Taehyun Kim (T. Kim) - Curriculum Vitae

Date: May-07-2025

Affiliation	School of Earth and Space Exploration, Arizona State University
Office	Room 590A, ISTB4, 781 S Terrace Road, Tempe, AZ 85287, USA
Mobile	623-284-6335
Email	tkim95@asu.edu

Academic Appointments

2022. 05. – present	Postdoctoral research scholar, School of Earth and Space Exploration, Arizona State University, Tempe, USA.
2022. 03. – 2022. 04.	Postdoctoral researcher, Department of Earth System Sciences, Yonsei University, Seoul, South Korea.

Educations

2017. 05. – 2022. 02.	Visiting graduate student, School of Earth and Space Exploration, Arizona State University, Tempe, USA.
2015. 09. – 2022. 02.	Ph.D. in Geological science. Department of Earth System Sciences, Yonsei University, Seoul, South Korea.
2010. 03. – 2015. 08.	Bachelor of Science, Department of Earth System Sciences, Yonsei University, Seoul, South Korea.

Honors

2022 Excellent Academic Paper Award, Yonsei University.

Research & Grant Proposal Awards

❖ **Research**

The proposals listed below (typically 5–10 pages in length) are evaluated by review panels and selected by beamline scientists at synchrotron facilities. I acquire ***beam time*** to obtain key datasets at high pressures and high temperatures for my past, current, and future projects. The synchrotron facilities, years, and awarded proposal numbers are listed below.

- Advanced Photon Source (APS), USA

  2025 1009966

  2024 1006895 (Principal Investigator), 1006967

2022 GUP-78985 (Principal Investigator)

2021 GUP-74297, GUP-76095 (Principal Investigator)

2020 GUP-67454 (Principal Investigator), GUP-67458

2019 GUP-62881 (Principal Investigator)

2018 GUP-57624

- Advanced Light Source (ALS), USA

  2023 ALS-12208

  2018 ALS-10047

- Pohang Light Source-II (PLS-II), South Korea

  2016 2016-1st-6C-003

  2015 2015-3rd-6C-010

❖ **Grants**

As Principal Investigator, I will re-submit a full proposal (previous proposal number: 2445393) to the Chemical Evolution of the Solid Earth and Volcanology (CESEV) program, NSF. I am revising the proposal to address reviewers' comments. I am also preparing a new proposal for submission to the Astronomy and Astrophysics Research Grants (AAG) program, NSF.

As a postdoctoral research scholar, my previous research has contributed to the grant proposals listed below, and I participated in internal reviews. These grants provide primary funding for my current position and support both past and ongoing research projects.

2024-2027 NASA-80NSSC25K7021. Principal Investigator: S.-H. Shim. 100% recognition for Shim. Title: Iron and its Impact in Magma Oceans of Emerging Rocky Planets.

2024-2026 NSF-AST2406790. Principal Investigator: S.-H. Shim. 100% recognition for Shim. Title: Research on Reaction between H_2-H_2O Fluid and Silicate, and Implications for Uranus and Neptune.

2021-2023 NSF-AST2108129. Principal Investigator: S.-H. Shim. 100% recognition for Shim. Title: Ingassing of Hydrogen in the Interiors of Sub-Neptunes and Gas Giants.

Research Interests

❖ **Mineral Physics**

Melting and chemical behavior of Earth's mantle compositions

Phase diagrams of silicate–volatile and metal–volatile systems (e.g., Mg_2SiO_4-H_2O, MgFeSi-H_2)

Phase diagrams of multi-volatile element systems (e.g., $C_xH_yO_z$, N_xH_y)

Volatile element properties in molten silicates and liquid metals

Elastic properties of metallic alloys and hydrous minerals

Synthesis of new hydrides and hydrous materials

- **Planetary Sciences**

  Interiors of exoplanets (e.g., sub-Neptunes)

  Interiors of solar system planets (e.g., Uranus)

