

DENG, XIN

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EDUCATION

Ph.D. in Geophysics (pending) School of Earth and Space Sciences, University of Science and Technology of China, China. Supervisor: Prof. Zhongqing Wu	2021-present
M.Sc. in Geophysics School of Earth and Space Sciences, University of Science and Technology of China, China. Supervisor: Prof. Zhongqing Wu	2019 - 2021
B.Sc. in Geophysics School of the Gifted Young, University of Science and Technology of China, China.	2015 - 2019

RESEARCH EXPERIENCE

Research Assistant Laboratory of Seismology and Physics of Earth's Interior, University of Science and Technology of China. Supervisor: Prof. Zhongqing Wu	2017 - 2019
Summer Intern Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology. Supervisor: Dr. Eduardo Andrade Lima	2018

TEACHING EXPERIENCE

Teaching Assistant School of Earth and Space Sciences, University of Science and Technology of China. Course: GEPH6411P Solid Mechanics.	2021 - 2022
Teaching Assistant School of Physical Sciences, University of Science and Technology of China. Course: PHYS1001A Mechanics A.	2018 - 2022
Teaching Assistant School of Physical Sciences, University of Science and Technology of China. Course: PHYS1004A Electromagnetism A.	2019 - 2020

HONORS AND AWARDS

Outstanding Student Presentation Award , AGU Fall Meeting 2022	2022
Outstanding Student Presentation Award , Annual Meeting of CGU 2022/2021	2022
Best Poster Award , Frontiers of High Pressure Research – Science under Extreme Conditions	2022
First-Class Academic Scholarship for Doctoral Students , USTC	2021-2022
First-Class Academic Scholarship for Master Students , USTC	2019-2020

RESEARCH INTERESTS

Properties of minerals at high pressure and temperature conditions.

Equilibrium Element Partition and Isotope Fractionation.

Structure and dynamics in the subduction zone.

Composition and structure of the deep Earth's interior.

PUBLICATIONS

[9] Wang, Dong; Wu, Zhongqing; **Deng, Xin**. "Thermal conductivity of Fe-bearing bridgmanite and post-perovskite: Implications for the heat flux from the core", submitted to *Earth and Planetary Science Letters*.

[8] Zhao, Yajie; **Deng, Xin**; Chen, Ling; Wu, Zhongqing. "Is there a carbonated mid-lithosphere discontinuity in cratons?", submitted to *Earth and Planetary Science Letters*.

[7] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2023) "Compositional and thermal state of the lower mantle from joint 3D inversion with seismic tomography and mineral elasticity", *Proceedings of the National Academy of Sciences*, 120 (26).

[6] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2023) "Seismic signals induced by the Metasomatism of mantle wedge by siliceous melts: Insights from the elasticity of orthopyroxene at high pressure and temperature", *Tectonophysics*, 846, 229681.

[5] Wang, Dong; Wu, Zhongqing; **Deng, Xin**. (2022) "Thermal Conductivity of Hydrous Wadsleyite Determined by Non-Equilibrium Molecular Dynamics Based on Machine Learning", *Geophysical Research Letters*, 49 (22).

[4] **Deng, Xin**; Luo, Chenxing; Wentzcovitch, Renata M.; Abers, Geoffrey A.; Wu, Zhongqing. (2022) "Elastic Anisotropy of Lizardite at Subduction Zone Conditions", *Geophysical Research Letters*, 49 (18).

[3] Zhao, Yajie; Wu, Zhongqing; Hao, Shangqin; Wang, Wenzhong; **Deng, Xin**; Song, Jian. (2022) "Elastic properties of Fe-bearing Akimotoite at mantle conditions: Implications for composition and temperature in lower mantle transition zone", *Fundamental Research*, 2, 570~577.

[2] Liu, Cong; Wang, Junjie; **Deng, Xin**; Wang, Xiaomeng; Pickard, Chris J.; Helled, Ravit; Wu, Zhongqing; Wang, Huitian; Xing, Dingyu; Sun, Jian. (2022) "Partially Diffusive Helium-Silica Compound under High Pressure", *Chinese Physics Letters*, 39, 076101.

[1] Luo, Chenxing; **Deng, Xin**; Wang, Wenzhong; Shukla, Gaurav; Wu, Zhongqing; Wentzcovitch, Renata M. (2021) "cij: A Python code for quasiharmonic thermoelasticity", *Computer Physics Communications*, 267, 108067.

INVITED TALKS

2. **Formation of Low V_P/V_S Regions in the Mantle Wedges of Subduction Zones** 04/2022

Academic Forum for Postgraduates of Solid Geophysics USTC

1. **3D Compositional and Thermal State of the Lower Mantle** 12/2021

Academic Forum for Postgraduates of Solid Geophysics USTC

FIRST-AUTHORED CONFERENCE ABSTRACTS

[20] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2023) "Compositional and Thermal State of the Lower Mantle from Joint 3D Inversion with Seismic Tomography and Mineral Elasticity", *Japan Geoscience Union Meeting 2023*, Chiba, Japan. (poster)

[19] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2023) "Inversion of 3D Thermo-Chemical Structure of the Lower Mantle using Seismic Tomography

and Elasticity of Lower-mantle Minerals at High Pressure and Temperature Conditions", *The 21st China High-Pressure Science Conference*, Dalian, China.

