

CURRICULUM VITAE: Emeritus Professor Eiji Ohtani, Tohoku University, Sendai, Japan

Eiji OHTANI

Born: 23th December, 1950, Shizuoka, Japan

Marital status: Married with wife and three daughters

Nationality: Japanese

Present occupation: Emeritus Professor, Mineral Physics at Graduate school of Science, Tohoku University, Sendai 980, Japan

Tel. 81-22-795-6662; Fax 81-22-795-6662

Address: 4-5-13, Kunimigaoka, Aoba-ku, Sendai, Miyagi-ken 989-32, Japan

Tel. 81-22-277-0591

E-mail: eohtani@tohoku.ac.jp

Research Interests:

1. Global circulation of water and other volatiles in the earth's interior
2. Melting behavior of Earth and planetary materials, properties of melts at high pressures, and early differentiation of the Earth
3. Phase transformation kinetics and discovery of high-pressure minerals in shocked meteorite
4. Mineralogy, geochemistry, and physical properties of the core and core-mantle boundary
5. Development of novel techniques for high pressure generation

Education:

Faculty of Science, Tohoku University, Sendai, Japan, 1969-1973: B. Sc. Petrology, 1973

Graduate school of Science, Nagoya University, Nagoya, Japan, 1973-1978

M. Sc., Geophysics, 1975

D. Sc., Geophysics, 1979

Research and professional experience:

1978.4.1-1980.3.31 Post-doctoral fellow from Japanese Association of Promotion of Science at Department of Earth Sciences, Nagoya University, Nagoya 464 Japan

1980.7.16-1982.3 Assistant Professor at Department of Earth Sciences, Faculty of Science, Ehime University, Matsuyama 790, Japan

1982.4-1984.3 Research Fellow at Research School of Earth Sciences, The Australian National University (Petrochemistry group), Canberra A.C.T., 2601, Australia

1984.4-1987.3.31 Assistant Professor of Geophysics at Department of Earth Sciences, Faculty of Science, Ehime University, Matsuyama 790, Japan

1987.4.1-1988.9.31 Associate Professor of Geophysics at Department of Earth Sciences, Faculty of

Science, Ehime University, Matsuyama 790, Japan
 1988.10.1-1994.6.30 Associate Professor of Mineral Physics at Institute of Mineralogy, Petrology, and Economic Geology, Tohoku University, Sendai 980, Japan
 1994.7.1-2016.3: Professor of Mineral Physics at Institute of Mineralogy, Petrology, and Economic Geology, Faculty of Science, Tohoku University, Sendai 980, Japan
 2002-2007: Project leader of 21st century COE program of Earth Science, Tohoku University in Sendai
 2008.4-2011.3: Distinguished Professor of Tohoku University
 2011.8- 2014.3: Distinguished Professor of Tohoku University
 2008.4-2013.3: Project leader of Global COE program of Earth and Planetary Science, Tohoku University in Sendai
 2011.4- 2013.3: Trustee of Tohoku University (elected on Jan. 26, 2011 by Faculty of Science)
 2013-2016: Visiting Research scientist of Sobolev Institute of Geology and Mineralogy, Russian Academy of Science, Novosibirsk, Russia.
 2015.4-2016.3: Distinguished Professor of Tohoku University
 2015.10.2-2020.9: Guest professor, China University of Geosciences (Wuhan), China.
 2016. 2.17-2021-2.16: Distinguished Affiliated Professor at the University of Bayreuth
 2016.4-present: Professor Emeritus of Tohoku University
 2016.4- 2021.3: Research Fellow (Professor Emeritus), Tohoku University
 2016.4-present: Visiting Researcher, RIKEN SPring-8 center, RIKEN
 2018.3-present: Distinguished Visiting Chair, Institute of Earth Science, Academia Sinica, Taiwan
 2018.4-present: Visiting Professor, Graduate School of Science, Shizuoka University
 2021.4-present: Visiting Researcher (Professor Emeritus), Tohoku University

Honors, Awards:

Post-doctoral fellowship from JSPS (Japanese Association of Promotion of Science), 1978-1980
 Visiting Professor Award of Bayerisches Geoinstitut from DFG (German Science Foundation) 1995.4-1995.10.
 Mineralogical Society of Japan Award 1997
 Reimei Research Award from Japan Atomic Energy Research Institute, 1998
 Fellow of Mineralogical Society of America, 2002
 Fellow of American Geophysical Union, 2006
 N.L. Bowen Award from VGP section of AGU, Dec., 2007.
 N.L. Bowen Lecturer, 2007AGU Fall Meeting, Dec. 2007.
 Distinguished Professor of Tohoku University, 2008.4.-2011.3, 2011.8-2014.3, 2015.4-2016.3
 Medal with Purple Ribbon from Japanese Government, 2010, 11.03
 Mega-grant Award, Ministry of education and science of Russian Federation, 2013-2016.
 Visiting Professor Award of University of Paris, 2015. 6-2015.9.

