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Zilong Wang

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Education

Peking University September 2022 – Today
PhD student in Mineralogy, Petrology, and Mineral Deposits (Advisor: Wei Tian) *Current GPA: 3.79/4.00*

Peking University September 2018 – June 2022
Bsc degree in Geochemistry *GPA: 3.64/4.00*
Thesis: From equilibrium crystallization to degassing: two-stage evolution history of Martian nakhlite meteorites

Joint Training Program

Visiting Student: Institute of Geomechanics, Chinese Academy of Geological Sciences [Advisor: Wei-(RZ) Wang; Program: Thermodynamic and kinetic mechanism of the petrogenesis of Chang'e-5 basalts]
Date: November 2021 – November 2022

Visiting Student: Institut für Geologie, Mineralogie und Geophysik, Ruhr-Universtät Bochum [Advisor: Ralf Dohmen; Program: Timescales and diffusion kinetics of extraterrestrial samples]
Date: January 2025 – January 2027

Skills and Interests

1. Petrogenesis interpretations of achondrite meteorites and returned samples from a comprehensive perspective including petrology, mineralogy, and geochemistry, based on the *in-situ* instrumental operation skills including SEM-CL-EDS, EPMA, LA-ICP-MS, SIMS (in training), FIB-TEM (in training), etc

2. Python/Matlab/R-based calculations/simulations (e.g., mantle-melting modeling, phase-equilibria modeling, crystallization and assimilation modeling, kinetic modeling based on elemental inter- and/or intra-diffusion processes) for understanding the geological process of extraterrestrial igneous rocks

3. Interested in petrogenesis interpretations from other perspectives, including remote-sensing techniques, geophysics and seismology, and state-of-the-art machine/deep-learning techniques

4. Also interested in experimental petrology, especially crystallization experiments by controlling the thermodynamic and kinetic conditions (e.g., P-T-fO_2, starting composition, cooling rate), to obtain reliable geo-thermobarometers and understand the formation processes of achondrites.

Projects and Funds

National Natural Science Foundation of China | *Project leader* Jan. 2025 – Dec. 2026
- **Title:** Constraints of volatile-bearing minerals in Qued Mya 005 meteorite on the evolution of volatiles in the Amazonian period on Mars
- **Grant Number:** 424B2020
- **Total funding amount:** CNY 300,000

National Natural Science Foundation of China | *Participate (Key Member)* Jan. 2023 – Dec. 2026
- **Title:** Constraints from nakhlite and related meteorites on Martian basaltic volcanism and crustal structure
- **Grant Number:** 42272348
- **Total funding amount:** CNY 570,000

Experience

Undergraduate Course | *Teaching assistant* Sept 2021 – Present
Planetary Material Science (Sept 2021 – Jan 2022, Mar 2023 – Jun 2023, Feb 2024 – Present)
General Petrology (Sept 2021 – Jan 2022)

China Meteorite Forum | *Moderator* May 2020 – May 2022
Volunteer service, including identifying meteorites for meteorite enthusiasts, organizing meteorite science popularization activities, managing the forum website, etc.

Journal Reviewer Jan 2023 – Present
Reviewer in Science Bulletin, Discover Space, Acta Petrologica Sinica, and Chinese Journal of Geophysics

Academic Conferences

International Conference of Deep Space Sciences (Hefei City, Anhui, China) Apr 22nd–27th, 2023
Presentation (oral): Martian crustal thickness and density constrained by volcanic physics of nakhlite meteorites

The 5th Young Scientist Forum of Planetary Science (Sanya City, Hainan, China) Mar 25th–29th, 2023
Presentation (oral): The slowest and fastest-cooling samples of Chang'E-5 basalts

The 54th Lunar and Planetary Science Conferences (The Woodlands, Texas, US) Mar 13th–17th, 2023
Presentation (online poster): Eucrite-Melt Breccia Jikharra 001: A Potential Window for Understanding the Petrogenesis of Ferroan Anomalous Eucrites; Ungrouped Achondrite Northwest Africa 13272/13351 is a Chondrite Melt Breccia Composed of L4 and L7 Materials

The 1st Chang'e-5 Lunar Sample Research Achievement Seminar (Beijing, China) Jan 16th, 2023
Presentation (poster): Cooling rate of clinopyroxene reveals the thickness and effusion volume of Chang'E-5 basaltic flow units

The 1st National Planetary Science Conference (Suzhou City, Jiangsu, China) Jun 19th–21st, 2021
Presentation (poster): Modelling of Martian magmatism informed from nakhlite NWA 5790

