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EDUCATION

University of Chicago, Chicago, IL
Ph.D. in Geophysical Sciences, Summer 2005.
Thesis: *Geophysics and Geochemistry of Iron in the Earth's Core*
McCormick Fellowship.

Massachusetts Institute of Technology, Cambridge, MA
Ph.D. candidate in Materials Science and Engineering, Fall 1998-Winter 2001.
Charles Stark Draper Fellowship.

Massachusetts Institute of Technology, Cambridge, MA
Bachelor of Science in Materials Science and Engineering, Spring 1998.
Graduated Phi Beta Kappa.
Member of Tau Beta Pi, a National Engineering Honor Society.
Member of Alpha Sigma Mu, a National Materials Science Honor Society.

PROFESSIONAL EXPERIENCE

Geological & Environmental Sciences, Stanford University and Photon Science, SLAC National Accelerator Laboratory, Stanford, CA
2007-Current. Assistant Professor.

Geophysics, Stanford University, Stanford, CA
2009-Current. Assistant Professor by courtesy.

Materials Science & Engineering, Zhejiang University, Hangzhou, China
2009-Current. Adjunct Professor.

Los Alamos Neutron Scattering Center and Hydrology, Geochemistry, and Geology Group, Los Alamos National Laboratory, Los Alamos, NM
2005-2007. J. Robert Oppenheimer Postdoctoral Fellow.

Geophysical Sciences, University of Chicago, Chicago, IL
2001-2005. Graduate research assistant.

Geophysical Laboratory, Carnegie Institution of Washington, Washington, D.C.
Winter 2001-Summer 2005. Predoctoral fellow.

PUBLICATIONS

Total citations: 2949

h-index: 26

[*] *Citations for top ten cited articles noted in bold.*

[*] *Student and postdoctoral advisees underlined.*

103. Z. Zeng, N. Liu, Q. F. Zeng, Q. Zhu, A. R. Oganov, Q. S. Zeng, Y. Cui, **W. L. Mao**, A novel phase in the Li-Si system, in preparation.

102. E. Boulard, D. Pan, G. Galli, Z.X. Liu, and **W. L. Mao**, Tetrahedrally coordinated carbonates in Earth's lower mantle, in preparation.

101. Z. Zhao, Q. S. Zeng, H. Zhang, S. Wang, S. Hirai, Z. Zeng, and **W. L. Mao**, Structural transition and amorphization in compressed α-Sb_2O_3, *Phys. Rev. B*, submitted.

100. F. Yang, Y. Lin, J. E. P. Dahl, R. M. K. Carlson, **W. L. Mao**, Deviatoric Stress-Induced Phase Transitions in Diamantane, *J. Chem. Phys.* submitted.

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98. A.E. Gleason, C. Bolme, H.J. Lee, B. Nagler, E. Galtier, D. Milathianaki, J. Eggert, J. Hawreliak, D. Fratanduono, R. Kraus, G. Collins, W. Yang, and **W.L. Mao**, Ultrafast crystallization and grain growth in shock compressed SiO_2, *Nature* in review.

97. S. Wang, M. Baldini, M. Shapiro, S. Riggs, A. F. Kemper, Z. Zhao, Z. Liu, T. P. Devereaux, T. Geballe, I. R. Fisher, **W. L. Mao**, Bandgap closure and reopening in $CsAuI_3$ at high pressure, *Phys. Rev. B* **89**, 245109, 2014.

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95. Z. Zhao, S. Wang, A. Oganov, P. Chen, Z. Liu, **W. L. Mao,** Tuning the crystal structure and electronic states of Ag_2Se: Structural transitions and metallization under pressure, *Phys. Rev. B* **89**, 180102(R), 2014.

94. L. Zhang, Y. Meng, W. Yang, L. Wang, **W. L. Mao** , Q. Zeng, J. S. Jeong, A. J. Wagner, K. A. Mkhoyan, W. Liu, R. Xu, and H-k. Mao, Disproportionation of $(Mg,Fe)SiO_3$ perovskite in Earth's deep lower mantle, *Science* **344**, 877-882, 2014.