Geochemical Fellow of Geochemical Society (USA) and European Association of Geochemistry (EAG), 2015.

Urey Award from European Association of Geochemistry, Goldschmidt conference in Paris, 2017. 8.

Humboldt Research Award from Alexander von Humboldt-Stiftung, Nov. 27, 2017.

Miyake Prize from Japan Geoscience Union, April 10, 2018.

International Mineralogical Association (IMA) Medal from IMA, October 2019.

Fellow of Japan Geoscience Union, June 1, 2021

Honorary Member of Japan Mineralogical Society, Sept. 17, 2022.

Professional Society activities:

Vice President of Japan Association of Mineralogical Sciences: 2008.6-2010.5

President of Japan Association of Mineralogical Sciences: 2010.10-2012.9

Member of Japan Science Council: 2005-present:

Chair of Japanese committee for IMA (International Mineralogical Association) of Japan Science Council: 2008-2021

Vice President of Japan Geoscience Union: 2009.6-2012.5

Member of Editorial Board of Journal of Mineralogical and Petrological Sciences, 2000-2006, 2009-present.

Section president of Solid earth science section, Japan Geoscience Union: 2012-2020. July

General Chief Editor of Progress in Earth and Planetary Sciences, JpGU/Springer-Nature: 2020, Sept.-2022, Sept.

Member of Editorial Board of Progress in Earth and Planetary Sciences, JpGU/Springer-Nature, 2022, Oct.-present

Member of the Executive committee of JpGU: 2022. May- present

Activities for International Science Community

AGU

AGU honors and recognition committee, 2006-2007, 2009-2012.

Executive Committee for Rock and Mineral Physics, AGU: 1998-2000, 2001-2003, 2004-2006, 2006-2007, 2008-2020.

Selection Sub-committee for Outstanding Student Award in Focus Group for Rock and Mineral Physics, AGU, 2004-2006, 2007-2008

Award Sub-committee in Focus Group for Rock and Mineral Physics, AGU, 2004-2006.

Fellow Nomination Sub-committee of VGP section, AGU, 2006-2007.

Program Committee of the VGP section of AGU for 2010 WPGM Taipei, 2009-2010.

Fellow Nomination Sub-committee of Focus group for Rock and Mineral Physics, AGU, 2006-2008, 2009-2020.

Bowie Medal selection committee, AGU, 2018-2019.

GS (Geochemical Society)

Member of Award Nomination Committee, Geochemical Society, 2010-2012, 2012-2014.

IMA (International Mineralogical Association)

Vice President of Commission of Physics of Minerals, International Mineralogical Association (IMA): 2003-2006, 2006-2007.

President of Commission of Physics of Minerals (CPM), International Mineralogical Association (IMA): 2008-2014.

General Secretary of Organizing Committee for 19th International Mineralogical Association, Kobe, 2006

Chair of National committee for IMA in Japan, 2010-2021

Vice President of International Mineralogical Association (IMA), 2022.7-present.

HPMPS (High Pressure Mineral Physics Seminar)

Member of organizing committee of 6th High Pressure Mineral Physics Seminar (HPMPS-6), Verbania, Italy: 2002

Chair of International Organizing Committee of 7th High Pressure Mineral Physics Seminar (HPMPS-7), Matsushima, Japan: 2007.

Member of organizing committee of 8th High Pressure Mineral Physics Seminar (HPMPS-8), July 10-12, 2012.

Member of organizing committee of 9th High Pressure Mineral Physics Seminar (HPMPS-9), St Malo, France, September 24-28, 2017.

DCO (Deep Carbon Observatory)

Member of Founding Committee for Deep Carbon Observatory, 2009.

Member of Executive Committee for Deep Carbon Observatory, 2010-2020

Other

Member of International Advisory Committee, Novosibirsk State University, 2014.6- 2018.9

Member of Organizing committee of the 2nd Asia-Pacific Workshop on Lithosphere and Mantle Dynamics, August 6-8, Yokohama, 2018. <http://agmt2018.html.xdomain.jp/#registration>

Member of the selection committee of the merit award of the French society of mineralogy and crystallography. 2021-present.

Publications:

Total 391 peer reviewed papers, Google scholar: h-index 76, Citation 19047

Highlight contributions by Eiji Ohtani:

Global circulation of water and other volatiles in the earth's interior

E. Ohtani, K. Litasov, T. Hosoya, T. Kubo, T. Kondo, 2004. Water transport into the deep mantle and formation of a hydrous transition zone. *Physics of the Earth and Planetary Interiors* 143, 255-269

Ohtani, E., Hydrous minerals and the storage of water in the deep mantle, *Chem. Geol.*

<http://dx.doi.org/10.1016/j.chemgeo.2015.05.005>, 2015.

