Xiu Wei

Associate Researcher, Ph.D./Master Supervisor **Email:**

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Research Interests: Aquifer Biogeochemistry, Environmental Microbiology

Personal profile:

In 2011, he graduated from the Environmental Engineering Department of Kunming University of Science and Technology (a national key training discipline), and in 2016 he was awarded the degree in environmental science and engineering from China University of Geosciences (Beijing) and stayed in the same year, working as a graduate student in the Academy of Sciences State Key Laboratory of Physical and Environmental Geology; in 2019, he was exceptionally appointed as a master supervisor, and in 2020 he was promoted to associate Researcher, will be hired as a doctoral supervisor in 2021, the eighth batch of "truth-seeking scholars" of China University of Geosciences (Beijing). 2018.11-2020.12 School of Earth and Environmental Sciences and Williamson Research Center, University of Manchester Sub-Environmental Science) Visiting Scholar (2018.11-2019.11 is funded by CSC; 2019.12 to now is remote visit scholar). 2016 Outstanding Doctoral Dissertation of China University of Geosciences (Beijing). Served as the "Water" album Guest Editor, "iMeta" youth editorial board member and Frontiers series journals Microbiological Chemistry and Geomicrobiology Editorial Board Reviewing Editor.

ÿ Environmental Science and TechnologyÿWater Resources Researchÿ

The first author of international academic journals such as Environmental International and co-published 40 scientific research papers More than one paper, including the first/corresponding authorship, published in ES&T (3 papers), WRR (1 paper) and other international mainstream journals, with a total of more than 830 citations. Reviewed by more than ten international mainstream journals such as ES&T, WR, JHM, EP, etc. people.

Research situation:

He has long been engaged in theoretical and experimental research on environmental geochemistry and biogeochemistry. Currently the main research Interest includes biogeochemical mechanisms (C, P, N, S, Fe and other multi-element biogeochemical cycles), organic matter-microbe-mineral interactions, etc. proficient in various Along with experimental techniques, including molecular biology techniques (especially metagenomics, microbial ecology, etc.), Microbial pure culture technology, isotope analysis technology, three-dimensional fluorescence spectroscopy, synchrotron radiation technology (XANES and EXAFS), etc. For molecular bioinformatics analysis, there are good server analysis resources, and the subject Group builds 3 servers (128 cores, 4T memory; 56 cores, 500G memory; 24 cores, 200G memory), The United Kingdom cooperates with 3 shared servers (the maximum analysis capability exceeds 56 cores and 1.5T memory). Manchester

Many internationally renowned scientific research institutes, such as the University of Stuttgart University, the Swiss Federal Institute of Technology in Lausanne, etc., have established research institutes in the field of

Long-term and stable international cooperative relations.

Presided over or participated in scientific research projects (subjects):

1. General Fund Project of the National Natural Science Foundation of China, 42072273, "Decommissioning of CO2+O2 in-situ leaching uranium mines Biogeochemical process and reaction migration mechanism of uranium in groundwater in mining areas", 2021/01-2024/12, 610,000 yuan, In research, host

2. National Natural Science Foundation of China Youth Fund Project, 41702272, Iron reduction in high-arsenic groundwater systems Bacteria and their iron reduction-biogeochemical kinetics of arsenic release, 2018/01-2020/12, 270,000 yuan, closed topic, host

3. The National Key R&D Program "Key Scientific Issues of Transformative Technology" key project, 2021YFA0715900 , Research on the theory and technology of in-situ regulation of poor quality groundwater improvement, 2022/01-2026/12, in research, sub-project leader

4. Key project of National Natural Science Foundation of China, 42130509, typical groundwater driven by carbon, nitrogen and sulfur cycle Conversion process and enrichment mechanism of redox-sensitive components, 2022/01-2026/12, 2.89 million, under research, participation

5. International (Regional) Cooperation Project of the National Natural Science Foundation of China, 41861144027, CKDu in groundwater The enrichment mechanism, intake route and treatment technology of pathogenic factors, 2019/01-2021/12, 1.8 million yuan, under research, participate

