Johann V. Hemmer

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2320 S Brook St ▪ Louisville, KY 40208 ▪ USA

Education

University of Louisville

2025–curr. *Doctor of Philosophy*: Chemistry
Advisor: Andrew J. Wilson, Ph.D.

2022–2025 *Master of Science*: Chemistry
Advisor: Andrew J. Wilson, Ph.D.

Universidade do Vale do Itajaí (UNIVALI)

2019–2023 *Master of Science*: Pharmaceutical Sciences
Thesis: Preparation of γ-Fe_2O_3/Fe_3O_4/*O*-Carboxymethylchitosan/Activated Carbon Magnetic Nanocomposite and its Utilization in the Adsorption of Cr(VI) from Aqueous Media
Advisor: Clóvis Antônio Rodrigues, Ph.D.

2014–2018 *Bachelor of Science in Engineering*: Chemical Engineering
Thesis: Basic Metallic Oxides as Heterogeneous Catalysts for the Propanolysis of Methyl Paraoxon in a Batch Reactor
Advisor: Gizelle I. Almerindo, Ph.D.

Publications

2025

Effect of Temperature Gradients on the Selectivity of the Electrocatalytic CO_2 Reduction Reaction

Al-Amin, M.; **Hemmer, J. V.**; Wilson, A. J.
ACS Applied Materials and Interfaces
10.1021/acsami.5c12578

Marine Algae for Antimicrobial Applications: Silver Nanoparticles Prepared With *Sargassum Cymosum* Extract

Gerlach, O. M. S; **Hemmer, J. V.**; Wanderlind, E. H.; Gasparetto, R. L.; de Souza, E. S. M.; Fontoura, A.; dos Santos, A. L. H.; Bella-Cruz, A.; Tamanaha, M.; Radetski, C. M.; Almerindo, G. I.
ChemistrySelect
10.1002/slct.202405940

Heterogenous HER activity of Ni(ii)N_2S_2 molecular catalysts

Paudel, M.; S. Karki; Acharya, N.; Chapagain, S.; **Hemmer, J. V.**; Hofsommer, D. T.; Gupta, G.; Buchanan, R. M.; Grapperhaus, C. A.
Dalton Transactions
10.1039/D5DT00005J

2024

Suppressing Competing Solvent Reduction in CO_2 Electroreduction with a Magnetic Field

Karki, N.; Marquina, I. G.; **Hemmer, J. V.**; Yu, Y.; Wilson, A. J.
The Journal of Physical Chemistry Letters
10.1021/acs.jpclett.4c01672

Publications (continued)

2024

Quantification and description of photothermal heating effects in plasmon-assisted electrochemistry

Al-Amin, M.; **Hemmer, J. V.**; Joshi, P. B.; Fogelman, K.; Wilson, A. J.
Communications Chemistry
10.1038/s42004-024-01157-8

Reducing Ensemble Averaging for Mechanistic Understanding of Electrocatalysis in Energy Conversion Reactions

Hemmer, J. V.; Joshi, P. B.; Kaur, A.; Wilson, A. J.
The Journal of Physical Chemistry C
10.1021/acs.jpcc.3c06615

2023

Tracking Electrochemistry on Single Nanoparticles with Surface-Enhanced Raman Scattering Spectroscopy and Microscopy

Hemmer, J. V.; Joshi, P. B.; Wilson, A. J.
Journal of Visualized Experiments
10.3791/65486

2022

Synthesis and characterization of Schiff base derivatives and its effect on urinary parameters of Wistar rats: A comparative analysis with different classes of diuretics

Adão, J. R. U.; de Souza, P.; Boeing, T.; Mariano, L.; Brandt, A. N. B.; **Hemmer, J. V.**; Bazani, H. A. G.; de Andrade, S. F.; Corrêa, R.; Klein-Júnior, L. C.; Niero, R.
Journal of Molecular Structure
10.1016/j.molstruc.2022.132849

2021

Pterocladiella capillacea-stabilized silver nanoparticles as a green approach toward antibacterial biomaterials

Cavalli, P. A.; Wanderlind, E. H.; **Hemmer, J. V.**; Gerlach, O. M. S.; Emmerich, A. K.; Bella-Cruz, A.; Tamanaha, M.; Almerindo, G. I.
New Journal of Chemistry
10.1039/d0nj05150k

2020

Green Synthesis of Gold Nanoparticles Obtained from Algae *Sargassum cymosum*: Optimization, Characterization and Stability

Costa, L. H.; **Hemmer, J. V.**; Wanderlind, E. H.; Gerlach, O. M. S.; Santos, A. L. H.; Tamanaha, M.; Bella-Cruz, A.; Corrêa, R.; Bazani, H. A. G.; Radetski, C. M.; Almerindo, G. I.
BioNanoScience
10.1007/s12668-020-00776-4

Simple and highly active strontium-based catalyst for detoxification of an organophosphorus chemical warfare agent simulant

Hemmer, J. V.; Wanderlind, E. H.; Bazani, H. A. G.; Campos, C. E. M.; Wagner, T. M.; Emmerich, A. K.; Adão, J. R. U.; Almerindo, G. I.
Brazilian Journal of Chemical Engineering
10.1007/s43153-020-00048-4