Ohtani, E., 2021. Hydration and Dehydration in Earth's Interior, *Annual Review of Earth and Planetary Sciences*, 49, 253-278. <https://doi.org/10.1146/annurev-earth-080320-062509>

T Ishii, E Ohtani, 2021. Dry metastable olivine and slab deformation in a wet subducting slab. *Nature Geoscience* 14 (7), 526-530

Melting behavior of Earth materials, properties of melts at high pressures, and early differentiation of the Earth

E. Ohtani, 1985. The primordial terrestrial magma ocean and its implication for stratification of the mantle. *Physics of the Earth and Planetary Interiors* 38 (1), 70-80

E Ohtani, T Kato, H Sawamoto, 1986. Melting of a model chondritic mantle to 20 GPa. *Nature* 322 (6077), 352-353

T. Sakamaki, A. Suzuki, E. Ohtani, 2006. Stability of hydrous melt at the base of the Earth's upper mantle. *Nature* 439 (7073), 192-194

Ohtani E., 2009. Melting relations and the equation of state of magmas at high pressure: Application to geodynamics. *Chem Geol* 265:279–288

Phase transformation kinetics and discovery of high-pressure minerals in shocked meteorite

Ohtani, E., Y. Kimura, M. Kimura, T. Takata, T. Kondo, T. Kubo, 2004. Formation of high-pressure minerals in shocked L6 chondrite Yamato 791384: constraints on shock conditions and parent body size. *Earth and Planetary Science Letters* 227 (3-4), 505-515

Ohtani E., Ozawa S., Miyahara M., Ito Y., Mikouchi T., Kimura M., Arai T., Sato K., Hiraga K., 2010. Coesite and stishovite in a shocked lunar meteorite, Asuka-881757, and impact events in lunar surface. *PNAS Early Edition*. www.pnas.org/cgi/doi/10.1073/pnas.1009338108

Mineralogy, geochemistry, and physical properties of the core and core-mantle boundary

Ohtani, E., Y. Shibazaki, T. Sakai, K. Mibe, H. Fukui, S. Kamada, T. Sakamaki et al., 2013. Sound velocity of hexagonal close-packed iron up to core pressures. *Geophysical Research Letters* 40 (19), 5089-5094

Sakamaki, T., Ohtani, E., H. Fukui, S. Kamada, S. Takahashi, T. Sakairi et al., 2016. Constraints on Earth's inner core composition inferred from measurements of the sound velocity of hcp-iron in extreme conditions. *Science Advances* 2 (2), e1500802.

Ikuta, D., Ohtani, E., N. Hirao, 2021. Two-phase mixture of iron-nickel-silicon alloys in the Earth's inner core. *Comm. Earth & Environment* 2, 225. <https://doi.org/10.1038/s43247-021-00298-1>.

Ikuta, D., Ohtani, E., et al. 2022. Sound velocity of hexagonal close-packed iron to the Earth's inner core pressure. *Nature Communications*, 13:7211, <https://doi.org/10.1038/s41467-022-34789-2>

Development of novel techniques for high pressure generation

Ohtani E., Irifune, T, Hibberson, W.O., and Ringwood, A.E., Modified split-sphere guide block for practical operation of a multiple-anvil apparatus. *High Temp. High Press.*, 19, 523-529, 1987.

Ohtani, E., N Kagawa, O Shimomura, M Togaya, K Suito, A Onodera, et al., 1989. High-pressure generation by a multiple anvil system with sintered diamond anvils. *Review of Scientific Instruments* 60 (5), 922-925

Selected invited and keynote talks (after 2016):

2016

Ohtani E., Hydrogen in the Mantle and Core: Hydrous minerals and Iron hydride (A Plenary talk) ISHA, 2016, 5th International Solvothermal and hydrothermal Association Conference, National Chen Kung Univ., Tainan, Taiwan, Jan 18th, 2016.