  Early planetary evolution (e.g., Magma Ocean)

  Collaborative research linking mineral physics, planetary modeling, and astrophysical observations

- **Geophysics**

  Volatile cycling in planetary interiors

  Core–mantle boundary processes

  Integrating mineral physics research with seismic observations and geodynamic simulations

Scientific & Technical Expertise

High Pressure	Utilize **diamond-anvil cell** (DAC) at Arizona State University (ASU), Yonsei University, and synchrotron facilities (APS, ALS, DESY, SSRL, PLS-II). Provided DAC training to 10~15 students and postdocs. Research using **multi-anvil press** at ASU.
High Temperature	**Laser-heated DAC** (LHDAC) experiments at ASU, APS, and Deutsches Elektronen-Synchrotron (DESY, Germany). Built a new laser heating system at Yonsei University. Provided LHDAC training for 15~20 students and postdocs. Provided technical and analytical support for LHDAC experiments contributing to multiple co-authored publications. **Resistive-heated DAC** experiments at DESY. **Pulsed-laser shock** experiments at the Linac Coherent Light Source (LCLS, USA) and PAL-XFEL (South Korea).
X-ray Diffraction	Synchrotron X-ray diffraction (XRD) at APS, ALS, DESY, Stanford Synchrotron Radiation Lightsource (SSRL, USA), and PLS-II, as well as XRD at PAL-XFEL.
Spectroscopy	Raman spectroscopy at ASU and APS. Infrared spectroscopy at NSLS-II (USA).
Electron Microscopy	Independent operation of a focused-ion beam (FIB) instrument integrated with scanning electron microscopy (SEM), as well as transmission electron microscopy (TEM) instrument at ASU.
Gas Loading	Use various compressed gases, including H2, N2, neon, argon, and mixed gases. Independent operation of high-pressure gas-loading systems at ASU. Use gas-loading systems at APS and DESY.
Others	Synchrotron X-ray fluorescence (XRF) at SSRL. Synchrotron X-ray tomography (CT) at PLS-II. Neutron diffraction and tomography at Australian Nuclear Science and Technology Organisation (ANSTO, Australia).

Academic Publications

❖ Preparation, Revision, Review

1. **Taehyun Kim***, Stella Chariton, Vitali Prakapenka, Sergio Speziale, and Sang-Heon Shim*. Chemical reactions between (Mg,Fe)O and H_2O at multi-megabar conditions: its implications on the deep interior of large H_2O-rich planets. [*in preparation*]

2. **Taehyun Kim***, Allona Vazan, Stella Chariton, Young-Jay Ryu, Vitali Prakapenka, Shize Yang, and Sang-Heon Shim*. The stability of SiH_4 in hydrogen-controlled planetary interiors and its implications for low-density exoplanets. [*in preparation; to be submitted this year*]

3. **Taehyun Kim*,** Haiyang Luo, Jie Deng, Stella Chariton, Vitali Prakapenka, Katherine Armstrong, Martin Kunz, Sang-Heon Shim*. Formation of larger planetary core induced by early giant impacts. [*in preparation; to be submitted this year*]

4. **Taehyun Kim**, Sang-Heon Shim*, Mingming Li, Edward Garnero, Eran Greenberg, Stella Chariton, Vitali Prakapenka, and Yongjae Lee*. Hydrous melting at the Earth's core-mantle boundary as the origin of ultra-low velocity zones. [*In revision at **Nature Geoscience***]

5. **Taehyun Kim***, Yongjae Lee, Stella Chariton, Vitali Prakapenka, Eran Greenberg, Sang-Heon Shim*. The effect of water on the post-perovskite transition pressure and its thickness. [*Under review at **Geophysical Research Letters***]

6. Jeongmin Lee, Jaeyoon Keum, **Taehyun Kim**, Stella Chariton, Vitali Prakapenka, Nico Giordano, Byung-Dal So, Huijeong Hwang, and Yongjae Lee* Thermal evolution of the sulfur-rich, small terrestrial planetary core as inferred from the experimental study of the Fe-S-O-H system. [*Under review at **JGR Planets***]