6. National major science and technology sub-project, 2018ZX07109-004, groundwater pollution in typical replenishment areas Risk prevention and control key technology research and engineering demonstration, 2018/01-2020/06, 4 million, final, backbone

7. General project of the National Natural Science Foundation of China, 41672225, organic monomers in high-arsenic groundwater systems Isotopic characteristics and biogeochemical significance, 2017/01-2020/12, 800,000, completed, participated

8. National Outstanding Youth Science Fund Project, 41222020, Groundwater Biogeochemistry, 2013/01-2015/12, 1 million, completed, participated

Published papers:

2023

1. Chongsheng Lu, **Wei Xiu#,** Huaming Guo#, Guoxi Lian, Bing Yang, Tianjin Zhang, Erping Bi, Zheming Shi. 2023. Multi-isotope based identification and quantification of oxygen consuming processes in uranium hosting aquifers with CO2+ O2 in-situ leaching. Water Resources Research, e2022WR033980

2. Chaoshuo Hou, **Wei Xiu#,** Huaming Guo, Simeng Li, Chunping Jiang. 2023.

Application of Al-Fe Co-modified Rice-Straw Biochar to Fluoride Removal: Synthesis, Optimization, and Performance. Water, Air, & Soil Pollution 234 (3), 169

3. Natali Hernandez-Becerra, Lisa Cliffe, **Wei Xiu,** Christopher Boothman, Jonathan R. Lloyd, Sophie L. Nixon#. 2023. New microbiological insights from the Bowland shale highlight heterogeneity of the hydraulically fractured shale microbiome. Environmental Microbiome 18 (1), 14

4. Oliver Moore, **Wei Xiu,** Huaming Guo, David A. Polya, Bart van Dongen, Jonathan R. Lloyd. 2023. The role of electron donors in arsenic-release by redox-transformation of iron oxide minerals–A review. Chemical Geology, 121322

2022:

1. **Wei Xiu*,** Min Wu*, Sophie L. Nixon, Jonathan R. Lloyd, Naji M. Bassil, Ruixuan Gai, Tianjin Zhang, Zhan Su, and Huaming Guo #. 2022. Genome-Resolved Metagenomic Analysis of Groundwater: Insights into Arsenic Mobilization in Biogeochemical Interaction Networks. Environmental Science & Technology 56 (14), 10105-10119. DOI: 10.1021/acs.est.2c02623

2. Di Zhang * Tiantian Ke *, **Wei Xiu** #, Cui Ren, Guangyu Chen 3, Jonathan R. Lloyd, Naji M. Bassil, Laura A. Richards, David A. Polya, Guangcai Wang, Huaming Guo #. 2022. Quantifying sulfidization and non-sulfidization in long-term in-situ microbial colonized As(V)-ferrihydrite coated sand columns: Insights into As mobility. Science of The Total Environment 858(Pt 3):160066 DOI: 10.1016/j.scitotenv.2022.160066

3. Tiantian Ke*, Di Zhang *, Huaming Guo #, **Wei Xiu,** Yi Zhao Geogenic arsenic and arsenotrophic microbiome in groundwater from the Hetao Basin. 2022. Science of The Total Environment 852(Pt 2):158549. DOI: 10.1016/j.scitotenv.2022.158549

4. Mengyu Liang, Huaming Guo; Wei Xiu 2022. Effects of low molecular weight organic acids with different functional groups on arsenate adsorption on birnessite. Journal of Hazardous Materials 436(20):129108. DOI: 10.1016/j.jhazmat.2022.129108

2021

1. **Xiu, W.,** Ke, T., Lloyd, JR, Shen, J., Bassil, NM, Song, H., Polya, DA, Zhao,

Y., Guo, H., 2021. Understanding Microbial Arsenic-Mobilization in Multiple Aquifers: Insight from DNA and RNA Analyses. Environ. Sci. Technol. https://doi.org/10.1021/acs.est.1c04117