Ohtani E.: Formation of a hydration zone at the bottom of the lower mantle. Japan Geoscience Union Meeting 2016, Chiba, May 22 - May 26, 2016. (Invited)

Ohtani E.: Dehydration of the descending slabs and formation of hydrated zones. International Conference on the Earth's Deep Interior, 2016 ICEDI symposium November 5-6, 2016, (Invited), Wuhan, China

Ohtani, E. (2016) Recent development of High-Pressure Experiments on Composition, physical properties, and thermal state of the core. International Symposium: Advances in High Pressure Research III: Towards Geodynamic Implications-2016. (Invited) V.S.Sobolev Institute of Geology and Mineralogy SB RAS, August 29-September 2, 2016, Novosibirsk, Russia

Ohtani, E. (2016) From Volatiles in the Earth to Shocked Meteorites: our exchange and collaborations with BGI in recent 20 years. Symposium for 30th Anniversary of BGI, BGI, Bayreuth, September 28-30, September 2016. (Invited)

Ohtani, E., (2016) Volatile circulation in the mantle and the light elements in the core. Geophysical Laboratory special lecture, Nov. 28, 2016. (Invited)

Ohtani, E. (2016). The Earth and Planetary Interior: A view from High Pressure Research. 57th High Pressure Conference of Japan. Tsukuba, Oct. 26-29, 2016 (Invited, Plenary Lecture in Japanese).

2017

Ohtani, E. (2017). Physical Properties of iron-light element alloys and composition of the Earth's core (Invited talk), XXXIV International Conference on "Magmatism of the Earth and related strategic metal deposits" 3-7, August 2017, Miass, Russia.

Ohtani, E. (2017) GS Urey lecture, Fate of volatiles in the deep mantle and the light elements in the Core, 2017 Goldschmidt conference, August 14-18, 2017, Paris, France.

Ohtani, E. (2017) Physical and Chemical properties of iron alloys and composition of the Earth's inner core (Invited), AIRAPT, August 19-23, 2017, Beijing, China.

Ohtani, E. (2017) Volatile transport into the deep mantle by slab subduction (Keynote), International conference in memory of Prof. Bor-Ming Jahn, Nov. 6-7, 2017, Taipei, Taiwan.

2018

Ohtani, E. (2018) DVEES 2018, Role of volatiles transported into the mantle transition zone and lower mantle (invited), Shanghai, China, March 13-16, 2018.

Ohtani, E., L. Yuan, I. Ohira, A. Shatskiy, K.D. Litasov (2018). Role of water transported into the deep mantle by subducting slabs. U-02 [EE] Pacific-type orogeny: From ocean to mantle (Invited), 2018 JPGU, Makuhari, Japan, May 20-24, 2018.

Ohtani, E. (2018) Role of Hydrogen in the Mantle and Core (No.50096) (Invited), 6th International Solvothermal and Hydrothermal Association Conference (ISHA2018). Aug. 8-12, Sendai, <http://isha2018.jp/program.html>

Ohtani, E. (2018) Hydrous Phases in TZ and Top of Lower Mantle (Keynote talk), Symposium “Intermediate and Deep Earthquakes: Observation and Modeling” organized by Barbara Romanowicz and Alexandre Schubnel, *Collège de France*. Nov 19th -20th, 2018@Paris

2019

Ohtani, E., Sakamaki, T., Fukui, H., Ikuta, D., Ishikawa, D., Uchiyama, H., Tsutsui, S., Baron, A.Q., (2019). Inelastic X-ray scattering at extreme conditions and its geophysical applications (Invited). 11th International Conference on Inelastic X-ray Scattering (IXS2019), Stony Brook University, June 24-28th, 2019.

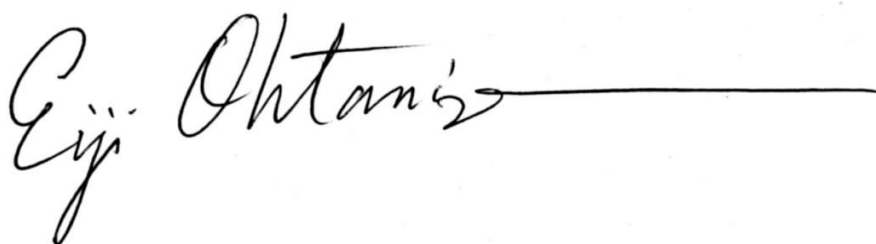
Ohtani, E. (2019) Role of hydrogen on composition, structure, and dynamics of the lower mantle, (Keynote lecture), 2019 Goldschmidt conference, Barcelona, 18-23, August 2019.

Ohtani, E., Ohira, I., Jackson, J., Ishii, T., Hsieh, W-P, (2019). Physical properties of high-pressure hydrous phase delta and lower mantle dynamics (Invited). GeoMuenster 2019, Muenster, September 22-25, 2019.

2021

Ohtani, E. Plenary Lecture: High Pressure Mineral Physics of the Deep mantle and Core (Award lecture of 2019 IMA medal), 3rd European Mineralogical Conference, Aug 29, 2021

Last updated Jan. 14th 2023

A handwritten signature in black ink that reads "Eiji Ohtani" followed by a long horizontal line extending to the right.

Eiji Ohtani

Tohoku University, Japan