[18] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2023) "3D Compositional and Thermal Structure of the Lower Mantle Inverted from Seismic Tomography and Mineral Elasticity", *The 8th Young Scientist Forum of Earth Science*, Wuhan, China.

[17] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2023) "3D Thermo-Chemical Structure of the Lower Mantle based on Seismic Tomography and Mineral Elasticity", *The 5th Congress of China Geodesy and Geophysics*, Wuhan, China.

[16] **Deng, Xin**; Luo, Chenxing; Wentzcovitch, Renata; Abers, Geoffrey; Wu, Zhongqing. (2023) "Elasticity of Serpentine Minerals at Subduction Zone Conditions", *The 18th Annual Meeting of Chinese Society for Mineralogy Petrology and Geochemistry*, Hefei, China.

[15] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2023) "Elasticity of Orthopyroxene at High *P-T* Conditions: Implications for the Metasomatism of Mantle Wedge by Siliceous Melts", *The 18th Annual Meeting of Chinese Society for Mineralogy Petrology and Geochemistry*, Hefei, China.

[14] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2022) "Compositional and Thermal State of the Lower Mantle from Joint 3D Inversion with Seismic Tomography and Mineral Elasticity", *AGU Fall Meeting 2022*, Chicago, USA. (Outstanding Student Presentation Award)

[13] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2022) "Compositional and Thermal State of the Lower Mantle from Joint 3D Inversion with Seismic Tomography and Mineral Elasticity", *Annual Meeting of Chinese Geoscience Union 2022/2021*, Fuzhou, China. (Outstanding Student Presentation Award)

[12] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2022) "Seismic signals induced by the Metasomatism of mantle wedge by siliceous melts: insights from the Elasticity of Orthopyroxene at High Pressure and Temperature", *Annual Meeting of Chinese Geoscience Union 2022/2021*, Fuzhou, China.

[11] **Deng, Xin**; Xu, Yinhan; Hao, Shangqin; Ruan, Youyi; Zhao, Yajie; Wang, Wenzhong; Ni, Sidao; Wu, Zhongqing. (2022) "Compositional and Thermal State of the Lower Mantle from Joint 3D Inversion with Seismic tomography and Mineral Elasticity", *Frontiers of High Pressure Research – Science under Extreme Conditions*, Shanghai, China. (poster / Best Poster Award)

[10] **Deng, Xin**; Luo, Chenxing; Wentzcovitch, Renata; Abers, Geoffrey; Wu, Zhongqing. (2022) "Elastic anisotropy of lizardite at subduction zone conditions", *The 33rd IUPAP Conference on Computational Physics*, Austin, USA.

[9] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2022) "Elasticity of Orthopyroxene at High Pressure and Temperature: Insights into the Metasomatism of Mantle Wedge by Siliceous Melts", *Goldschmidt 2022 Conference*, Honolulu, USA. (poster)

[8] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2022) "Elasticity of Orthopyroxene at High Pressure and Temperature: Insights into the Metasomatism of Mantle Wedge by Siliceous Melts", *Japan Geoscience Union Meeting 2022*, Chiba, Japan.

[7] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2021) "Elasticity of Orthopyroxene at High Pressure and Temperature: Insights into the Metasomatism of Mantle Wedge by Siliceous Melts", *AGU Fall Meeting 2021*, New Orleans, USA. (poster)

[6] **Deng, Xin**; Luo, Chenxing; Wentzcovitch, Renata; Abers, Geoffrey; Wu, Zhongqing. (2021) "Elasticity of Lizardite at High Pressure and Temperature: Implications for the Water Content in Subduction Zones", *AGU Fall Meeting 2021*, New Orleans, USA. (poster)

[5] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2021) "Elasticity of Orthopyroxene at High Pressure and Temperature: Insights into the Metasomatism of Mantle Wedge by Siliceous Melts", *2021 International Symposium on Deep Earth Exploration and Practices*, Nanjing, China.

- [4] **Deng, Xin**; Luo, Chenxing; Wentzcovitch, Renata; Wu, Zhongqing. (2021) "Elasticity of Lizardite at High Pressure and Temperature: Implications for the Water Content in Subduction Zones and Arc Magmas", *The 6th Conference on Earth System Science*, Shanghai, China.
- [3] **Deng, Xin**; Song, Jian; Qian, Wangsheng; Wu, Zhongqing. (2021) "Elasticity of Orthopyroxene at High Pressure and Temperature: Insights into the Metasomatism of Mantle Wedge by Siliceous Melts", *The 8th "From Atom to Earth" Symposium on High-pressure Science and Earth Science*, Guiyang, China.
- [2] **Deng, Xin**; Wu, Zhongqing. (2021) "Compositional and thermal state of the Moon from first-principles calculations", *2021 National Planetary Science Conference*, Suzhou, China.
- [1] **Deng, Xin**; Wu, Zhongqing. (2020) "Elasticity of Lizardite at High Pressure and Temperature: Implications for the Water Content in Subduction Zones", *Annual Meeting of Chinese Geoscience Union 2020*, Chongqing, China.