2. **Xiu, Wei;** Yuan, Wenjie; Polya, David A.; Guo, Huaming*; Lloyd, Jonathan R.; A critical review of abiotic and microbially-mediated chemical reduction rates of Fe(III) (oxyhydr)oxides using a reactivity model, Applied Geochemistry, 2021, 126. (Journal paper; Editor's Choice for open access)
3. Hou, C., **Xiu, W.*,** He, M., 2021. Simulating Nonequilibrium Transport Processes of Ammonium Through Unsaturated Sandy Soil. Water, Air, Soil Pollut. 232, 1–15. https://doi.org/10.1007/s11270-021-05409-4

2020

1. Liang Wei, Qian Ding, Huaming Guo, **Wei Xiu,** Zhengcai Guo. (2020) Forms and mobility of heavy metals/metalloids in sewage-irrigated soils in the North China Plain. J Soils Sediments. https://doi.org/10.1007/s11368-020-02744-7
2. Liang, M., Guo, H. & **Xiu,** W. (2020) Arsenite oxidation and arsenic adsorption on birnessite in the absence and the presence of citrate or EDTA. Environ Sci Pollut Res. https://doi.org/10.1007/s11356-020-10292-3
3. H. Guo, Y. Chen, H. Hu, K. Zhao, H. Li, S. Yan, **W. Xiu,** RM Coyte, A. Vengosh (2020) High hexavalent chromium concentration in groundwater from a deep aquifer in the Baiyangdian Basin of the North China Plain. Environ. Sci. Technol., 54 , 10068-10077
4. W Qiao, H Guo, C He, Q Shi, **W Xiu,** B Zhao. (2020) Molecular evidence of arsenic mobility linked to biodegradable organic matter Environmental science & technology 54 (12), 7280-7290
5. **W Xiu,** J Lloyd, H Guo, W Dai, S Nixon, NM Bassil, C Ren, C Zhang, T Ke,, , David Polya. (2020) Linking microbial community composition to hydrogeochemistry in the western Hetao Basin: Potential importance of ammonium as an electron donor during arsenic mobilization. Environment International 136, 105489

2019

1. **Xiu, W.,** Yu, X., Guo, H., Yuan, W., Ke, T., Liu, G., ... & Dong, H. (2019). Facilitated arsenic immobilization by biogenic ferrihydrite-goethite biphasic Fe (III) minerals (Fh-Gt Bio-bi-minerals). ***Chemosphereÿ225,*** 755-764.

2. HY Wang, HM Guo, **W. Xiu** *, J Bauer, GX Sun, XH Tang, S Norra. Indications that weathering of evaporite minerals affects groundwater salinity and As mobilization in aquifers of the northwestern Hetao Basin, China. ***Applied Geochemistry*** 109, 104416.

3. **Xiu, W.,** Guo, HM, Yu, XN, Yuan, WJ, & Ke, TT (2019, August). Characteristics and mechanisms of arsenic behavior during the microbial oxidation-reduction of iron. In Environmental Arsenic in a Changing World: Proceedings of the 7th International Congress and Exhibition on Arsenic in the Environment (AS 2018), July 1-6, 2018, Beijing, PR China (p. 150). CRC Press.

4. Li, X., Guo, H., Zheng, H., **Xiu, W.,** He, W., & Ding, Q. (2019). Roles of different molecular weights of dissolved organic matter in arsenic enrichment in groundwater: Evidences from ultrafiltration and EEM-PARAFAC. ***Applied Geochemistryÿ104,*** 124-134.

5. Guo, H., Li, X., **Xiu,** W., He, W., Cao, Y., Zhang, D., & Wang, A. (2019). Controls of organic matter bioreactivity on arsenic mobility in shallow aquifers of the Hetao Basin, PR China. ***Journal of Hydrology,*** *571,* 448-459.

6. Li, F., Guo, H., Zhao, K., **Xiu, W.,** Shen, J., & Chen, Y. (2019). transport of arsenic through modified granular natural siderite filters for arsenic removal. ***Geoscience Frontiersÿonline,*** in press.

