Research Field: Environmental Geochemistry, Cosmochemistry

SHORT BIO

I Start my research career as a PhD candidate in Guangzhou Institute of Geochemistry, Chinese Academy of Sciences in 2014. In 2018, I went to Virginia Tech as a joint PhD student. After I got the PhD degree in 2019, I continue worked as a post-doctoral fellow at GIG. In 2021, I joined Macau University of Science and Technology as an assistant professor.

Jing Liu
劉晶

PhD: 2014-2019, Mineralogy, Petrology, Mineral deposits – Guangzhou Institute of Geochemistry, CAS

Degree: 2010-2014, Environmental Science – Xiangtan University

TEACHING

Earth Sciences , Stone Culture and Mineralogy

RESEARCH INTEREST

My research focus on geochemical evolution of rock planets through crystal nucleation/growth, redox chemistry, and mineral interfacial processes. Using advanced techniques (e.g., TEM, SEM, IR, Raman), I analyze natural samples (e.g., meteorites, Mars analogues) and simulated products to address the following themes:

1) Investigate the nucleation, phase transformation, and crystallization of nanominerals, linking atomic-scale mechanisms to global biogeochemical cycles of key elements.
2) Characterize the chemistry and minerology of meteorites and Mars analogues to unravel the paleoenvironment.
3) Simulate mineral alteration under Mars-like conditions (e.g., freeze-thaw, light-irradiation, hydrothermal systems) to decode redox and hydrologic history, aiding rover data interpretation.

PROFESSIONAL EXPERIENCE

Ongoing – 2021 – Macau University of Science and Technology, Macao (China) – Assistant Professor
2021 – 2019 – Guangzhou Institute of Geochemistry, Chinese Academy of Sciences (China) – Post Doctoral
2018 – 2017 – Virginia Polytechnic and State University (USA) – Joint Doctoral Student

SERVICE

Reviewer of Environmental Science & Technology, Ore Geology Reviews , Clay and Clay minerals, etc.

GRANTS

The Science and Technology Development Fund of Macau 0003/2025/RIC, 2026.01-2027.12, **PI**
The Science and Technology Development Fund of Macau 0062/2024/ITP2, 2025.01-2026.12, **PI**
The National Natural Science Foundation of China (NSFC) Youth Project 42302033, 2023.1-2025.12, **PI**
The Science and Technology Development Fund of Macau 0070/2022/A, 2022.12-2024.12, **PI**
Faculty Research Grants of the Macau University of Science and Technology, 2022.5-2023.5, **PI**
Open Project of Guangdong Key Laboratory of Mineral Physics and Material Development, 2021-2023, **PI**

KEY PUBLICATIONS

(Selected, Full publication please refer to WWW.RESEARCHGATE.NET/PROFILE/JING-LIU-62)

Liu, J.*, Wang, J., Tong, S., Luo, M., Zhou, J., Liu, J., et al. (2026). Freeze-thaw cycling accelerated olivine weathering and water sequestration on icy Mars. ***Geophysical Research Letters***, 53, e2025GL118467.

Tong, S., Wei, H., Zhou, J., Yang, Y., Zhu, R.,* Chen, Q., Xie, X., Hu, Q., Hochella, M.F. *, **Liu, J***, **2025**, Atomic Insights into the Heterogeneous Crystallization of Manganese (Oxyhydr)oxides on Typical Iron (Oxyhydr)oxides: from Adsorption to Oxidation to Crystallization, ***Environmental Science & Technology***

Wei, H., Wei, S., Chen, Q.*, Yang, Y., Liu, X., Long, S., **Liu, J.*,** Zhu, J., Zhu, R., **2025**, Nano-Scale Insights into Clay Minerals Regulating the Fe(II)-Catalyzed Ferrihydrite Transformation under Anoxic Conditions, ***Environmental Science & Technology***.

Liu, J., Zhou, J. * Jiang, X., Wei, Z., Yang, S., **2024**, Formation of authigenic titania during the alteration of volcanic glasses in modern deep-sea environments. (2024), ***Geochimica et Cosmochimica Acta***.

Liu, J., Chen, Q., Yang, Y., Wei, H., Laipan, M., Zhu, R.*, He, H., Hochella, F. M.* **2022,** Coupled redox cycling of Fe and Mn in the environment: The complex interplay of solution species with Fe-and Mn-(oxyhydr) oxide crystallization and transformation**.** ***Earth-Science Reviews***

Liu, J., Inoué, S., Zhu, R.*, He, H., Hochella, F. M.* **2021**, Facet-specific oxidation of Mn(II) and heterogeneous growth of manganese (oxyhydr)oxides on hematite nanoparticles. ***Geochimica et Cosmochimica Acta.***

Liu, J., Zhu, R.*, Ma, L., Fu, H., Lin, X., Parker, S.C., Molinari, M. **2021,** Adsorption of phosphate and cadmium on iron (oxyhydr)oxides: A comparative study on ferrihydrite, goethite, and hematite. ***Geoderma***

RECENT NEWS OF OUR GROUP

2026. 03 - Our work about the weathering of olivine under FT conditions is published on GRL.

2025. 09 - Li Wenhan join our group as master student.

2025. 07 - Congrats! Mengqi finish her master thesis defense, and will start her PhD study in our group.

2025. 02 - Freeze-thaw machine is installed, our FT cycling experiments can be more time saving.

2025. 02 - The first research paper of Tong Shouhao is published on EST!

2024. 11 - Mike visit China! Haven't seen him for 7 years. An important scientist that has influenced my research career.

2024. 10 - We publish a GCA paper about the formation of authigenic titania during the alteration of volcanic glasses in modern deep-sea

2024. 07 - Congrats! Liang Xiaonan and Wang Jing successfully pass the master thesis defense, and they both get A! Wish them all the best in the future.

2023. 07 – Tong Shouhao successfully get his master degree and will continue work in our group as PhD candidate

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