❖ First Author Publications

7. **Taehyun Kim***, Xuehui Wei, Stella Chariton, Vitali Prakapenka, Young-Jay Ryu, Shize Yang, and Sang-Heon Shim*. Stability of hydrides in sub-Neptune exoplanets with thick hydrogen-rich atmospheres. ***Proc. Natl. Acad. Sci. U.S.A.*** 120 (52), December 2023. (10.1073/pnas.2309786120)

8. **Taehyun Kim**, Joseph G. O'Rourke, Jeongmin Lee, Stella Chariton, Vitali Prakapenka, Rachel J. Husband, Nico Giordano, Hanns-Peter Liermann, Sang-Heon Shim*, Yongjae Lee*. A hydrogen-enriched layer in the topmost outer core sourced from deeply subducted water. ***Nature Geoscience*** 16, November 2023. (10.1038/s41561-023-01324-x)

9. **Taehyun Kim**, Stella Chariton, Vitali Prakapenka, Anna Pakhomova, Hanns-Peter Liermann, Zhenxian Liu, Sergio Speziale, Sang-Heon Shim*, and Yongjae Lee*. Atomic-scale mixing between MgO and H_2O in the deep interiors of water-rich planets. ***Nature Astronomy*** 5, August 2021. (10.1038/s41550-021-01368-2) <The article was highlighted by *Nature Astronomy*; 10.1038/s41550-021-01421-0>

10. **Taehyun Kim**, Byeongkwan Ko, Eran Greenberg, Vitali Prakapenka, Sang-Heon Shim*, and Yongjae Lee*. Low melting temperature of anhydrous mantle materials at the core-mantle boundary. ***Geophysical Research Letters*** 47, October 2020. (10.1029/2020GL089345)

11. **Taehyun Kim**, Yongjae Lee*, and Yuong-Nam Lee. Fluorapatite diagenetic differences between Cretaceous skeletal fossils of Mongolia and Korea. ***Palaeogeography, Palaeoclimatology,***

Palaeoecology 490, January 2018. (10.1016/j.palaeo.2017.11.047)

❖ **Co-authored Publications**

12. Jinhyuk Choi, Rachel J. Husband, Huijeong Hwang, **Taehyun Kim**, Yoonah Bang, Seohee Yun, Jeongmin Lee, Heehyeon Sim, Sangsoo Kim, Daewoong Nam, Boknam Chae, Hanns-Peter Liermann, Yongjae Lee*. Oxidation of iron by giant impact and its implication on the formation of reduced atmosphere in the early Earth. ***Science Advances*** 9, 2023. (10.1126/sciadv.adi6096)

13. R. J. Husband*, R. S. McWilliams, E. J. Pace, A. L. Coleman, H. Hwang, J. Choi, **T. Kim**, G. C. Hwang, O. B. Ball, S. H. Chun, D. Nam, S. Kim, H. Cynn, V. B. Prakapenka, S.-H. Shim, S. Toleikis, M. I. McMahon, Y. Lee, and H.-P. Liermann. X-ray free electron laser heating of water and gold at high static pressure. ***Communications Materials*** 2, 2021. (10.1038/s43246-021-00158-7)