7. H Guo, Z Shen, Y Chen, K Zhao, H Li, W Xiu, L Weng. (2019) Differences in hydrogeochemistry between shallow and deep aquifers in the Baiyangdian basin, China. **E3S Web of Conferences,** 98, 07009

8. M Liang, H Guo, W Xiu. (2019) Mechanisms of arsenite oxidation and arsenate adsorption by a poorly crystalline manganese oxide in the presence of low molecular weight organic acids. E3S Web of Conferences 98, 04009

2018

1. Wang, Z., Guo, H., **Xiu, W.,** Wang, J., & Shen, M. (2018). High arsenic groundwater in the Guide basin, northwestern China: Distribution and genesis mechanisms. *Science of the Total Environment, 640,* 194-206.

2. Mao, R., Guo, H., **Xiu, W.,** Yang, Y., Huang, X., Zhou, Y., ... & Jin, J. (2018). Characteristics and compound-specific carbon isotope compositions of sedimentary lipids in high arsenic aquifers in the Hetao basin, Inner Mongolia. *Environmental pollution, 241,* 85-95.

3. Guo, H., Zhao, W., Li, H., **Xiu, W.,** & Shen, J. (2018). High Radionuclides in Groundwater of an Inland Basin from Northwest China: Origin and Fate. *ACS Earth and Space Chemistry,* 2(11), 1137-1144.

4. Ma, J., Guo, H., Lei, M., Li, Y., Weng, L., Chen, Y., ... & **Xiu, W.** (2018). Enhanced transport of ferrihydrite colloid by chain-shaped humic acid colloid in saturated porous media. *Science of the Total Environment, 621,* 1581-1590.

5. **Xiu, W.,** Guo, H., Zhou, X., Wanty, R. B., & Kersten, M. (2018). Change of arsenite adsorption mechanism during aging of 2-line ferrihydrite in the absence of oxygen. *Applied Geochemistry, 88,* 149-157.

2017

1. Ting Liu, Huaming Guo, **Wei Xiu,** Chao Wei, Xiaomeng Li, Di Zhang, Wei Song. (2017) Biomarkers of arsenic exposure in arsenic-affected areas of the Hetao Basin, Inner Mongolia. ***Science of the Total Environment,*** 609:524.

2. ZhilinYang, **Wei Xiu,** Huaming Guo, Fulan Li. (2017). Arsenate removal from aqueous solution by siderite synthesized under high temperature and high pressure. ***Environmental Science & Pollution Research,*** 1-10.

3. Di Zhang, Huaming Guo, **Wei Xiu,** Ping Ni, Hao Zheng, Chao Wei. (2017). In-situ mobilization and transformation of iron oxides-adsorbed arsenate in

natural groundwater. ***Journal of Hazardous Materials,*** 321, 228-237.

2016

1. **Wei Xiu,** Huaming Guo, Jiaxing Shen, Shuai Liu, Susu Ding, Weiguo Hou, Jie Ma, Hailiang Dong. (2016). Stimulation of Fe(II) oxidation, biogenic lepidocrocite formation, and arsenic immobilization by *Pseudogulbenkiania* sp. strain 2002. ***Environmental Science & Technology,*** 50(12), 6449-6458.

2. Guo, H., Jia, Y., Wanty, RB, Jiang, Y., Zhao, W., **Xiu, W., ...** & Zhang, D. (2016). Contrasting distributions of groundwater arsenic and uranium in the western Hetao basin, Inner Mongolia: implication for origins and fate controls. ***Science of the Total Environment,*** *541,* 1172-1190.

2015

1. **Wei Xiu,** Huaming Guo, Qiong Liu, Zeyun Liu, Yan'e Zou, Baogang Zhang. (2015). Arsenic removal and transformation by *Pseudomonas* sp. strain ge-1-induced ferrihydrite: co-precipitation versus adsorption. ***Water Air & Soil Pollution,*** 226 (6), 167.

2. Huaming Guo, Zeyun Liu, Susu Ding, Chunbo Hao, **Wei Xiu,** Weiguo Hou. (2015). Arsenate reduction and mobilization in the presence of indigenous aerobic bacteria obtained from high arsenic aquifers of the Hetao basin, Inner Mongolia. ***Environmental Pollution,*** 203, 50-59.