Jin Zhu
Project Engineer
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Jin is a Project Engineer at the UNSW Water Research Laboratory. She has expertise in drinking water quality, river restoration, green remediation of soil and groundwater.

Jin has 9 years of experience in water engineering, having worked on river remediation, soil and groundwater remediation, and biogenic taste and odour in drinking water supply. Before joining WRL projects team in May 2024, she completed a PhD at the Water Research Centre, School of Civil and Environmental Engineering at UNSW Sydney. Jin has been closely working with Australian industry collaborators from WaterNSW, Sydney Water and Melbourne Water. She is inspired to solve the real-world water problems by engaging with internal and external collaborators in water sectors.

Qualifications and awards

PhD in Environmental Engineering, UNSW, 2024
M.Eng. in Environmental Engineering, East China Normal University, CN, 2018
B.Eng. in Civil Engineering, Nanjing University of Information Science and Technology, CN, 2015
AWA Student Water Prize 2024 (An NSW finalist)

Professional history

2024-Current: Project Engineer, UNSW WRL
2024: Senior Project Officer, UNSW
2020-2021: Research Assistant, Tsinghua University, Beijing, CN
2019-2020: Environmental consultant, PONY Test International Group, Shanghai, CN
2018-2019: Research Assistant, Tsinghua, CN

Expertise

- Drinking water quality
- River restoration
- Soil and groundwater remediation
- Historical water quality data analysis

- Algae culturing and jar testing operation
- Data extraction and meta-data analysis
- Green material synthesis and characterization
- Mesocosm sampling and analysis

Summary of relevant experience

River, soil and groundwater remediation
2020: Remediation techniques for PFAS contaminated sites
2019: Modified biochar materials for benzene removal from groundwater
2018: Review on phytoremediation of contaminated soil
2018: Controlled release materials for benzene removal from groundwater
2017: Mesocosm study on river sediment
2016: River simulation system setup and operation
2015: Review on biogeochemical cycling of nitrogen and sulphur in aquatic systems

Wetland restoration and drinking water quality
2024: Hexham Swamp sea level rise
2023: Meta-analysis of odour treatability at full-scale DWTPs
2023: Jar testing and pilot plant operation at Orchard Hills Water Filtration Plant
2022: Diatom culturing and analysis of major fractions of organic matter
2021: Source-to-tap analysis of odour risks in a drinking water system fed by mixed water supplies
2020: Review on source-to-tap management of biogenic taste and odour in drinking water

Analytical Skills	Computing Skills
Characterization of synthesized materials:	Programming: R studio
XRD, FTIR, XPS, SEM, EPR	GIS: ArcGIS
Detection and characterization of organic compounds:	Analytical software: Jade, XPS
GC-FID, GC-MS, ICP-OES, LC-OCD	Data extraction: GetData Digitizer
Floc size and strength: Mastersizer and Zeta sizer	
Routine water quality: Turbidity meter, UV spectrometer,	
pH meter, DO meter	

Publications

Selected journal and conference papers

Zhu, J., Stuetz, R.M., Hamilton, L., Power, K. and Tamburic, B. **2023**. Odour management in drinking water systems fed by mixed water supplies. Journal of Water Process Engineering, 56, 104329.

Zhu, J., Stuetz, R.M., Hamilton, L., Power, K., Crosbie, N.D. and Tamburic, B. **2022**. Management of biogenic taste and odour: From source water, through treatment processes and distribution systems, to consumers. Journal of Environmental Management 323(116225).

Zhu, J., Song, Y., Wang, L., Zhang, Z., Gao, J., Tsang, D.C., Ok, Y.S. and Hou, D. **2022**. Green remediation of benzene contaminated groundwater using persulfate activated by biochar composite loaded with iron sulfide minerals. Chemical Engineering Journal 429, 132292.

Jin, Y., Wang, L., Song, Y., **Zhu, J.**, Qin, M., Wu, L., Hu, P., Li, F., Fang, L. and Chen, C. **2021**. Integrated life cycle assessment for sustainable remediation of contaminated agricultural soil in China. Environmental Science & Technology 55(17), 12032-12042.

Jia, X., Cao, Y., O'Connor, D., **Zhu, J.**, Tsang, D.C., Zou, B. and Hou, D. **2021**. Mapping soil pollution by using drone image recognition and machine learning at an arsenic-contaminated agricultural field. Environmental Pollution 270, 116281.

Sheng, H., Weng, R., **Zhu, J.**, He, Y., Cao, C. and Huang, M. **2021**. Calcium nitrate as a bio-stimulant for anaerobic ammonium oxidation process. Science of the Total Environment 760, 143331.

Wang, L., Hou, D., Shen, Z., **Zhu, J.**, Jia, X., Ok, Y.S., Tack, F.M. and Rinklebe, J. **2020**. Field trials of phytomining and phytoremediation: A critical review of influencing factors and effects of additives. Critical Reviews in Environmental Science and Technology 50(24), 2724-2774.

Jia, H., Hou, D., O'Connor, D., Pan, S., **Zhu, J.**, Bolan, N.S. and Mulder, J. **2020**. Exogenous phosphorus treatment facilitates chelation-mediated cadmium detoxification in perennial ryegrass (*Lolium perenne* L.). Journal of Hazardous Materials 389, 121849.

Zhu, J., He, Y., Zhu, Y., Huang, M. and Zhang, Y. **2018**. Biogeochemical sulfur cycling coupling with dissimilatory nitrate reduction processes in freshwater sediments. Environmental Reviews 26(2), 121-132.

Wang, J., He, Y., **Zhu, J.**, Guan, H. and Huang, M. **2017**. Screening and optimizing of inhibitors for ammonia-oxidizing bacteria in sediments of malodorous river. Applied Microbiology and Biotechnology 101, 6193-6203.

Zhu, J., He, Y., Wang, J., Qiao, Z., Wang, Y., Li, Z. and Huang, M. **2017**. Impact of aeration disturbances on endogenous phosphorus fractions and their algae growth potential from malodorous river sediment. Environmental Science and Pollution Research 24, 8062-8070.

Industry engagement and placement

Nov - Dec 2023   Orchard Hills Water Filtration Plant, on-site jar test and pilot plant operation with Sydney Water

July 2023   Prospect Water Filtration Plant, training with SUEZ and Sydney Water