

# JOHN REY A. ROMAL

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## RESEARCH INTEREST

Design of separation processes and novel materials for critical minerals recovery and water remediation.

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## EDUCATION

### Iowa State University

Ph.D. in Environmental Engineering (Water Quality route)

*Dissertation:* Development of chitosan-based hydrogel for Dy(III) recovery

*Advisor:* Say Kee Ong, PhD

Ames, IA

2019-2024

### Iowa State University

M.S. in Organic Chemistry

*Thesis:* Triacetic acid lactone Mannich bases and its corrosion inhibition

Ames, IA

2014-2016

### University of Illinois - Chicago

Coursework in Chemical Engineering

Chicago, IL

2013-2014

### Benedictine University

B.S. in Chemistry

B.S. in Physics minor in Mathematics

Lisle, IL

2010-2013

### College of DuPage

General Education

Glen Ellyn, IL

2008-2010

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## PEER-REVIEWED PUBLICATIONS

1. **Romal\***, J.; DeBraske\*\*, E., Recoverable critical minerals from an acid mine drainage in Southern Wisconsin: Insights on the rare earth elements recovery using Purolite C160™ resin. *Journal of Water Process Engineering*, **2025**, 79, 108906. <https://doi.org/10.1016/j.jwpe.2025.108906>
2. **Romal\***, J., Cheng, M-H, Ong, S.K., The recovery of dysprosium(III) using a modified phosphorylated chitosan resin by Rapid Small-Scale Column Testing and its environmental impact assessment. *Journal of Environmental Management*, **2025**, 380, 125117. <https://doi.org/10.1016/j.jenvman.2025.125117>.
3. **Romal\***, J.; Ong, S. Opportunity for a greener recovery of dysprosium(III) from secondary sources by a novel Mannich reaction-modified phosphorylated chitosan hydrogel. *International Journal of Biological Macromolecules*, **2024**, 237, 131449. <https://doi.org/10.1016/j.ijbiomac.2024.131449>.
4. **Romal\***, J.; Ong, S.K., Marine polysaccharide-based hydrogels for critical materials selective removal and recovery: a review, *Coordination Chemistry Review* **2023**, 482, 215054. <https://doi.org/10.1016/j.ccr.2023.215054>

5. **Romal\***, J.; Ong, S.K., Single step fabrication of a dual-sensitive chitosan hydrogel by C-Mannich reaction: Synthesis, physicochemical properties, and screening of its Cu<sup>2+</sup> uptake, *Processes* **2023**, 11(2), 354. <https://doi.org/10.3390/pr11020354>
6. **Romal\***, J.; Ong, S.K., Extending the Library of 4-Hydroxycoumarin Derivatives with Potential Pharmacological Activity by a Catalyst-Free and Purification-Free Method, *ChemistrySelect* **2023**, 8, e202300519. <https://doi.org/10.1002/slct.202300519>.

#### NON-REFEREED PUBLICATION

1. E. DeBraske\*\*, **J. Romal\***. *Recoverable critical minerals from acid mine drainage sites in Grant County, WI: A Preliminary Investigation*. **2025**, Undergraduate Student Research Symposium, University of Wisconsin-Platteville, Platteville, Wisconsin.
2. **J.. Romal\***, S.K. Ong. *Simple and green fabrication of a novel phosphate functionalized chitosan hydrogel for dysprosium(III) recovery*. **2024**, 12th World Biomaterials Congress, Daegu, South Korea.
3. **J. Romal\***, S.K. Ong. *A novel water-insoluble chitosan hydrogel: Green fabrication method and copper(II) chelation capability*. **2024**, 12th World Biomaterials Congress, Daegu, South Korea.
4. **J. Romal\***, S.K. Ong. *One-Pot Synthesis of a Novel Chitosan-Based Hydrogel By C-Mannich Reaction and Screening of Its Cu (II)*. **2023**. 2023 AIChE International Annual Meeting, Orlando, FL.

\*Corresponding author

\*\*Undergraduate student co-author

#### GRANTS AND CONTRACTS

1. **J. Romal (PI)**, 2024, \$3,120, Undergraduate Research Assistantship Program, University of Wisconsin-Platteville, "Improving rare earth elements recovery from secondary sources by the flow-interruption method"
2. **J. Romal (Co-PI)**, 2019, \$23,000, Exploratory Research Program, Iowa State University, "Novel complexation compounds for heavy metals and rare earth elements removal and recovery"

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#### PROFESSIONAL ACADEMIC EXPERIENCE

##### **Lecturer of Environmental Engineering**

*Aug. 2024 -present*

University of Wisconsin-Platteville, Dept. of Civil & Environmental Engineering  
Platteville, WI

- Provide academic instructions from lower division general engineering coursework to upper division environmental engineering core and elective coursework.
- Co-advise senior design teams.

##### **Instructor of Chemistry and Chemical Instrumentation Manager**

*Aug. 2021 -May 2024*

Grand View University, Dept. of Chemistry and Physics, Des Moines, IA

- Developed core curriculum and lower division chemistry courses for in-person, Hy-flex, and fully online class formats.

- Involved in departmental assessment and DEI planning and implementation.
- Participated in departmental and university-wide committees.
- Lectured, evaluate, and assess progress of lower division chemistry, core curriculum, and senior seminar students.
- Maintained and managed chemical instrumentation facility that operates NMR, HPLC, FT-IR, ICP-OES, and UV-Vis.
- Advised and trained chemistry researchers on instrumentations and analytical techniques.

**Adjunct Faculty- Chemistry***Aug. 2019 –May 2024*

Des Moines Area Community College, Ankeny, IA

- Lectured and evaluated coursework in Principles of General Chemistry and Introduction to Organic Chemistry and Biochemistry for health science majors.

