Xiaolei Liu

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Department of Earth, Atmospheric and Planetary Sciences
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Education

2007-2011, PhD., Organic Geochemistry, **MARUM, University of Bremen**, Germany
- Advisor: *Prof. Kai-Uwe Hinrichs*
- Thesis title: *Glycerol ether lipids in sediments: sources, diversity and implications*

05/2010-11/2010, Vistiting Student, **Massachusetts Institute of Technology**, USA
- Advisor: *Prof. Roger E. Summons*

2004-2007, MSc., Palaeontology and Stratigraphy, Nanjing Institute of Geology and Palaeontology, **Chinese Academy of Sciences**, China

1999-2003, B.S., Ecology and Environmental Microbiology, **Shandong University**, China

Professional experience

2017-Present, Assistant Professor of Organic Geochemistry, **University of Oklahoma**, USA

2016-2017 August, Research Scientist, **Massachusetts Institute of Technology**, USA

2014-2016, Postdoctoral Associate, **Massachusetts Institute of Technology**, USA
- Advisor: *Prof. Roger E. Summons*
- Research project: *Understanding the divergence of Archaea from the other two life domains by studying the stereochemistry of glycerol ether lipids. Using lipid biomarkers to trace microbial metabolism in extreme environments*

2011-2013, Postdoctoral Researcher, **MARUM, University of Bremen**, Germany
- Advisor: *Prof. Kai-Uwe Hinrichs*
- Research project: *Diagenetic pathway of glycerol ether lipids in various environments*

Professional Certificate Courses

2015, MBL summer course, **Mirobial Diversity**, at Woods Hole with full scholarship
2012, MARUM/GLOMAR course, **New Paradigms in Marine Biogeochemistry**, at Bremen
2008, MARUM/GLOMAR summer course, **The Deep Subseafloor Biosphere**, at Bremen

Cruise experience

April 2013, FS Poseidon cruise POS 450 "DARCSEAS II - Deep subseafloor Archaea in the western Mediterranean Sea: carbon cycle, life strategies, and role in sedimentary ecosystems"

Teaching experience

2016_Molecular Biogeochemistry, co-lecturer with Prof. Roger Summons

2016_Geobiology Undergraduate Course, teaching assistant together with colleague and Prof. Tanja Bosak

2015_Essentials of Geochemistry Course, together with other colleagues and Prof. Roger Summons

Supervised two visiting graduate students and one UROP (Undergraduate Research Opportunities Program) student for doing archaeal lipid analysis in lab.

2014_Introduction to Mass Spectrometry, together with other colleagues and Prof. Roger Summons

Supervised one summer intern student analyzing and isolating bacterial hopanoids in cultures.

2013_Supervised one guest scientist for one year of laboratory work and data analysis at University of Bremen. One related paper was published.

Reviewer activities

Organic Geochemistry, Biogeoscience, Geochimica et Cosmochimica Acta, Earth and Planetary Science Letters, Nature Communications, Journal of Quaternary Science, Geochemistry Geophysics Geosystems, Geoscience Frontiers, Marine Chemistry

Google scholar profile

https://scholar.google.com/citations?user=B5xxAxkAAAAJ&hl=en

h-index: 16

Pulications

Liu X.-L., Lipp J.S., Elling F., Birgel D., Summons R.E., Hinrichs K.-U., **2018.** Predominance of the parallel glycerol arrangement in archaeal tetraethers from marine subsurface sediments: structural features revealed by degradation products. **Organic Geochemistry** 115, 12-23.

Liu X.-L., Birgel D., Elling F., Sutton P.A., Lipp J.S., Zhu R., Zhang C., Könneke M., Peckmann J., Rowland S.J., Summons R.E., Hinrichs K.-U., **2016**. From ether to acid: a plausible degradation pathway of glycerol dialkyl glycerol tetraethers. **Geochimica et Cosmochimica Acta** 183, 138-152.

Liu X.-L., Santiago Torio A.D., Bosak T., Summons R.E., **2016**. Novel archaeal tetraether lipids with a cyclohexyl ring identified in Feyetteville Green Lake, NY and other sulfidic lacustrine settings. **Rapid Communications in Mass Spectrometry** 30, 1197–1205.

Liu X.-L., Zhu C., Wakeham S.G., Hinrichs K.-U., **2014**. In situ production of branched glycerol dialkyl glycerol tetraethers in anoxic marine water columns. **Marine Chemistry** 166, 1-8.

