Liu Mengjie

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Education

University of Chinese Academic of Science 2019.09 - 2024.06

Environmental Engineering PhD

- GPA: 3.92/4.0 6 SCI papers, 1 Chinese paper, 1 group standard
- Honors & Awards: National Scholarship, President's Award of Chinese Academy of Sciences, Qian Yi Environment Award of Tsinghua University, Outstanding Student Leader, Merit Student

Huazhong University of Science and Technology 2015.09 - 2019.07

Municipal Engineering Bachelor

- GPA: 3.98/4.0 (rank 1st)
- Honors & Awards: National Scholarship (2017 & 2018), Merit Student (2016-2018), Outstanding Student of Qiming College, Guanghua Scholarship

Experience

Postgraduate Party Branch secretary 2022.09 - End Date

- **Organize activities**: Organize activities once a month; Through various forms of activities such as knowledge contests, visits to red scenic spots, essay contests, etc., the participation rate has increased from 50% and maintained above 80%.
- **Teamwork**: Carry out the meeting of the committees and the group leaders, divide the tasks, and collect opinions. Use the public account to publicize the activity and collect feedback to optimize the activities.
- **Brand building**: Organize brand activities based on actual needs, including experience sharing by outstanding students, employment sharing by graduates and academic lectures. Collaborate with the Association of Graduate Students to expand the service scope to all students of the institute.
- **Emergency management**: Set up a daily report system to help the college to collect student health information during the COVID-19 outbreak. The report rate exceeded 95% and realized zero infection during the 91-day lockdown.

Skills

- **Personal website**: Build a personal website and share Kaggle data analysis projects and tutorials
- **Programming language**: R (tidyverse, shiny, flexdashboard), C++, SQL
- **Software**: R Markdown，Tableau，Microsoft Office，ArcGis，QGis，Origin
- **Certificate**: Computer Test Band 4 (Network Engineer), Computer Test Band 3 (Network Technology), Computer Test Band 2 (C++), CET-6

Academic Projects

National evaluation of tap water quality 2021.03 - 2022.06

Cooperated with Yale and Xiamen University, published a paper on Nature sustainability. Project leader

- **Situation & Task**: Assess the health risks and causes of tap water quality in China, and provide solutions.
- **Action**: Collecting tap water samples from 103 major cities by advertising free water quality testing on WeChat Moments. Using correlation analysis, spatial autocorrelation and partial least squares path model to verify the spatial correlation between bladder cancer incidence and water quality. Taking the initiative to contact authoritative experts for cooperation.
- **Result**: After 52 email discussions, the collaborative paper was published, received reports from domestic and foreign media, and was highly recognized and appraised by professors of Stanford University and Hong Kong University of Science and Technology.

Design of bubbleless aerated biological activated carbon (BAC) 2020.09 - 2022.07

Designed an process for efficient water purification , published 2 papers on top journals. Project leader

- **Situation & Task**: Develop a low-cost and uniform aeration method to overcome the poor degradation of BAC caused by oxygen deficiency.
- **Action**: Based on the structural characteristics of hollow fiber membranes, the bubbleless aeration method was developed, and the positive effects of uniform aeration on biodegradation were explained.
- **Result**: After the continuous operation for more than 400 days, the removal rate of organic matter remained at > 80%, and the removal rate increased by 50%.

Coking wastewater defluorination research project 2019.09 - 2020.03

Cooperated with a Coal Enterprise, developing a coagulant to treat coking wastewater. Technical director

- **Situation & Task**: Develop an appropriate process to treat coking wastewater, ensuring it meets the effluent requirements and controlling the operation cost.
- **Action**: Adopted the low-cost coagulation process by literature review. Conducted a control variable experiment to explore the effects of the Al/Fe ratio and the solution properties on the removal efficiency.
- **Result**: The appropriate operation conditions were determined to increase the removal efficiency by 70% and reduce the operating cost by 60%.

Undergraduate research practice project 2017.03 - 2017.09

Applied for the summer research project of Vanderbilt University by myself, Project leader
and was the first undergraduate project leader of the college.

- **Situation & Task**: If I join the postgraduate research project, I cannot become the project leader, and would not have sufficient opportunities to practice. The college cannot provide conditions for undergraduate students to carry out research projects independently.
- Action: At an academic conference, I recommended myself to a professor from Vanderbilt University and obtained the invitation letter. As an outstanding student of Qiming University, I applied for the summer visiting program of the college and received 20,000 yuan of scientific research funding.
- **Result**: As the project leader, I completed a scientific research project of preparing degradable microbeads with green materials for phosphorus adsorption and removal. During the 2-month summer vacation, I completed all the experiments and published a paper with a postdoctoral fellow of Vanderbilt University.

Academic achievements

Spatial assessment of tap-water safety in China. Nature Sustainability. 2022.
Mengjie Liu, Nigel Graham, Wenyu Wang, Renzun Zhao, Yonglong Lu, Menachem Elimelech* and Wenzheng Yu*.

Bubbleless Air Shapes Biofilms and Facilitates Natural Organic Matter Transformation in BiologicalActivated Carbon. Environmental Science & Technology 2023.
Mengjie Liu, Nigel J. D. Graham, Lei Xu, Kai Zhang, and Wenzheng Yu*.

Removal of Small-Molecular-Weight Organic Matter by Coagulation, Adsorption, and Oxidation: MolecularTransformation and Disinfection Byproduct Formation Potential. ACS ES&T Engineering 2022.
Mengjie Liu, Muhammad Saboor Siddique, Nigel J. D. Graham, and Wenzheng Yu*.

Surface chemical groups of flocs are key factors for the growth of flocs in sweep coagulation: A case study ofsurface occupation by humic acid. ACS ES&T Engineering 2022.
Mengjie Liu, Wenzheng Yu*

Effect of pre-coagulation using different aluminium species on crystallization of cake layer and membranefouling. npj Clean Water 2019.
Wenzheng Yu*, Mengjie Liu, Xuejia Zhang, Nigel Graham and Jiuhui Qu.

Combining Magnetic Ion Exchange Media and Microsand before Coagulation as Pretreatment for Submerged Ultrafiltration: Biopolymers and Small Molecular Weight Organic Matter. ACS Sustainable Chemistry & Engineering 2019.
Wenzheng Yu*, Mengjie Liu, and Nigel J. D. Graham.