93. Z. Zhao, S. Wang, T. F. Qi, Q. S. Zeng, S. Hirai, P. P. Kong, L. Li, C. Park, S. J. Yuan, C. Q. Jin, G. Cao, **W. L. Mao**, Pressure induced second-order structural and electronic transition in $Sr_3Ir_2O_7$, *J. Phys.: Condens. Matter* **26**, 215402, 2014.

92. F. Yang, Y. Lin, J. E. P. Dahl, R. M. K. Carlson, **W. L. Mao**, High pressure Raman and X-ray diffraction study of [121] Tetramantane, *J. Phys. Chem. C*, doi:10.1021/jp500431, 2014.

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84. G. A. Farfan, E. Boulard, S. Wang, and **W. L. Mao**, Bonding and electronic changes in rhodochrosite at high pressure, *Am. Mineral*. **98**, 1817-1823, 2013.

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*12. **W. L. Mao**, Y. Meng, G. Shen, V. B. Prakapenka, A. J. Campbell, D. L. Heinz, J. Shu, R. Caracas, R. Cohen, Y. Fei, R. Hemley, and H-k. Mao, Iron-rich silicates in the Earth's D" Layer, *Proc. Natl. Acad. Sci.* **102**, 9751-9753, 2005. **63 citations**

11. **W. L. Mao**, V. V. Struzhkin, H-k. Mao, and R. J. Hemley, Pressure-temperature stability of the van der Waals compound $(H_2)_4CH_4$, *Chem. Phys. Lett.* **402**, 66-70, 2005.

*10. **W. L. Mao**, G. Shen, V. B. Prakapenka, Y. Meng, A. J. Campbell, D. L. Heinz, J. Shu, R. Hemley, and H-k. Mao, Ferromagnesian postperovskite silicates in the D" layer of the Earth, *Proc. Nat. Acad. Sci*. **101**, 15867-15869, 2004b. **131 citations**

*9. K. Lokshin, Y. Zhao, D. He, **W. L. Mao**, H-k. Mao, R. J. Hemley, M. V. Lobanov, and M. Greenblatt, Structure and dynamics of hydrogen molecules in the novel clathrate hydrate by high pressure neutron diffraction, *Phys. Rev. Lett.* **93**, 125503, 2004. **222 citations**

8. **W. L. Mao**, W. Sturhahn, D. L. Heinz, H-k. Mao, J. Shu, and R. J. Hemley, Nuclear resonant x-ray scattering of iron hydride at high pressure, *Geophys. Res. Lett.* **31**, doi:10.1029/2004GL02054, 2004.

*7. **W. L. Mao** and H-k. Mao, Hydrogen storage in molecular compounds, *Proc. Natl. Acad. Sci.* **101**, 708-710, 2004. **232 citations**

6. V. V. Struzhkin, H-k. Mao, **W. L. Mao**, R. J. Hemley, W. Sturhahn, E. E. Alp, C. L'Abbe, M. Y. Hu, and D. Errandonea, Phonon densities of states and elastic properties of Fe-based materials under compression, *Hyperfine Interactions* **153**, 3-15, 2004.

*5. **W. L. Mao**, H-k. Mao, P. J. Eng, T. P. Trainor, M. Newville, C-c. Kao, D. L. Heinz, J. Shu, Y. Meng, and R. Hemley, Bonding changes in compressed superhard graphite, *Science* **302**, 425-427, 2003. **272 citations**

4. **W. L. Mao**, H-k. Mao, C-s. Yan, J. Shu, J. Hu, and R. J. Hemley, Generation of ultrahigh pressures using single-crystal chemical-vapor-deposition diamond anvils, *Appl. Phys. Lett.* **83**, 5190-5192, 2003.

