Siwei Gu

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Education

University of Ottawa (Ottawa, Canada) **Sep 2019 – Dec 2023**
Ph.D. in Chemical Engineering
Beijing University of Chemical Technology (Beijing, China) **Sep 2015 - Jun 2019**
B.A. in Pharmaceutical Engineering

Academic Position

University of Notre Dame (Notre Dame, the United States) **Dec 2023 – Present**
Postdoctoral Researcher

Funding

- Selected as Research Assistant and Teaching Assistant, amounting to $90,000CAD/3years
- Award International Doctoral Scholarship, $30,000CAD/3years
- Secured admission PhD Studentship, $27,000CAD/3years
- Awarded two internally graduate project grants, amounting to $10,000CAD/year
- Won National Scholarship for Outstanding Self (China), $6,000USD/year

Honors & Awards

National Scholarship for Outstanding Self-Funded Foreign Students China Scholarship Council Jun 2023
Graduate International Research Scholarship, University of Ottawa Mar 2023
Ph.D. Internal Experience Scholarship, University of Ottawa Mar 2023
Admission Scholarship-Doctorate, University of Ottawa Sep 2020
Second prize in China Undergraduate Mathematical Contest in Modeling, COMAP May 2016
The Second Prize Scholarship, Ministry of Education of the People's Republic of China May 2016
Second prize in national chemistry competition, Chinese Chemical Society Jun 2012

Publications

1. **S. Gu**, C.Q. Lan, Mechanism of heavy metal ion biosorption by microalgal cells : A mathematic approach. J. Hazard. Mater. 463, 132875. (JCR Q1, Impact factor 13.6, 2023)
2. **S. Gu**, C.Q. Lan, Enhanced Pb(II), Cd(II), Zn(II) biosorption by microalgae *Neochloris oleoabundans* cultivated at high culture pH. Chem. Eng. J. (JCR Q1, Impact factor 15.1, 2023)
3. **S. Gu**, C.Q. Lan, Lipid-extraction algal biomass for biosorption of bivalent lead and cadmium ions: kinetics and isotherm, Chemical Engineering Science, 118778, 0009-2509. (JCR Q2, Impact factor 4.7, 2023)
4. **S. Gu**, Y. Su, C.Q. Lan, Effect of phosphate in medium on cell growth and Cu (II) biosorption by green alga *Neochloris oleoabundans*, Chem. Eng. Res. Des. 185, 186–197. (JCR Q2, Impact factor 3.9, 2022)
5. **S. Gu**, E.M. Boase, C.Q. Lan, Enhanced Pb(II) removal by green alga *Neochloris oleoabundans*

cultivated in high dissolved inorganic carbon cultures, Chem. Eng. J. 416, 128983. (JCR Q1, Impact factor 16.744, 2021)

6. **S. Gu**, C.Q. Lan, Biosorption of heavy metal ions by green alga *Neochloris oleoabundans*: Effects of metal ion properties and cell wall structure, J. Hazard. Mater. 418, 126336. (JCR Q1, Impact factor 14.224, 2021)
7. Z. Xu, **S. Gu**, D. Rana, T. Matsuura, C.Q. Lan, Chemical precipitation enabled UF and MF filtration for lead removal, J. Water Process Eng. 41, 101987. (JCR Q1, Impact factor 7.34, 2021)

In preparation:

1. S. Gu, C.H. Zhang, C.Q. Lan, Effect of nitrate on cell growth and biosorption of Pb(II) by green alga *Neochloris oleoabundans* (Submitted to Water Research Journal)
2. S. Gu, C.A. Khalil, K. Doudrick, Compared the short and ultra-short PFAS removal by WAX and MAX and active carbon under high fluoride and competitive surfactant conditions (In preparation)

Conference Presentations

Oral:

- 72nd Canadian Chemical Engineering Conference, Siwei Gu, Christopher Lan, Biosorption of Pb(II) and Cd(II) by residual biomass of green microalgal *Chlorella vulgaris* after lipid extraction, October 2022, Vancouver, Canada
- 70th Canadian Chemical Engineering Conference, Siwei Gu, Emma Mary Boase, Christopher Lan, Enhanced Pb (II) removal by microalgae cultivated in high dissolved inorganic carbon culture, October 2020, Ottawa, Canada

Poster:

- Engineering and Computer Science Graduate Poster Competition (University of Ottawa), Siwei Gu, Christopher Lan, Mechanism of heavy metal ion biosorption by microalgal cells: A mathematic approach, , March 2023, Ottawa, Canada