14. H. Hwang, **T. Kim**, H. Cynn, T. Vogt, R. J. Husband, K. Appel, C. Baehtz, O. B. Ball, M. A. Baron, R. Briggs, M. Bykov, E. Bykova, V. Cerantola, J. Chantel, A. L. Coleman, D. Dattlebaum, L. E. Dresselhaus-Marais, J. H. Eggert, L. Ehm, W. J. Evans, G. Fiquet, M. Frost, K. Glazyrin, A. F. Goncharov, Z. Jenei, J. Kim, Z. Konôpková, J. Mainberger, M. Makita, H. Marquardt, E. E. McBride, J. D. McHardy, S. Merkel, G. Morard, E. F. O'Bannon, III, C. Otzen, E. J. Pace, A. Pelka, C. M. Pépin, J. S. Pigott, V. B. Prakapenka, C. Prescher, R. Redmer, S. Speziale, G. Spiekermann, C. Strohm, B. T. Sturtevant, N. Velisavljevic, M. Wilke, C.-S. Yoo, U. Zastrau, H.-P. Liermann, M. I. McMahon, R. S. McWilliams*, and Y. Lee*. X-ray free electron laser-induced synthesis of ε-iron nitride at high pressures. ***The Journal of Physical Chemistry Letters*** 12, 2021. (10.1021/acs.jpclett.1c00150)

15. Yoonah Bang, Huijeong Hwang, **Taehyun Kim**, Hyunchae Cynn, Yong Park, Haemyeong Jung, Changyong Park, Dmitry Popov, Vitali B. Prakapenka, Lin Wang, Hanns-Peter Liermann, Tetsuo Irifune, Ho-Kwang Mao, and Yongjae Lee*. The stability of subducted glaucophane with the Earth's secular cooling. ***Nature Communications*** 12, 2021. (10.1038/s41467-021-21746-8)

16. Huawei Chen*, Sheng-Yi Xie, Byeongkwan Ko, **Taehyun Kim**, Carole Nisr, Vitali Prakapenka, Eran Greenberg, Dongzhou Zhang, Wenli Bi, Alp E. Ercan, Yongjae Lee, and Sang-Heon Shim*. A new hydrous iron oxide phase stable at mid-mantle pressures. ***Earth and Planetary Science Letters*** 550, 2020. (10.1016/j.epsl.2020.116551)

17. H. Hwang, E. Galtier, H. Cynn, I. Eom, S. H. Chun, Y. Bang, G. C. Hwang, J. Choi, **T. Kim**, M. Kong, S. Kwon, K. Kang, H. J. Lee, C. Park, J. I. Lee, Y. Lee, W. Yang, S.-H. Shim, T. Vogt, S. Kim, J. Park, S. Kim, D. Nam, J. H. Lee, H. Hyun, M. Kim, T.-Y. Koo, C.-C. Kao, T. Sekine, and Y. Lee*. Subnanosecond phase transition dynamics in laser-shocked iron. ***Science Advances*** 6, 2020. (10.1126/sciadv.aaz5132)

18. E. J. Pace, A. L. Coleman, R. J. Husband, H. Hwang, J. Choi, **T. Kim**, G. Hwang, S. H. Chun, D. Nam, S. Kim, O. B. Ball, H.-P. Liermann, M. I. McMahon, Y. Lee, and R. S. McWilliams*. Intense reactivity in sulfur−hydrogen mixtures at high pressure under x-ray irradiation. ***The Journal of Physical Chemistry Letters*** 11, 2020. (10.1021/acs.jpclett.9b03797)

19. Xin Li, Ye Yuan, Jinbo Zhang, **Taehyun Kim**, Dongzhou Zhang, Ke Yang, Yongjae Lee, and Lin Wang*. Pressure-induced photoluminescence of MgO. ***Journal of Physics: Condensed Matter*** 30, 2018. (10.1088/1361-648X/aabb40)

20. Yongjae Lee*, Yongmoon Lee, Donghoon Seoung, Jun-Hyuk Im, Hee-Jung Hwang, **Tae-Hyun Kim**, Dan Liu, Zhenxian Liu, Seung Yeop Lee, Chi-Chang Kao, and Thomas Vogt. Immobilization of large, aliovalent cations in the small-pore zeolite k-natrolite by means of pressure. ***Angewandte Chemie International Edition*** 51, 2012. (10.1002/anie.201201045)

Presentations

❖ Invited Talks & Seminars

2024 October Colloquium Guest Speaker (Host: Lars Ehm). **The Department of Geosciences at Stony Brook University**, USA. Title: Chemical reactions between silicates and volatile materials at high pressures and temperatures: implications for exoplanets.