**Environmental Engineering Lab Manager/Research Scientist II***July 2018 - July 2021*

Iowa State University, Dept. of Civil, Construction, and Environmental Engineering

- Overseen environmental engineering research lab operations and space management.
- Authors and collaborates research proposal development.
- Managed undergraduate teaching lab operations and preparation.
- Implementation of Environmental, Health, and Safety policy and compliance.
- Conducted investigations to address safety issues in environmental engineering lab.
- Conducted development of the fee-for-service structure for equipment usage in the environmental engineering group.
- Maintained and troubleshoot chemical instruments including ICP-AES, TOC, SEAL Analyzer, and GC.

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**INDUSTRY EXPERIENCE****Chemist II***Oct. 2017 - July 2018*

Hach Company, Sciex Department

- Performed total synthesis of specialty organic chemicals from raw materials.
- Provided technical production support as a synthetic organic chemist.
- Assisted in method improvement of existing Standard Operation Procedures.
- Analyzed product failures and implementation of solutions.

**Laboratory Analyst***Aug. 2016 – Oct. 2017*

Eurofins Nutritional Analysis Center, HPLC Department

- Analyzed amino acids, sugars, and small organic molecules in human food, animal feed, and pharmaceutical products through quantification by HPLC.

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### RELEVANT COURSEWORK TAUGHT

- |                                                   |                                              |
|---------------------------------------------------|----------------------------------------------|
| 1. Principles of General Chemistry                | 4. Introduction to Environmental Engineering |
| 2. Introduction to Organic Chemistry/Biochemistry | 5. Air and Waste Management                  |
| 3. Environmental Chemistry                        | 6. Fluid Mechanics                           |

### RELEVANT GRADUATE/ADVANCED UNDERGRADUATE COURSEWORK

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|----------------------------------------------|--------------------------------------------|
| 1. Organic Synthesis                         | 8. Chemical and Physical Water Treatment   |
| 2. Physical Organic Chemistry                | 9. Biological Wastewater Treatment         |
| 3. Molecular Kinetics and Thermodynamics     | 10. Environmental Biotechnology            |
| 4. Chemical Quantum Mechanics                | 11. Chemical Reaction Engineering          |
| 5. Mathematical Methods in Physical Sciences | 12. Chemical Engineering Thermodynamics    |
| 6. Environmental Engineering Chemistry       | 13. Transport Phenomena I (Fluid Dynamics) |
| 7. Separation Process Engineering            | 14. Transport Phenomena II (Heat Transfer) |
|                                              | 15. Catalytic Reaction Engineering         |

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### UNDERGRADUATE RESEARCH MENTEES

1. Eli DeBraske, B.S. Environmental Engineering (Class of 2026), University of Wisconsin-Platteville
2. William Putney, B.S. Biochemistry (Class of 2023), Grand View University
3. Anie Reh bain, B.S. Biochemistry (Class of 2023), Grand View University
4. Euan Price, B.S. Genetics (Class of 2022), Iowa State University
5. Psalms Amos, B.S. Biology spec. in Environmental Science (Class of 2021), Iowa State University
6. Rodolfo Gonzalez, B.S. Mechanical Engineering (Class of 2021), Iowa State University
7. Sze (Faye) Lim, B.S. Biological Systems Engineering spec. in Bioenvironmental Engineering (Class of 2020), Iowa State University
8. Andrew Lewis, B.S. Civil Engineering spec. Environmental Engineering (Class of 2020), Iowa State University

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### GUEST LECTURE

1. "Overview of Critical Materials: Sources and Common Extraction Methods" Invited Lecture for Environmental Science Graduate Seminar at the University of Idaho, Idaho Falls, Idaho, **December 2024**.
2. "From Waste to Treasure: Opportunity for a sustainable recovery of rare earth elements" Invited Speaker at Platteville Society of Environmental Engineers, Platteville, Wisconsin, **October 2024**
3. "Rare earth elements separation and recovery strategies", Invited Lecture for Environmental Science Graduate Seminar at the University of Idaho, Idaho Falls, Idaho, **October 2023**.

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### HONORS AND AWARDS

1. Doctoral Research Excellence Award

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### PROFESSIONAL DEVELOPMENT ACTIVITIES

1. KEEN Leadership Academy, Fall 2025
  2. Entrepreneurial-Minded Learning and Student Research Workshop, Summer 2025
  3. KEEN Crescendo Workshop, Summer 2024
  4. Unwritten Curricula Proposal Writing Skills Workshop, Summer 2024
  5. The Inclusive STEM Teaching Project, Fall 2023
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### PROFESSIONAL AFFILIATIONS

1. American Chemical Society (**Member**)
  2. Association of Environmental Engineering and Science Professors (**Member**)
  3. American Institute of Chemical Engineers (**Member**)
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### SYNERGISTIC ACTIVITIES

#### **1. Committee Service**

- i. Department of Civil and Environmental Engineering Research Lab Committee (**Member**), *University of Wisconsin-Platteville, 2025-present*
- ii. College of EMS Research Committee (**Member**), *University of Wisconsin-Platteville, 2024-2025*
- iii. Scholarship Committee (**Member**), *University of Wisconsin-Platteville, 2024-2025*
- iv. Research Scholarship Symposium Committee (**Head**), *Grand View University, 2022-2023*
- v. Environmental Health and Safety Committee (**Member**), *Grand View University, 2022-2023*
- vi. Faculty Search Committee (**Member**), *Grand View University, 2022-2023*
- vii. Research Scholarship Symposium Committee (**Head**), *Grand View University, 2021-2022*
- viii. Health and Safety Committee (**Member**), *Iowa State University, 2019-2021*

#### **2. Journal Peer Reviewer**

- i. Results in Engineering
- ii. Chemical Engineering Journal
- iii. Processes