Supervision Experiences

Laboratory Demonstrator to graduate Students **Sep 2020 – Nov 2023**
Vishali Gopi, Huan Wu
Laboratory Demonstrator to Undergraduate Students **Sep 2019 – Nov 2023**
Emma Mary Boase, William Yuan, Tareq Mareh

Serves

- Journal Reviewer for Journal of Environmental Management
- Journal Reviewer for Journal of Hazardous Materials
- Journal Reviewer for Bioresource Technology
- Journal Reviewer for Chemical Engineering Journal
- Journal Reviewer for Water, Air & Soil Pollution Journal
- Membership of American Chemical Society (ACS)
- Membership of Association of Environmental Engineering and Science Professors (AEESP)

Research Experience

Civil and Environmental Engineering and Earth Sciences, University of Notre Dame
Postdoctoral Researcher **Dec 2023 – Present**

Project: Short and ultra-short PFASs removal by WAX and MAX under high fluoride and competitive surfactant conditions. – Funded by Department of Defense (ND-ECI)
Supervisor: Associate Professor Kyle Doudrick

- Engaged in cutting-edge research focused on the removal of short and ultra-short per- and polyfluoroalkyl substances (PFASs) using Weak Anion Exchange (WAX) and Mixed-Mode Anion Exchange (MAX) resins.
- Actively participating in Professor Kyle Doudrick research groups, presenting findings within the academic community, and contributing to the ongoing dialogue on emerging challenges in environmental engineering.

Chemical and Biological Engineering, University of Ottawa
Research Assistant **Sep 2019 – Dec 2023**

Project: Mechanism of heavy metal ion adsorption by microalgal cells, a mathematic approach. – Funded by Natural Sciences and Engineering Research Council of Canada
Supervisor: Professor Christopher Lan

- Employed a mathematical approach to unravel the mechanism behind the adsorption of heavy metal ions by microalgal cells, contributing to a deeper understanding of the processes involved.
- Collaborated with Professor Christopher Lan's research team to study the fundamental research of heavy metal ions accumulation by microalgae.

Project: Lipid-extraction algal biomass for biosorption of bivalent lead and cadmium ions: kinetics and isotherm. - Natural Sciences and Engineering Research Council of Canada
Supervisor: Professor Christopher Lan

- Explored the use of lipid-extracted algal biomass for biosorption of bivalent lead and cadmium ions, delving into the kinetics and isotherm aspects of the biosorption process.
- Personally carried out the extraction of microalgal lipids using the ultrasonication method.

Biodesign Swette Center for Environmental Biotechnology, Arizona State University
Exchange Scholar **Mar 2023 – May 2023**

Project: Bioaccumulation and toxicity of PFOA and PFOS on algae *Scenedesmus obliquus*. – Funded by University of Ottawa
Supervisor: Professor Bruce Rittmann

- Investigated the bioaccumulation patterns and toxicity effects of PFOA and PFOS on the algae *Scenedesmus obliquus*, contributing to our understanding of the environmental impact of these persistent pollutants.
- Collaborated with Professor Bruce Rittmann's research team to develop a synergistic platform for the PFAS removal.

Working Experience

Mobile agent (part-time), Bell Company, Ottawa, Canada **Sep 2021 – Apr 2022**

- Engaged in the sales of phone and internet plans

Teaching Assistant, University of Ottawa, Ottawa, Canada **Sep 2019 – Dec 2023**

- CHG8191C/Wastewater treatment (graduate course)-Once
- CHG3122/Chemical Engineering Practice (undergraduate course)-Five times
- CHG2317/Introduction to Chemical Process Analysis (undergraduate course)-Five times

Research Assistant, University of Ottawa, Ottawa, Canada **Sep 2020 – Dec 2023**

- Work as Research Assistant in Dr. Christopher Lan's Lab

Extracurricular Activities

- Proficient in Origin, 3D Max, ChemOffice, ChemDraw, ChemNMR, Casaxps and other professional software.
- Proficient in HPLC, FAAS, UV-Visual spectrometer, FTIR, TEM, SEM-EDX, TEM, XPS, XRD and LC-MS.
- Mandarin- Native speaker, English - proficiency

Referees

Associate Professor Kyle Doudrick, Department of Civil and Environmental Engineering and Earth Sciences, University of Notre Dame, the United State
Phone: 574-631-0305, mail: kdoudrick@nd.edu

Professor Bruce Rittmann, Department of Environmental Biotechnology, Arizona State University, the United States
Phone: 480-727-0434, mail: rittmann@asu.edu

Professor Christopher Lan, Department of Chemical and Biological Engineering, University of Ottawa, Canada
Phone: 613-619-5778, mail: clan@uottawa.ca