金子梁 JIN Ziliang

Assistant Professor

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Research interests

- Derivation and migration of primordial materials in the solar system
- Plasma-solid interactions in space environments
- Deep magmatic processes in the Moon's interior

Education

- 2014 – 2017 **Guest scientist** GeoForschungZentrum, Potsdam, Germany.
  Co-Advisor: **Dr. Michael Wiedenbeck**
- 2012 – 2017 **Ph.D. candidate** China University of Geosciences, Beijing
  Advisor: **Dr. Zhaochong Zhang**
- 2008 – 2012 **B.Sc. (Geology)** China University of Geosciences, Beijing

Professional appointment

- 2021 – present **Assistant Professor**–Macau University of Science and Technology
- 2017 – 2020 **Postdoctoral scholar**–Arizona State University, Tempe, U.S.
  Supervisor: **Dr. Maitrayee Bose**

Professional experiences

Macau University of Science and Technology (2021-present)

- Manage LA-ICP-MS (GeoLasHD + Agilent 7900) and low-energy ion implanter
- Simulate hydration processes in early solar system materials via ion implantation
- Research on the Moon's redox evolution and early solar system material transport

Arizona State University, Arizona, U.S. (2017-2020)

- Maintained lab operations, purchasing, scheduling, and training
- Developed high-precision H measurement protocols using NanoSIMS 50L
- Studied hydrogen isotope systematics in meteorites and asteroids (SIMS, NanoSIMS 50L, IMS 6f)
- Developed Duoplasmatron and Cs ion sources (with Peter Williams)
- Contributed to building a Class 10,000 clean lab (PI: Maitrayee Bose)
- Operated NanoSIMS 50L on projects including:
  - Water/H isotopes in Martian meteorites (PI: Anne Peslier)

- Li diffusion in zircon (PI: Christy Till)
- Li isotopes in coal (PI: Lynda Williams)
- Presolar grain imaging (PI: Maitrayee Bose)
- C, O, H isotopes in carbonates (PI: Myriam Telus)
- C-N isotopes in bee brains (PI: Tyler Quigley)

GeoForschungsZentrum, Potsdam, Germany (2015-2017)

- Developed SIMS reference materials: synthetic silicate glass, olivine, and hornblende
- Studied SIMS sputtering behavior and isotopic homogeneity of O/C standards
- Conducted zircon U-Pb and oxygen isotope dating of tuff from E'meishan LIP (PI: Zhaochong Zhang)

Grants

- FDCT (2021-2023) **PI**: A comprehensive study of mineral disequilibrium in the achondrite EC002
- FDCT (2023-2024) **PI**: Process development: ion-implanted reference materials used for in-situ analysis
- NSFC (2023-2025) **PI**: The hydrogen implantation-diffusion process that hydrates the silicates in the solar nebula.

Peer-reviewed articles (Last 5 years)

**Indicates corresponding author*

- X. Zeng, **Z. Jin***, C. Dong, Z. Huang, M. Zhu, L. Xu, L. Morrissey, L.Wang, Earth wind-driven formaiton of hematite on the lunar surface, *under review in Geophysical Research Letters.*
- X. Zeng, **Z. Jin***, M. Bose , R. Hervig , T. Long Effects of Crystal Orientation and Temperature on Space Irradiation of Silicates, *under review in The Astrophysical Journal*.
- **Z. Jin***, T. Hou, M. Zhu, Y. Zhang and O. Namur, (2025). Late-stage microstructures in Chang'E-5 basalt and implications for the evolution of lunar ferrobasalt. ***American Mineralogist***, 110(4), pp.560-569.
- Y. Zhang, R. Dasgupta, D. Ji, C.T. Lee,Y. Peng, B. Charlier, **Z. Jin,** J. Chen, and O. Namur, (2025). Mantle melting conditions of mare lavas on South Pole–Aitken basin of lunar farside. ***Geophysical Research Letters***, 52(6), p.e2024GL112418.
- **Z. Jin***, Y. Zhang, M. Bose, S. Glynn, and F. Couffignal, (2024). Petrogenesis of Erg Chech 002 Achondrite and Implications for an Altered Magma Ocean. ***The Astrophysical Journal***, 965(1), p.24.

- H. Tian, J. Hao, Y. Lin, Y. Xu, **Z. Jin,** C. Zhang, W. Yang, S. Hu, R. Li, Z. Yue, Q. Li, 2024. Distribution and abundance of solar wind-derived water in Chang'E-5 core samples and its implications. ***Geophysical Research Letters***, 51(9), p.e2023GL107005.
- P. Zhang, Y. Li, J. Zhang, S. Li, **Z. Jin**, H. Han, C. Liu, Y. Lin, Z. Ling, Y. Wen. Compositional indication of E-and M-type asteroids by VIS-NIR reflectance spectra of meteorites. ***Astronomy and Astrophysics***. 2023 Mar 8;671:A77.
- Z. Cheng, Z. Zhang, Z. Wang, **Z. Jin**, J. Hao, L. Jin, M. Santosh (2022), Petrogenesis of continental intraplate alkaline basalts in the Tuoyun Basin, western Central Asian Orogenic Belt: implications for deep carbon recycling, ***Journal of Petrology***, egac088
- **Z. Jin***, M. Bose, T. Lichtenberg, G. Mulders (2021), New evidence for wet accretion of inner solar system planetesimals from meteorites Chelyabinsk and Benenitra. ***The Planetary Science Journal***, 2, 244.
- Q. Xie, Z. Zhang*, **Z. Jin***, M. Santosh, L. Han, K. Wang, P. Zhao, H. He (2021), The high-grade Fe skarn deposit of Jinling, North China Craton: Insights into hydrothermal iron mineralization. ***Ore Geology Reviews***, 138, 104395.
- **Z. Jin*** and M. Bose (2021), Hydration of Nebular Minerals through the Implantation–Diffusion Process. ***The Astrophysical Journal***, 913, 116.
- J. Zhu, Z. Zhang*, M. Santosh, **Z. Jin** (2020), Carlin-style gold province linked to the extinct Emeishan plume. ***Earth and Planetary Science Letters***, 530: 115940.
- **Z. Jin*** and M. Bose (2019), New clues to ancient water on Itokawa. ***Science Advances***, eaav8106**.**

Full publication list available on Google Scholar.

Students & Postdoc Supervision

Postdoc: Dr. Xiandi Zeng (2023–present)

Ph.D. Student: Pengfei Zhang (2022–2024)

Master Students: Zhirui Zhang (2022–2024), Jinwei Xiang (2022–2025), Luning Gu (2024–present)

Teaching history

Fall 2021 – 2024	Earth science (Undergraduate)
Spring 2022 – 2025	Cosmochemistry (Master)
	Cosmochemistry and advanced topics (Ph.D)

Technical skills

- Operation on NanoSIMS 50L for isotopic analyses (e.g. H, Li, C, O, and S).

- Operation on Cameca SIMS-1280 HR for high precision isotopic analyses (e.g. U-Pb, O, B, and C).
- Operation on LA-ICPMS.
- Operation on Electronic Microprobe and Scanning Electron Microscope.
- Statistics of geochemical metrology.
- Preparation of samples for SIMS measurements (polishing, mounting, Au coating, optical microscope).