2024 March Guest Speaker. **The Atmospheric Physics of Exoplanets Department at the Max Planck Institute for Astronomy**, Germany. Title: Stability of hydrides in sub-Neptune exoplanets with thick hydrogen-rich atmospheres.

❖ Conference Abstracts

2024 **Taehyun Kim**, Sang-Heon Shim, Mingming Li, Edward Garnero, Eran Greenberg, Stella Chariton, Vitali Prakapenka, Shize Yang, and Yongjae Lee. Understanding the ultralow velocity zones at the Earth's core-mantle boundary through synchrotron experiments. ***AGU Fall Meeting 2024***, USA. December 2024. **<Invited Talk>**

2024 **Taehyun Kim**, Sang-Heon Shim, Stella Chariton, Vitali Prakapenka, Martin Kunz, Katherine Armstrong. Iron metal formation from silicate melts at 55–75 GPa and 4000–6000 K. ***AGU Fall Meeting 2024***, USA. December 2024. **<Poster>**

2024 Sibo Chen, **Taehyun Kim**, Xuehui Wei and Sang-Heon Shim. Partitioning of potassium between FeO and Fe metal impacted by hydrogen and implications for Earth's core. ***AGU Fall Meeting 2024***, USA. December 2024.

2024 **Taehyun Kim**, Xuehui Wei, Kurt Leinenweber, Shize Yang, Stella Chariton, Vitali Prakepenka, Young-Jay Ryu, Yongjae Lee, Sang-Heon Shim. High-pressure experiments support compositional gradients in sub-Neptune interiors. ***Exoplanets in Our Backyard 3***, USA. November 2024. **<Poster>**

2024 Yuong-Nam Lee, **Taehyun Kim**, Yongjae Lee, Joseph Bevitt, Yoshitsugu Kobayashi, Louis Jacobs, Rinchen Barsbold, Darla K. Zelenitsky, Ariana Paulina-Carabajal. Stomach contents of a juvenile Tarbosaurus (Dinosauria: Tyrannosaurinae). ***SVP* (*Society of Vertebrate Paleontology) 84th Annual Meeting***, USA. November 2024.

2024 Sang-Heon Shim, **Taehyun Kim**, Xuehui Wei, Stella Chariton, Vitali Prakapenka, Young-Jay Ryu, Shize Yang. Formation of hydride perovskite and water on hot hydrogen-rich exoplanets. ***GSA (The Geological Society of America) Connects 2024 Meeting***, USA. September 2024.

2024 Sibo Chen, Shize Yang, **Taehyun Kim**, Xuehui Wei, and Sang-Heon Shim. Sub-nanometer detection of hydrogen in minerals using vibrational electron energy loss spectroscopy. ***GSA (The Geological Society of America) Connects 2024 Meeting***, USA. September 2024.

2023 **Taehyun Kim**, Xuehui Wei, Stella Chariton, Vitali Prakapenka, Young-Jay Ryu, Shize Yang, and Sang-Heon Shim. Formation of Mg-hydrides and water from reaction between MgO and hydrogen and implication for sub-Neptune exoplanets. ***AGU Fall Meeting 2023***, USA. December 2023. **<Talk>**

2023 **Taehyun Kim**, Stella Chariton, Vitali Prakapenka, Young-Jay Ryu, Shize Yang, and Sang-Heon Shim. Effect of H_2-to-H_2O ratio on the stability of silicates in sub-Neptune exoplanets. ***AGU Fall***

Meeting 2023, USA. December 2023. **<Poster>**

2023 Sibo Chen, Shize Yang, **Taehyun Kim**, Xuehui Wei, and Sang-Heon Shim. A nondestructive sub-nanometer probe for hydrogen in high-pressure minerals: vibrational electron energy loss spectroscopy. ***AGU Fall Meeting 2023***, USA. December 2023.