3. **W. L. Mao**, J. Shu, J. Hu, R. J. Hemley, and H-k. Mao, Displacive transition in magnesiowüstite, *J. Phys.: Condens. Matter* **14**, 11349-11354, 2002.

*2. **W. L. Mao**, H-k. Mao, A. F. Goncharov, V. V. Struzhkin, Q. Guo, J. Hu, J. Shu, R. J. Hemley, M. Somayazulu, and Y. Zhao, Hydrogen clusters in clathrate hydrate, *Science* **297**, 2247-2249, 2002. **528 citations**

1. J-f. Lin, D. L. Heinz, A. J. Campbell, J. M. Devine, **W. L. Mao**, and G. Shen, Iron-nickel alloy in the Earth's Core, *Geophys. Res. Lett.* **29**, doi: 10.1029/2002GL015089, 2002.

INVITED TALKS

TEDxYouth talk, Summit Preparatory High School, Redwood City, CA, June 2014.

MSA Award Lecture, 2013 Fall GSA Meeting, Denver, CO, October 2013.

Research Highlight, SSRL Scientific Advisory Committee meeting, Menlo Park, CA, October 2013.

6th Asian Conference on High Pressure Research, Beijing, China, August 2012.

Materials Science and Engineering Departmental Seminar, Stanford University, Stanford, CA, February 2012.

High pressure studies using synchrotron radiation: present and future, Soleil Synchrotron, Paris, France, January 2012.

ALS/CXRO Seminar Series, Lawrence Berkeley National Laboratory, Berkeley, CA, November 2011.

Smith Lecture Series, Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI, September 2011.

Chinese Academy of Engineering Physics, Mianyang, China, September 2011.

Research Highlight, Department of Energy Review of Advanced Photon Source, Argonne, IL, September 2011.

Deep Carbon Observatory, Energy, Environment & Climate Workshop, Houston, TX, July 2010.

12th National School on Neutron and X-ray Scattering, Argonne National Laboratory, Argonne, IL, June 2010.

Division of Geological & Planetary Sciences Seminar Series, California Institute of Technology, Pasadena, CA, May 2010.

Berkeley Seismological Laboratory Seminar, University of California, Berkeley, CA, October 2009.

Materials Science & Engineering Department, Zhejian University, Hangzhou, China, September 2009.

Department of Geosciences Colloquium, Stony Brook University, Stony Brook, NY, September 2009.

Solid State Seminar, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY, September 2009.

SSUN Energy Summer School, Stanford University and SLAC National Accelerator Laboratory, August 2009.

11th National School on Neutron and X-ray Scattering, Argonne National Laboratory, Argonne, IL, June 2009.

Department of Geology, University of California, Davis, CA, April 2009.

Department of Earth and Environmental Sciences, University of Illinois at Chicago, Chicago, IL, March 2009.

Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA, March 2009.

Geophysics Seminar, Department of Earth and Environmental Sciences, Ludwig-Maximilians University, Munich, Germany, November 2008.

Munchner Physik Kolloquium, Joint between Max-Planck Institute for Physics, Technical University of Munich, and Ludwig-Maximilians University, Munich, Germany, November 2008.

Transport Properties of the Lower Mantle Workshop, Yunishigawa, Japan, October 2008.

4th Asian Conference on High Pressure Research, Seoul, Korea, October 2008.

School of Earth and Environmental Sciences, Seoul National University, Seoul, Korea, October 2008.

10th National School on Neutron and X-ray Scattering, Argonne National Laboratory, Argonne, IL, October 2008.

Future of High Pressure Research Workshop, NSLS-II, Brookhaven National Laboratory, Upton, NY, May 2008.

High Resolution Inelastic X-ray Scattering Workshop, Advanced Photon Source, Argonne National Laboratory, Argonne, IL, May 2008.

Sloan Deep Carbon Workshop, Geophysical Laboratory, Washington, DC, May 2008.

American Conference on Neutron Scattering, Santa Fe, NM, May 2008.

Geological Annual Congress, Tainan, Taiwan, May 2008.