Liu, X.-L., Summons, R.E., Hinrichs, K.-U., **2012**. Extending the known range of glycerol ether lipids in the environment: structural assignments based on MS/MS fragmentation patterns. **Rapid Communications in Mass Spectrometry** 26, 2295–2302.

Liu, X.-L., Lipp, J.S., Simpson, J.H., Lin, Y.-S. Summons, R.E., Hinrichs, K.-U., **2012**. Mono- and dihydroxyl Glycerol Dibiphytanyl Glycerol Tetraethers in marine sediments: identification of both core and intact polar lipid forms. **Geochimica et Cosmochimica Acta** 89, 102-115.

Liu, X.-L., Lipp, J. S., Schröder, J. M., Summons, R. E., Hinrichs, K. -U., **2011**. Isoprenoidal glycerol dialkanol diethers: a series of novel archaeal lipids in marine sediments. **Organic Geochemistry** 43, 50-55.

Liu, X.-L., Lipp, J.S., Hinrichs, K.-U., **2011**. Distribution of intact and core GDGTs in marine sediments. **Organic Geochemistry** 42, 368-375.

Liu, X.-L., Leider, A. Gillespie, A., Gröger, J., Versteegh, G.J.M., Hinrichs, K-U., **2010**. Identification of polar lipid precursors of the ubiquitous branched GDGT orphan lipids in a peat bog in Northern Germany. **Organic Geochemistry** 41, 653–660.

Wilhelm, M.B., Davila, A.F., Eigenbrode, J.L., Parenteau, M.N., Jahnke, L.L., **Liu, X.-L.**, Summons, R.E., Wray, J.J., Stamos, B.N., O'Reilly, S.S., Williams, A., **2016 in press**. Xeropreservation of functionalized lipid biomarkers in hyperarid soils in the Atacama Desert. **Organic Geochemistry** 1–40.

Zhang, H., Cao, C., **Liu, X.-L.**, Mu, L., Zheng, Q., Liu, F., Xiang, L., Liu, L., Shen, S., **2015**. The terrestrial end-Permian mass extinction in South China. **Palaeogeography, Palaeoclimatology, Palaeoecology** 448, 108-124.

Lü, X., **Liu, X.-L.**, Elling, F., Yang H., Xie, S., Song, J., Li, X., Yuan, H., Li, N., Hinrichs, K-U., **2015**. Hydroxylated isoprenoid GDGTs in Chinese coastal seas and their potential as a paleotemperature proxy for mid-to-low latitude marginal seas. **Organic Geochemistry** 89, 31-43..

Birgel, D., Guido, D., **Liu, X.-L.**, Hinrichs, K-U., Gier, S., Peckmann, J., **2014**. Hypersaline conditions during deposition of the Calcare di Base revealed from archaeal di-and tetraether inventories. **Organic Geochemistry** 77, 11–21.

Zhu, C., Yoshinaga, M.Y., Peters, C.A., **Liu, X.-L.**, Elvert, M., Hinrichs, K-U., **2014**. Identification and significance of unsaturated archaeal tetraether lipids in marine sediments. **Rapid Communications in Mass Spectrometry** 28, 1144-1152.

Feng, D., Birgel, D., Peckmann, J., Roberts, H.H., Joye, S.B., Sassen, R., **Liu, X.-L.**, Hinrichs, K.-U., Chen, D., **2014**. Time integrated variation of sources of fluids and seepage dynamics archived in authigenic carbonates from Gulf of Mexico Gas Hydrate Seafloor Observatory. **Chemical Geology** 385, 129-139.

Xie, S., **Liu, X.-L.**, Schubotz, F., Wakeham S.G., Hinrichs K.-U., **2014**. Distribution of glycerol ether lipids in the oxygen minimum zone of the Eastern Tropical North Pacific Ocean. **Organic Geochemistry** 71, 60–71.

Becker, K.W., Lipp, J.S., Zhu, C., **Liu, X.-L.**, Hinrichs, K.-U., **2013**. An improved method for the analysis of archaeal and bacterial ether core lipids. **Organic Geochemistry** 61, 34-44.