Awards

Dec 2019. Merit Student of Peking University
Dec 2019. The Third Prize of Peking University Scholarship (CNY 4,000)
Dec 2020. Award for Academic Excellents
Dec 2020. Guangzhou Pharmaceutical Wanglaoji Scholarship (CNY 6,000)
Dec 2021. Merit Student of Peking University
Dec 2021. Leo Koguan Scholarship (CNY 20,000)
Jun 2022. Excellent Graduate of Peking University
Jun 2022. Bachelor's degree with Honours (CNY 10,000)
Mar 2023. Longruan Technology Scholarship (CNY 4,500)
Jun 2023. Presidential Fellowship of Peking University (CNY 72,000)
Jun 2024. Presidential Fellowship of Peking University (CNY 72,000)
Jul 2024. China Scholarship Council Scholarship for Visiting PhD Student (EUR 32,400)

Publications

2025

Wang Z. L., Tian W., Wang W.-R., Prissel C. T., Di Y. K., Qian Y. Q., Liu P. P., Fa W. Z., Su A. 2025. Genesis and timing of KREEP-free lunar Mg-suite magmatism indicated by the first norite meteorite Arguin 002. *Communications Earth & Environment*. 6, 170. DOI: 10.1038/s43247-025-02086-7.

2024

Li H. J.*, **Wang Z. L.**, Chen Z. Y., Tian W., Wang W.-R., Zhang G. B., Zhang L. F. 2024. A petrogenetic study of apatite in Chang'E-5 basalt: implications for high sulfur contents in lunar apatite and volatile estimations for the lunar mantle. *Geochimica et Cosmochimica Acta*. 385: 118–140. DOI: 10.1016/j.gca.2024.09.002.

Fu Y. H., Tao R. B., Zhang L. F., Li S. J., Yang Y. Y., Shen D. H., **Wang Z. L.**, Meier T.* 2024. Trace element detection in anhydrous minerals by micro-scale quantitative nuclear magnetic resonance spectroscopy. *Nature Communications*. 15: 7293. DOI: 10.1038/s41467-024-51131-0.

Qian Y. Q.*, Head III J., Michalski J., Gong S. X., Yang W., **Wang Z. L.**, Wang X., Xiao L., Li X. H., Zhao G. C. 2024. Extensive intrusive magmatism in the lunar farside Apollo and South Pole-Aitken basins, Chang'e-6 landing site. *The Astrophysical Journal Letters*. 971(2):L39. DOI: 10.3847/2041-8213/ad698f.

2023

Chen G. Z., Xia Z. P.*, Miao B. K.*, **Wang Z. L.***, Tian W., Zhang Y. K., Liu H., Zhang C. T., Xie L. F., Peng Y. H., Chen H. Y., Wang X. 2023. Petrology and mineralogy of volcanic glass beads in meteorite Northwest Africa (NWA) 11801: implications for their petrogenesis. *Meteoritics & Planetary Science*. 53(9): 1318–1332. DOI: 10.1111/maps.14058.

Zhu W. P., Tian W.*, Zhang Y. H., Li Z., Gong M. Y., Fu B., **Wang Z. L.**, Wei C. J. 2023. Geological characteristics and genesis of the Late Carboniferous extremely thick slate in the Shuangjianzishan Ag-Pb-Zn district, southern Great Xing'an Range, NE China: constraints on metallogenesis and tectonic setting. *Frontiers in Earth Science*. 11: 1145656. DOI: 10.3389/feart.2023.1145656.

Wang Z. L., Tian W.*, Wang W.-R.*, Ma B., Liu P.-P., Pei J. L., Chen Z. Y., Wu J., Wei C. J. 2023. Crystallization kinetics of a fastest-cooling young mare basalt of Chang'E-5. *Science Bulletin*. 68: 1621–1624. DOI: 10.1016/j.scib.2023.06.036.

Zhu W. P., Tian W.*, Wang B., Gong M. Y., Fu B., **Wang Z. L.**, Wei C. J. 2023. Magmatism and thermal effect of the Late Paleoproterozoic layered complex in the Jining terrane, North China Craton: Evidence from magmatic cooling duration and crust-mantle interaction. *Precambrian Research*. 389: 107030. DOI: 10.1016/j.precamres.2023.107030.

Wang Z. L., Tian W.* 2023. Petrology and mineralogy of mesosiderite Northwest Africa 12949: Implications for geological history on its parent body. *Meteoritics & Planetary Science*. 58(3): 341–359. DOI: 10.1111/maps.13957.

Wang Z. L., Wang W.-R.*, Tian W.*, Li H. J., Qian Y. Q., Pei J. L., Chen Z. Y., Wang D. B., Liu P.-P., Fa W. Z., Wu J., Bao H. 2023. Cooling rate of clinopyroxene reveals the thickness and effusion volume of Chang'E-5 basaltic flow units. *Icarus*. 394, 115406. DOI: 10.1016/j.icarus.2022.115406.

2021

Wang Z. L., Tian W.*, Di Y. K. 2021. New temperature and oxygen fugacity data of Martian nakhlite from Northwest Africa (NWA) 5790 and implications for shallow sulphur degassing. *Earth, Planets and Space*. 73, 164. DOI: 10.1186/s40623-021-01492-3.