Central Geological Survey, Taipei, Taiwan, May 2008.

X-ray Absorption Spectroscopy Workshop, NSLS-II, Brookhaven National Laboratory, Upton, NY, January 2008.

Department of Physics, Chinese University of Hong Kong, China, November 2007.

Department of Earth and Planetary Science, University of California, Berkeley, CA, November 2007.

Sixth Annual Conference on Transatlantic Collaboration in Research, Innovation, and Higher Education, Carnegie Institution of Washington, Washington, DC, October 2007.

Department of Earth and Space Science, University of Washington, Seattle, WA, October 2007.

Department of Earth and Planetary Materials, Tohoku University, Sendai, Japan, September 2007.

5th International Workshop on Water Dynamics, Sendai, Japan, September 2007.

VLab Workshop, University of Minnesota, Minneapolis, MN, August 2007.

LANSCE Neutron School, Los Alamos, NM, July 2007.

6th International Conference on Inelastic X-ray Scattering, Awaji, Japan, May 2007.

Studies of Materials at Extreme Conditions Meeting, Miami Beach, FL, April 2007.

Department of Geophysics, Stanford University, Stanford, CA, January 2007.

Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, NY, November 2006.

Department of Geological Sciences, Cornell University, Ithaca, NY, November 2006.

Department of Physics Colloquium, New Mexico State, Las Cruces, NM, October 2006.

Department of Geology Colloquium, University of Illinois, Urbana-Champaign, IL, October 2006.

Bayerisches Geoinstitut, Bayreuth, Germany, September 2006.

Workshop on Density, Temperature and Elastic Constants of Earth's Mantle, Bayerische Akademie der Wissenschaften, Munich, Germany, September 2006.

16th Annual V. M. Goldschmidt Conference, Melbourne, Australia, August 2006.

Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan, July 2006.

Future Frontiers in High-Pressure Science and ERL X-ray Beams, Ithaca, NY, June 2006.

Materials Science and Engineering Departmental Seminar, Stanford University, Stanford, CA, May 2006.

Workshop on Synergy of 21st Century High-Pressure Science and Technology, Argonne, IL, May 2006.

Stanford Synchrotron Radiation Laboratory, Stanford, CA, April 2006.

Frontiers in Petrology Seminar Series, Stanford University, Stanford, CA, April 2006.

Earth and Space Sciences Colloquium, UCLA, Los Angeles, CA, April 2006.

SNAP Meeting, Oakridge, TN, April 2006.

Lujan Center Seminar Series, Los Alamos Neutron Science Center, Los Alamos, NM, April 2006.

Department of Geology and Geophysics Seminar Series, University of Minnesota, Minneapolis, MN, March 2006.

ESRF High Pressure and Synchrotron Workshop, Grenoble, France, February 2006.

International workshop on the post-perovskite phase transition in the earth's deep mantle, Tokyo, Japan, October 2005.

IUCr Meeting, Florence, Italy, August 2005.

Hydrogen-Metal Systems Gordon Research Conference, Maine, July 2005.

Aminoff Symposium, Sweden, June 2005.

Nuclear Resonant Scattering on Earth Materials using Synchrotron Radiation Meeting, Argonne, IL, February 2005.

Solid Earth Lunch Seminar, Princeton University, Princeton, NJ, May 2005.

High Pressure Group Meeting, Argonne, IL, November 2004.

Division of Geological & Planetary Sciences Seminar Series, California Institute of Technology, Pasadena, CA, November 2004.

Mineral Physics Group Seminar Series, California Institute of Technology, Pasadena, CA, November 2004.

IUCr High Pressure Workshop, Saskatchewan, Canada, August 2004.

APS User Science Seminar, Argonne, IL, August 2004.

APS Users Meeting, IXS Workshop, Argonne, IL, May 2004.

LANSCE User Group Meeting, Los Alamos Neutron Science Center, Los Alamos, NM, October 2003.