Shen, S.-Z., Crowley, J.L., Wang, Y., Bowring, S.A., Erwin, D.H., Sadler, P.M., Cao, C.-Q., Rothman, D.H., Henderson, C.M., Ramezani, J., Zhang, H., Shen, Y., Wang, X.-D.,

Wang, W., Mu, L., Li, W.-Z., Tang, Y.-G., **Liu, X.-L.,** Liu, L.-J., Zeng, Y., Jiang, Y.-F., Jin, Y.-G., **2011**. Calibrating the End-Permian Mass Extinction. **Science** 17 Nov. 2011

Zhang, Y.G., Zhang, C.L., **Liu, X.-L.**, Li, L., Hinrichs, K.-U., Noakes, J.E., **2011**. Methane Index: A tetraether archaeal lipid biomarker indicator for detecting the instability of marine gas hydrates. **Earth and Planetary Science Letters** 307, 525–534.

Perevalova, A.A., Bidzhieva, S.K., Kublanov, I.V., Hinrichs, K.-U., **Liu, X.-L.**, Mardanov, A.V., Lebedinsky, A.V., Bonch-Osmolovskaya, E.A., **2010**. Fervidicoccus fontis gen. nov., sp. nov., an anaerobic, thermophilic crenarchaeote from terrestrial hot springs, and proposal of Fervidicoccaceae fam. nov. and Fervidicoccales ord. nov. **International Journal of Systematic and Evolutionary Microbiology** 60, 2082-2088.

Wang S.N., Xu P., Tang H.Z., Meng J., **Liu X.-L.**, Ma C. Q., **2005**. "Green" route to 6-hydroxy-3-succinoyl-pyridine from (S)-nicotine of tobacco waste by whole cells of a Pseudomonas sp. **Environmental Science and Technology** 39: 6877-6880.

Wang S.N., Xu P., Tang H.Z., Meng J., **Liu X.-L.**, Huang J., Chen H., Du Y., Blankespoor H. D., **2004**. Biodegradation and detoxification of nicotine in tobacco solid waste by a Pseudomonas sp. **Biotechnology Letter** 26: 1493-1496.

Conference presentations

Liu X.-L., Summons R.E., M.B. Higgins, C.C. Walters, Esterified Glycerol Dialkyl Glycerol Tetraethers derived from Low Temperature Thermal Diagenesis of Microbial Lipids, 28th International Meeting on organic Geochemistry (IMOG), Florence, Italy 2017, **Poster Presentation.**

Liu X.-L., Hinrichs K.-U., Summons R.E., Analysis of Glycerol Configuration in Archaeal Tetraethers, Gordon Research Conference, Organic Geochemistry Meeting, Holderness NH, United States 2016, **Poster Presentation.**

Liu X.-L., Santiago Torio A.D., Summons R.E., Bosak T., Novel archaeal tetraether lipids with a cyclohexyl ring identified in Fayetteville Green Lake, NY and other sulfidic lacustrine settings, Gordon Research Conference, Geobiology Meeting, Galveston TX, United States 2016, **Poster Presentation.**

Liu X.-L., Birgel D., Elling F., Lipp J.S., Summons R.E., Hinrichs K.-U., Predominance of the parallel glycerol arrangement in archaeal tetraethers from marine sediments, 27th International Meeting on organic Geochemistry (IMOG), Prague, Czech Republic 2015, **Oral Presentation.**

Liu X.-L., Klepac-Ceraj V., Santiago Torio A.D., Summons R.E., Bosak T., Novel cyclohexyl ring containing archaeal tetraether lipids identified in sulfidic lake deposit, Goldschmidt 2015, Prague, Czech Republic 2015, **Poster Presentation.**

Liu X.-L., Elling F., Birgel D., Lipp J.S., Summons R.E., Hinrichs K.-U., From ether to acid: a plausible degradation pathway of glycerol dialkyl glycerol tetraethers. Gordon Research Conferences, Organic Geochemistry Meeting, United States 2014, **Poster Presentation.**

Liu X.-L., Zhu C., Wakeham S.G., Hinrichs K.-U., In-situ production of branched glycerol dialkyl glycerol tetraethers in anoxic marine water column, 26th International Meeting on organic Geochemistry (IMOG), Tenerife, Span 2013, **Oral Presentation.**

Liu X.-L., Lipp J.S., Simpson J., Lin Y.-S., Summons R.E., Hinrichs K.-U., Exploring the diversity of archaeal ether lipids in marine sediments, 25th International Meeting on organic Geochemistry (IMOG), Interlaken, Switzerland 2011, **Oral Presentation.**

Liu X.-L., Lipp J.S., Hinrichs K.-U., Distribution of fossil and intact archaeal GDGTs in marine sediments, 24th International Meeting on organic Geochemistry (IMOG), Bremen,

Germany 2009, **Oral Presentation.**