2023 Sang-Heon Shim, Harrison W Horn, **Taehyun Kim**, Helene Piet, Sergio Speziale, Yongjae Lee, Stella Chariton, and Vitali Prakapenka. High-pressure chemistry linking dry and wet planets. ***23rd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter***, USA. June 2023.

2022 **Taehyun Kim**, Joseph G O'Rourke, Jeongmin Lee, Stella Chariton, Vitali Prakapenka, Rachel Husband, Nico Giordano, Hanns-Peter Liermann, Yongjae Lee, and Sang-Heon Shim. Possible link between deeply subducted water and the E' layer. ***AGU Fall Meeting 2022***, USA. December 2022. **<Talk>**

2022 **Taehyun Kim**, Eran Greenberg, Vitali Prakapenka, Yongjae Lee, and Sang-Heon Shim. Melting behaviors of hydrous pyrolite in the lower mantle. ***AGU Fall Meeting 2022***, USA. December 2022. **<Talk>**

2022 **Taehyun Kim**, Xuehui Wei, Stella Chariton, Vitali Prakapenka, and Sang-Heon Shim. Impact of the H_2/H_2O ratio on the internal structure of Uranus, Neptune, and sub-Neptune exoplanets. ***Exoplanets in Our Backyard 2***, USA. November 2022. **<Talk>**

2022 **Taehyun Kim**, Yongjae Lee, Stella Chariton, Vitali Prakapenka, Anna Pakhomova, Hanns-Peter Liermann, Zhenxian Liu, Sergio Speziale, and Sang-Heon Shim. Solubility of MgO in H_2O-H_2 at high pressures and its implications for large water-rich planets. ***54th Annual DPS (Division for Planetary Sciences) Meeting***, Canada. October 2022. **<Talk>**

2021 Sang-Heon Shim, Helene Piet, Suyu Fu, Byeongkwan Ko, **Taehyun Kim**, Yongjae Lee, Vitali Prakapenka, and Stella Chariton. Impacts of hydrogen on the chemistry and structure of rocky planets cores. ***AGU Fall Meeting 2021***, New Orleans. December 2021.

2021 **Taehyun Kim**, Stella Chariton, Vitali Prakapenka, Anna Pakhomova, Hanns-Peter Liermann, Zhenxian Liu, Sergio Speziale, Sang-Heon Shim, and Yongjae Lee. Atomic scale mixing between MgO and H_2O in the deep interiors of water-rich planets. ***Europlanet Science Congress 2021*** (Session: Ice Giant System Science and Exploration), Germany. September 2021 (Virtual meeting). **<Talk>**

2021 **Taehyun Kim**, Jeongmin Lee, Stella Chariton, Vitali Prakapenka, Rachel Husband, Nico Giordano, Hanns-Peter Liermann, Sang-Heon Shim, and Yongjae Lee. Water may limit silicon amount in the Earth's core. ***2021 COMPRES Annual Meeting***, USA. August 2021 (Virtual meeting). **<Talk>**

2021 Sang-Heon Shim, Carole Nisr, **Taehyun Kim**, Yongjae Lee, Andrew Chizmeshya, Kurt Leinenweber, Stella Chariton, Vitali Prakapenka, Sergio Speziale, Zhenxian Liu, and Hanns-Peter Liermann. Mineral-water reaction at high pressures–implications for Uranus and Neptune. ***52nd Lunar and Planetary Science Conference***, USA. March 2021.

2021 **Taehyun Kim**, Stella Chariton, Vitali Prakapenka, Anna Pakhomova, Hanns-Peter Liermann, Zhenxian Liu, Sergio Speziale, Sang-Heon Shim, and Yongjae Lee. Atomic scale mixing between (Mg,Fe)O and H_2O in the deep interiors of water-rich planets. ***DESY Photon Science Users' Meeting 2021*** (Session: Status and research highlights of the ECB (P02.2) at PETRA III), Germany. January 2021 (Virtual meeting). **<Talk>**

2020 Britany Kulka, **Taehyun Kim**, Jeongmin Lee, Stella Chariton, Vitali Prakapenka, Yongjae Lee, and Sang-Heon Shim. Possible control of redox conditions in the laser-heated diamond-anvil cell. ***AGU Fall Meeting 2020***, USA. December 2020.