LANL High-Pressure Seminar, Los Alamos, NM, November 2002.

High Pressure Group Meeting, Argonne, IL, October 2002.

10th International Conference on the Physics and Chemistry of Ice, Newfoundland, Canada, July 2002.

AIRAPT-18, Beijing, China, July 2001.

AWARDS

Mineralogical Society of America Award, 2013.

NSF CAREER Award, 2011-2016.

Frederick E. Terman Fellowship, 2009-2012.

COMPRES Distinguished Lecturer, 2008-2009.

Mineral and Rock Physics Group Student Research Award, Fall AGU Meeting, San Francisco, CA, December 2006.

Rosalind Franklin Young Investigator Award, Advanced Photon Source, Argonne National Laboratory, Argonne, IL, May 2006.

2005 J. Robert Oppenheimer Fellowship, Los Alamos National Laboratory, Los Alamos, NM.

GRANTS

"Geophysics of Iron in the Earth's Core," P.I. **Wendy L. Mao**, NSF-EAR (Geophysics Program), 1/1/2012-12/31/2014; Total grant: $287,000.

"CAREER: Visualizing Earth's Core-Mantle Interactions using Nanoscale X-ray Tomography," P.I. **Wendy L. Mao**, NSF, 10/1/2011-9/30/2016; $496,820.

"Time Dynamics of Oxides and Related Materials," P.I. Tom Devereaux, DOE-BES, 7/1/10-; Funding to date for Mao activities: $312,000.

"Advanced synchrotron x-ray spectrometer for deep carbon," P.I. **Wendy L. Mao**, Alfred P. Sloan Foundation, 7/1/2010; Total equipment grant: $100,000.

"High capacity molecular hydrogen storage in novel crystalline solids," P.I.'s **Wendy L. Mao**, Peter T. Cummings, Maaike C. Kroon, Cor J. Peters, Global Climate Energy Project, Stanford University, 5/1/2009-4/30/2010; $90,000.

Partner in "Center for Energy Frontier Research in Extreme Environments," Energy Frontiers Research Center DOE-BES, 08/01/09-09/28/14; Funding to date for Mao activities: $300,000.

"Geological Sequestration of CO_2 – An Exploratory Study of the Mechanisms and Kinetics of CO_2 Reaction with Mg-Silicates," P.I.'s Gordon Brown Jr., Dennis Bird, Kate Maher, and **Wendy L. Mao**, Global Climate Energy Project, Stanford University, Total grant: $100,000.

Partner in "Carnegie/DOE Alliance Center: A Center of Excellence for High Pressure Science and Technology," DOE/NNSA, 4/1/2008-2014; Funding for Mao activities: $360,000.

"Bonding and Structures of Light Element-Hydrogen Systems Under Extreme Conditions," P.I. **Wendy L. Mao**, DOE-BES, 7/1/2007-2013; Total funding: $1,357,000.

"Geophysics of Iron in the Earth's D" Layer and Core," P.I. **Wendy L. Mao**, NSF-EAR (Geophysics Program), 1/1/2008-12/31/2011; Total grant: $315,903.

"Influence of Pressure on Physical Property of Ammonia Borane and its Re-hydrogenation," P.I.'s: Jiuhua Chen, **Wendy L. Mao**, Yusheng Zhao, Chi-Chang Kao, and Donald J. Weidner, DOE solicitation DE-PS02-06ER06-17, 8/15/2007-7/31/2010; Total grant:$740,000. Renewal from 8/15/2010-8/14/2013; Total grant: $735,000.

"Novel Molecular Materials for Hydrogen Storage Applications," P.I.'s: Russell J. Hemley, Viktor V. Struzhkin ,**Wendy L. Mao**, Burkhard Militzer, and Ho-kwang Mao, DOE solicitation DE-FG01-05ER05-01, 4/1/06-4/1/09; Total grant: $987,716.

