Chen, Correlation of seismic and petrologic thermometers argues for deep thermal anomalies, *Earth and Planetary Science Letters*, *264*, 308-316, doi: 10.1016/j.epsl.2007.10.003, 2007.
76. Stixrude, L., Properties of rocks and minerals - Seismic properties of rocks and minerals, and the structure of the Earth, in *Treatise on Geophysics, Volume 2: Mineral Physics*, G. Schubert, ed., pp. 7-32, Oxford: Elsevier Ltd., doi: 10.1016/B978-044452748-6/00042-0, 2007.
75. Stixrude, L., and R. Jeanloz, Constraints on seismic models from other disciplines - Constraints from mineral physics on seismological models, in *Treatise on Geophysics, Volume 1: Seismology and the Structure of the Earth*, G. Schubert, ed., pp. 775-803, Oxford: Elsevier Ltd., doi: 10.1016/B978-044452748-6/00026-2, 2007.
74. Stixrude, L. and C. Lithgow-Bertelloni, Influence of phase transformations on lateral heterogeneity and dynamics in Earth's mantle, *Earth and Planetary Science Letters*, *263*, 45-

- 55, doi: 10.1016/j.epsl.2007.08.027, 2007.
73. Karki, B. B., D. Bhattarai, and L. Stixrude, First principles simulations of silica liquid: structural and dynamical behavior at high pressure, *Physical Review B*, *76*, 104205, 2007.
72. Fumagalli, P. and L. Stixrude, The 10 Å phase at high pressure by first principles calculations and implications for the petrology of subduction zones, *Earth and Planetary Science Letters*, *260*, 212-226, doi: 10.1016/j.epsl.2007.05.030, 2007.
71. Aronson, M. C., L. Stixrude, M. K. Davis, W. Gannon, and K. Ahilan, Magnetic excitations and heat capacity of fayalite Fe_2SiO_4 , *American Mineralogist*, *92*, 481-490, doi: 10.2138/am.2007.2305, 2007.
70. Stixrude, L., C. Lithgow-Bertelloni, B. Kiefer, and P. Fumagalli, Phase stability and shear softening in CaSiO_3 perovskite at high pressure, *Physical Review B*, *75*, 024108, doi: 10.1103/PhysRevB.75.024108, 2007.
69. Modak, P., A. K. Verma, R. S. Rao, B. K. Godwal, L. Stixrude, and R. Jeanloz, Stability of hcp phase and temperature variation of axial ratio of iron near Earth-core conditions, *Journal of Physics: Condensed Matter*, *19*, 016208, 2007.
68. Panero, W. R., S. Akber-Knutson, and L. Stixrude, Al_2O_3 incorporation in MgSiO_3 perovskite and ilmenite, *Earth and Planetary Science Letters*, *252*, 152-161, 2006.
67. Bhattarai, D., Karki, B. B., and L. Stixrude, Space-time multiresolution atomistic visualization of MgO and MgSiO_3 liquid data, *Visual Geosciences*, *11*, 1-11, doi: 10.1007/s10069-006-0003-y, 2006.
66. Karki, B. B., Bhattarai, D., and L. Stixrude, A first principles computational framework for liquid mineral systems, *CMC-Computers, Materials, & Continua*, *3*, 107-118, 2006.
65. Karki, B. B., Bhattarai, D., and L. Stixrude, First principles calculations of the structural, dynamic, and electronic properties of liquid MgO , *Physical Review B*, *73*, 174208, 2006.
64. Mookherjee, M. and L. Stixrude, High pressure proton disorder in brucite, *American Mineralogist*, *91*, 127-134, 2006.
63. Stixrude, L. and B. Karki, Structure and freezing of MgSiO_3 liquid in Earth's lower mantle, *Science*, *310*, 297-299, 2005.
62. Stixrude, L. and C. Lithgow-Bertelloni, Thermodynamics of mantle minerals: 1. Physical properties, *Geophysical Journal International*, *162*, 610-632, doi: 10.1111/j.1365-246X.2005.02642.x, 2005.
61. De Carmejane, O., M. D. Morris, M. K. Davis, L. Stixrude, M. Tecklenburg, R. M. Rajachar, and D. H. Kohn, Bone chemical structure response to mechanical stress studied by high pressure Raman spectroscopy, *Calcified Tissue International*, *76*, 207-213, 2005.
60. Stixrude, L. and C. Lithgow-Bertelloni, Mineralogy and elasticity of the oceanic upper mantle: Origin of the low velocity zone, *Journal of Geophysical Research*, *110*, B03204, doi: 10.1029/2004JB002965, 2005.
59. Panero, W. R., L. Stixrude, and R. C. Ewing, First principles calculations of defect formation energies in the $\text{Y}_2(\text{Ti},\text{Sn},\text{Zr})_2\text{O}_7$ pyrochlore system, *Physical Review B*, *70*, 054110:1-11, 2004.
58. Wentzcovitch, R. M., L. Stixrude, B. B. Karki, and B. Kiefer, Akimotoite to perovskite phase transition in MgSiO_3 , *Geophysical Research Letters*, *31*, L10611, 2004.
57. Panero, W. R. and L. Stixrude, Hydrogen incorporation in stishovite at high pressure and symmetric hydrogen bonding in $\delta\text{-AlOOH}$, *Earth and Planetary Science Letters*, *221*, 421-431, 2004.
56. Steinle-Neumann, G., R. E. Cohen, and L. Stixrude, Magnetism in iron as a function of pressure, *Journal of Physics: Condensed Matter*, *16*, S1109-S1119, 2004.
55. Steinle-Neumann, G., L. Stixrude, R. E. Cohen, Magnetism in dense hexagonal iron, *Proceedings of the National Academy of Sciences of the United States of America*, *101*, 33-36, 2004.

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