2020 Byeongkwan Ko, **Taehyun Kim**, Eran Greenberg, Vitali Prakapenka, Yongjae Lee, Sang-Heon Shim. Temperature-dependent solubility of Uranium in silicate perovskites in the Earth's lower mantle. ***2020 COMPRES Annual Meeting***, USA. August 2020.

2020 **Taehyun Kim**, Sang-Heon Shim, Vitali Prakapenka, Hanns-Peter Liermann, Sergio Speziale, and Yongjae Lee. High Solubility of Mg in H_2O at high pressures and its implications for the interiors of water-rich planets. ***Exoplanets in Our Backyard***: Solar System and Exoplanet Synergies on Planetary Formation, Evolution, and Habitability Workshop, USA. February 2020. **<Poster>**

2019 Yoonah Bang, Huijeong Hwang, **Taehyun Kim**, Hyunchae Cynn, Haemyeong Jung, Changyong Park, Dmitry Popov, Vitali B. Prakapenka, Hanns-Peter Liermann, Lin Wang, Tetsuo Irifune, Ho-Kwang Mao, and Yongjae Lee. The stability of subducted glaucophane with the Earth's secular cooling. ***AGU Fall Meeting 2019***, USA. December 2019.

2019 **Taehyun Kim**, Sang-Heon Shim, Byeongkwan Ko, Eran Greenberg, Vitali Prakapenka, and Yongjae Lee. Low melting temperatures of anhydrous and hydrous mantle materials at the core-mantle boundary. ***AGU Fall Meeting 2019***, USA. December 2019. **<Poster>**

2016 **Taehyun Kim**, Youngnam Lee, and Yongjae Lee. Comparative mineralogical and geochemical investigation of fossils from Mongolia and Korea. ***Goldschmidt***, Japan. August 2016. **<Poster>**

Mentoring

❖ Teaching Assistant

2016 Fall	ESS8509-01, Research frontiers in Earth System Sciences, Yonsei University
2016 Spring	ESS4126-01, Senior Thesis*, Yonsei University. *Guided undergraduate students in the Earth System Sciences through research and writing for graduation thesis.

❖ Student Mentoring

Jeongmin Lee. Master Student. Yonsei University. Principal Advisor: Y. Lee

Yeonhak Jung. PhD Student. Yonsei University. Principal Advisor: Y. Lee

Harrison Horn. PhD Student. Arizona State University. Principal Advisor: S.-H. Shim

Xuehui Wei. PhD Student. Arizona State University. Principal Advisor: S.-H. Shim

Ava Campbell. Undergraduate Student. Arizona State University. Principal Advisor: S.-H. Shim

Services

❖ **Outreach**

2024 October	Volunteer, Earth and Space Exploration Day, ASU Tempe Campus

2024 August	Volunteer, SESE Symposium, ASU Tempe Campus
2023 November	Volunteer, Earth and Space Exploration Day, ASU Tempe Campus
2023 July	Interview, The Washington Post, article title: The U.S. is About to Open a New Window into Earth's Mysterious Insides.

❖ **Academic service**

2023-2024	Committee of the ASU Geophysical Seminar Series
Article Review	Nature Astronomy
	Nature Communications
	Earth and Planetary Science Letters
	Progress in Earth and Planetary Science
	National Science Review
	Journal of Geophysical Research - Solid Earth
Proposal Review	National Science Foundation EAR – Petrology and Geochemistry
	National Science Foundation EAR – Postdoctoral Fellowship

Membership

American Geophysical Union (AGU)

American Astronomical Society (AAS)

Geochemical Society, USA