"Hydrogen Storage in Novel Molecular Materials," P.I.'s: Viktor V. Struzhkin ,**Wendy L. Mao**, Burkhard Militzer, Ho-kwang Mao, and Russell J. Hemley, DOE Grand Challenge for Basic and Applied Research in Hydrogen Storage. 1/1/05-1/1/09; Total grant $1,477,129.

PATENTS

"Method for storing hydrogen involves maintaining mixture of hydrogen and hydrocarbon in the solid state at specific pressure and temperature," W. L. Mao and H-k. Mao. 2006, Patent Numbers: WO2006091293-A2; US2006248920-A1; EP1838816-A2; WO2006091293-A3; AU2006217081-A1; JP2008528417-W.

"Hydrogen storage, e.g. for later use in fuel cell, comprises adding water and hydrogen gas to a containment vessel and reducing the temperature to form a hydrogen clathrate," W. L. Mao and H-k. Mao. 2002, Patent Numbers: WO2003037785-A; WO2003037785-A1; US2003089117-A1; US6735960-B2; EP1438258-A1; AU2002350021-A1; JP2005507989-W; AU2002350021-B2.

TEACHING EXPERIENCE

Earth Materials: Introduction to Mineralogy (w/ Gordon Brown), Fall 2010, 2011, 2012, 2013.

Oxidation State of the Mantle (w/ Jessica Warren), Winter 2012.

Volatiles in the Mantle (w/ Jessica Warren), Spring 2011.

Journey to the Center of the Earth (w/ Jesse Lawrence), Winter 2009, 2010, 2012 & 2014.

Diamonds, Spring 2009, 2010 & 2011.

STANFORD UNIVERSITY & SLAC SERVICE

GES Graduate Admissions Committee, 2012-present.

GES Vision Subcommittee, 2012-present.

Stanford Pre-Majors Advisor, 2010-2014.

Photon Science Integration Committee, SLAC National Accelerator Laboratory, 2012- 2013.

Elected member of the LCLS Users' Executive Committee, 2011-present.

GES Educational Outreach Committee, 2010.

GES Seminar Program Coordinator, 2009-2011.

GES Search Committee for Geochronology, Petrology, Geodynamics position, 2008-2009.

GES Long Range Planning Committee, 2007-2008

EXTERNAL SERVICE

NSF Petrology and Geochemistry Panel Member, 2014-2016.

COMPRES Nominations Committee, 2014-present.

Associate Editor for *American Mineralogist*, 2010-2013.

Co-chair of Extreme Physics and Chemistry Directorate, Deep Carbon Observatory, 2013-present.

Scientific Steering Committee for the Extreme Physics and Chemistry Directorate, Deep Carbon Observatory, 2011-present.

Elected member of COMPRES Facilities Committee, 2009-2012.

Elected member of APS Users Organization (APSUO) Steering Committee , 2009-2012.

APSUO Rosalind Franklin Young Investigator Award Selection Committee, 2011.

NSF Geophysics Panel Member, 2011.

NSF CSEDI Panel Member, 2010.

West Coast High Pressure Facilities Review Committee, Advanced Light Source, Lawrence Berkeley National Laboratory, 2007-2008.

DOE Hydrogen Fuel Initiative Review, Hydrogen Storage Panel Member, 2008.

Co-convener of Study of the Earth's Deep Interior session "New constraints on the structure and dynamics of the lower mantle" 2013 AGU Fall Meeting.

Co-convener of Study of the Earth's Deep Interior session "Nature of the Core-Mantle Boundary Region" 2008 AGU Fall Meeting.

Co-convener of Mineral and Rock Physics session "Clathrates under Compression" 2006 AGU Fall Meeting.

Co-convener of Mineral and Rock Physics session "Perovskite to Post-Perovskite Phase Transition in the Earth's Deep Interior" 2005 AGU Fall Meeting.

MEMBERSHIPS

American Geophysical Union

American Physical Society

Geological Society of America

Geochemical Society

Mineralogical Society of America

Neutron Scattering Society of America