Use of brewing industry waste to produce carbon-based adsorbents: Paracetamol adsorption study

Naldony, B.; Heineck, R. G.; Bazani, H. A. G.; **Hemmer, J. V.**; Biavatti, M. L.; Radetski, C. M.; Almerindo, G. I.
Journal of Environmental Science and Health - Part A
10.1007/s12668-020-00776-4

Professional Experience

2021–2022 **Central de Laboratórios de Ensaios Analíticos (CLEAn) - UNIVALI**, Itajaí, SC, Brazil
Chromatography Sector Manager
Main responsibilities: testing of cosmetics and pharmaceuticals products through HPLC, LC–MS and FTIR; method development and validation; corrective and preventive maintenance, and calibration of analytical instruments.

2019–2020 *Laboratory Technician*
Main responsibilities: physical-chemical analysis in water, wastewater and foodstuffs; method development and validation; maintenance of equipment, instruments and laboratory materials; sampling; internal quality control; inventory management; SOP writing and reviewing; ISO 17025 implementation.

2016–2018 *Laboratory Technician (Student Worker)*
Main responsibilities: physical-chemical analysis in water and wastewater; maintenance of equipment, instruments and laboratory materials; sampling.

Awards

- **2024** *Best Laboratory Teaching Assistant*
  Department of Chemistry, University of Louisville
- **2023** *Most Auspicious First Year Graduate Student*
  Department of Chemistry, University of Louisville
- **2019** *Certificate of Merit upon Graduation ("Honra ao Mérito")*
  Conselho Regional de Química (CRQ)
- **2019** *Certificate of Merit upon Graduation ("Honra ao Mérito")*
  Conselho Regional de Engenharia e Arquitetura (CREA)

Mentoring

- **2024** Mentored Undergraduate Research and Creative Activities Grant (MURC)
  Colin Ackerman, August 2024–present

Presentations

- **Tri-State Catalysis Society Meeting**
  "Effect of Temperature Gradients on the Selectivity of the CO_2 Electroreduction Reaction"
  Contributed Talk
  Lexington, KY, September 11, 2025
- **Graduate Student Regional Research Conference**
  "Measuring intermediates of electrochemical CO_2 reduction with spatially and temporally resolved SERS spectroscopy"
  University of Louisville, Louisville, KY, March 22, 2023
- **II Simpósio de Investigações Químico-Farmacêuticas**
  "Alumina-supported Strontium Oxide as Heterogeneous Catalyst for the Detoxification of an Organophosphorus Chemical Warfare Agent Simulant"
  Universidade do Vale do Itajaí (UNIVALI), Itajaí, BR, September 19, 2019
- **IV Simpósio de Ciência e Tecnologia Ambiental**
  "Adsorção de Paracetamol em Coluna de Leito Fixo Empacotada com Carvão Obtido de Bagaço de Malte"
  ("Adsorption of Paracetamol in a Fixed-bed Column Packed with Activated Carbon from Malt Bagasse")
  Universidade do Vale do Itajaí (UNIVALI), Itajaí, BR, June 4, 2019

Teaching Experience

Univeristy of Louisville

F2025	*CHEM210: Introduction to Chemical Analysis 4* Instructor: Richard Baldwin, Ph.D.
	CHEM210: Introduction to Chemical Analysis 4 Instructor: Richard Baldwin, Ph.D.
F2024	*CHEM426: Instrumental and Statistical Analysis* Instructor: Andrew J. Wilson, Ph.D.
S2024	*CHEM210: Introduction to Chemical Analysis 4* Instructor: Richard Baldwin, Ph.D.
	CHEM209: Introduction to Chemical Analysis 3 Instructor: Richard Baldwin, Ph.D.
F2023	*CHEM210: Introduction to Chemical Analysis 4* Instructor: Xiang Zhang, Ph.D.
	CHEM209: Introduction to Chemical Analysis 3 Instructor: Xiang Zhang, Ph.D.

Univeristy of Louisville

Su2023	*CHEM344: Organic Chemistry 2* Instructor: Andrea Gorce, Ph.D.
S2023	*CHEM344: Organic Chemistry 2* Instructor: Andrea Gorce, Ph.D.
F2022	*CHEM208: Introduction to Chemical Analysis 2* Instructor: Richard Baldwin, Ph.D.
	CHEM207: Introduction to Chemical Analysis 1 Instructor: Richard Baldwin, Ph.D.

University of Vale do Itajaí (UNIVALI)

2021.1	*Análise Instrumental (Instrumental Analysis)* Instructor: Rodolfo Moresco, Ph.D.

Outreach

- **Poster presentation organizer and presenter**
  Fairdale High School, Louisville, KY, February 2, 2024
- **Outreach experiment organizer**
  "Synthesis and optical characterization of Ag and Au nanoparticles"
  Fairdale High School, Louisville, KY, October 25, 2023
- **Organizer and panel presenter**
  Opção Profissional por Área (OPA)
  University of Vale do Itajaí (UNIVALI), Itajaí, BR, October, 2021