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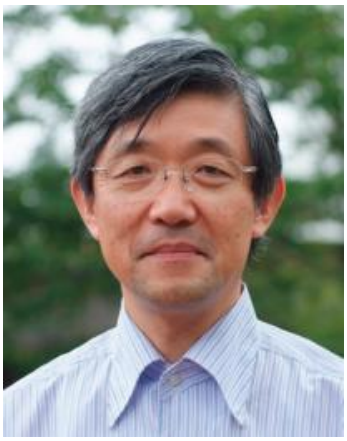

Professor Ohtani received his BSc degree in petrology in 1973 from Tohoku University (Japan). He received his MSc degree (1975) and his PhD degree (1979), both in geophysics, from Nagoya University (Japan). His professorial career began in 1980 at Ehime University (Japan), where he stayed until 1988. From then he continued at the Department of Earth and Planetary Materials Science at Tohoku University, from where he retired in 2016. He continued his research after retirement at Tohoku University as a professor emeritus on the water circulation in the deep mantle by using multianvil press and the sound velocity measurements of iron-light element alloys by Inelastic X-ray scattering at the core pressures to clarify dynamics of the inner core.

Professor Ohtani was the first person to perform successful melting experiments on minerals and rocks at P > 10 GPa using the then-revolutionary multi-anvil technology. He determined the precise melting relations of major mantle minerals, and he modeled phase relations at pressures equivalent to those of the uppermost lower mantle. He also invented techniques to measure density changes in molten rocks under very high pressures and used these techniques to constrain density contrasts between melts and minerals in the mantle. This pioneering work led to the development of the deep magma ocean model in 1985. Since the mid-1990s, Professor Ohtani has built an international reputation with his studies of water storage in the mantle. He measured the solubility of hydrogen in such nominally anhydrous minerals as olivine, majorite, and bridgmanite and demonstrated that the presence of water in mantle phases significantly affects their phase boundaries, something that could explain the topographic variations in the 410 km and 660 km seismic discontinuities.

In parallel with probing the mantle, Professor Ohtani actively explored the Earth's deepest interior and made impactful contributions on element partitioning between the mantle and core and on phase relations in the Fe–O (± Si, H, S) systems. In particular, his research demonstrated that both O and Si are the most likely light-element constituents in the outer core. In addition, his investigations of high-pressure polymorphism in shocked meteorites led to the discovery of coesite, stishovite, and seifertite (one of the densest SiO_2 polymorphs) in lunar materials, and of olivine breakdown to periclase plus bridgmanite in a shocked Martian meteorite. Professor Ohtani's publication record comprises over 390 peer-reviewed articles and is remarkable for its originality and influence.

Professor Ohtani has received a large number of honors, including the Mineralogical Society of Japan Award (1997), the Reimei Research Award from the Atomic Energy Research Institute of Japan (1998),

the Norman L. Bowen Award (2007) from the American Geophysical Union, the Medal of Honor (Purple Ribbon) from the Government of Japan (2010), the Urey Award from the European Association of Geochemistry (2017), and the Humboldt Research Award (2017). He holds fellowships in the Mineralogical Society of America (2002), American Geophysical Union (2006), Geochemical Society and European Association of Geochemistry (2015), Japan Geoscience Union (2021), and has received many prestigious guest-, distinguished and visiting-professor appointments, most recently as Distinguished Affiliated Professor at the University of Bayreuth (Germany) to run from 2016 to 2021, and Institute of Earth Science, Academia Sinica, Taiwan from 2018 to present. More details are given in the following website:
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