Curriculum Vitae

Gregory Earl Vansuch
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Education

Emory University, Atlanta, GA — 2014 – present
Ph.D. Candidate in Inorganic Chemistry — *Expected Graduation:* 05 – 14 – 2021

University of Colorado Boulder, Boulder, CO — 2009 – 2014
Bachelor of Arts in Chemistry (ACS Certified) and Mathematics
Minor in Biochemistry

Research Experience

Emory University, Atlanta, GA — 2014 – present
Advisor: R. Brian Dyer
Close collaboration with Michael W. W. Adams (University of Georgia)
Project: Equilibrium, steady state, and time-resolved spectroscopic studies of soluble hydrogense-1 from *Pyrococcus furiosus* enzyme variants.

University of Colorado Boulder, Boulder, CO — 2013 – 2014
Advisor: Niels Damrauer
Project: (Spectro)electrochemistry applied to ruthenium(II) polypyridyl complexes.

California Institute of Technology, Pasadena, CA — 2011
Advisor: Vladimir Dergachev
Summer REU with the Laser Interferometer Gravitational Wave Observatory.
Project: Investigated the robustness of an algorithm, PowerFlux, to parameters of simulated gravitational waves and utilized astronomical databases to determine locations that may contain sources of such waves to study with PowerFlux.

California Institute of Technology, Pasadena, CA — 2010
Advisor: Advisor: Jan Harms and Riccardo DeSalvo
Summer REU with the Laser Interferometer Gravitational Wave Observatory.
Project: Modeled portions of a seismometer to understand how it could be modified to study Newtonian Noise.

Publications

9. **Vansuch, G. E.**; Wu, C.-H.; Haja, D. K.; Blair, S. A.; Chica, B.; Johnson, M. K.; Adams, M. W. W.; and Dyer, R. B. "Metal-Ligand Cooperativity in the Soluble Hydrogenase-1 from *Pyrococcus furiosus*." *Chemical Science* **2020**, *11*(32), 8572 – 8581.

8. Yang, W.; **Vansuch, G. E.**; Liu, Y.; Jin, T.; Liu, Q.; Ge, A.; Sanchez, M. L. K.; Haja, D. K.; Adams, M. W. W.; Dyer, R. B.; and Lian, T. "Surface-Ligand "Liquid" to "Crystalline" Phase Transition Modulates the Solar H_2 Production Quantum Efficiency of CdS Nanorod/Mediator/Hydrogenase Assemblies." *ACS Applied Materials & Interfaces* **2020**, *12*(31), 35614 – 35625.

7. Zhao, J.; Su, H.; **Vansuch, G. E.**; Liu, Z.; Salaita, K.; and Dyer, R. B. "Localized Nanoscale Heating Leads to Ultrafast Hydrogel Volume-Phase Transition." *ACS Nano* **2019**, *13*(1), 515 – 525.

6. Rivera, S.; Young, P. G.; Hoffer, E. D.; **Vansuch, G. E.**; Metzler, C. L.; Dunham, C. M.; and Weinert, E. E. "Structural Insights into Oxygen-Dependent Signal Transduction within Globin Coupled Sensors." *Inorganic Chemistry* **2018**, *57*(22), 14386 – 14395.

5. Greene, B. L.; **Vansuch, G. E.**; Chica, B. C.; Adams, M. W. W.; and Dyer, R. B. "Applications of Photogating and Time Resolved Spectroscopy to Mechanistic Studies of Hydrogenases." *Accounts of Chemical Research* **2017**, *50*(11), 2718 – 2726.

4. Greene, B. L.; **Vansuch, G. E.**; Wu, C.-H.; Adams, M. W. W.; and Dyer, R. B. "Glutamate Gated Proton-Coupled Electron Transfer Activity of a [NiFe]-Hydrogenase." *Journal of the American Chemical Society* **2016**, *138*(39), 13013 – 13021.

3. Greene, B. L.; Wu, C.-H.; **Vansuch, G. E.**; Adams, M. W. W.; and Dyer, R. B. "Proton Inventory and Dynamics in the Nia-S to Nia-C Transition of a [NiFe] Hydrogenase." *Biochemistry* **2016**, *55*(12), 1813 – 1825.

2. Rivera, S.; Burns, J. L.; **Vansuch, G. E.**; Chica, B.; and Weinert, E. E. "Globin Domain Interactions Control Heme Pocket Conformation and Oligomerization of Globin Coupled Sensors." *Journal of Inorganic Biochemistry* **2016**, *164*, 70 – 76.

1. Aasi, J.; et al. "Search of the Orion Spur for Continuous Gravitational Waves Using a Loosely Coherent Algorithm on Data from LIGO Interferometers." *Physical Review D* **2016**, *93*(4), 042006.

Conference Presentations, Oral

2. "Modulation of Proton Movement at the Active Site of a [NiFe]-Hydrogenase: Cooperativity Between the First and Second Coordination Spheres." *The 71st Southeastern Regional Meeting of the American Chemical Society*, Savannah, GA. — 2019

1. "Proton Migration in a [NiFe]-Hydrogenase: The Roles of the First and Second Coordination Spheres." *Inorganic Reaction Mechanisms Gordon Research Seminar*, Galveston, TX. — 2019

Conference Presentations, Poster

1. **Vansuch, G. E.**; Greene, B. L.; Wu, C.-H.; Haja, D. K.; Chica, B. C.; Adams, M. W. W.; and Dyer, R. B. "Gating Proton Coupled Electron Transfer at the Active Site of a [NiFe]-Hydrogenase: The Roles of the First and Second Coordination Spheres." *29th International Photochemistry Conference*, Boulder, CO. — 2019

2. **Vansuch, G.E .**; Greene, B. L.; Wu, C.-H.; Haja, D. K.; Chica, B. C.; Adams, M. W. W.; and Dyer, R. B. "Proton Migration in a [NiFe]-Hydrogenase: The Roles of the First and Second Coordination Spheres." *12th International Hydrogenase Conference*, Lisbon, Portugal. **–Best Poster Award** 2019

3. **Vansuch, G. E.**; Wu, C.-H.; Haja, D. K.; Blair, S. A.; Chica, B. C.; Greene, B. L.; Johnson, M. K.; Adams, M. W. W.; and Dyer, R. B. "Proton Migration in a [NiFe]-Hydrogenase: The Roles of the First and Second Coordination Spheres." *Inorganic Reaction Mechanisms Gordon Research Conference*, Galveston, TX. 2019

4. **Vansuch, G. E.**; Wu, C.-H.; Haja, D. K.; Adams, M. W. W.; and Dyer, R. B. "Gating Proton Coupled Electron Transfer at the Active Site of a [NiFe]-Hydrogenase: The Role of the First and Second Coordination Sphere." *3rd International Conference on Proton Coupled Electron Transfer*, Blowing Rock, NC. 2018

5. **Vansuch, G. E.**; Greene, B. L.; Wu, C.-H.; Adams, M. W. W.; and Dyer, R. B. "Unraveling the Glutamate Gating Mechanism in Nickel-Iron Hydrogenases." *2016 Solar Energy Research Conference*, Chapel Hill, NC. 2016

Scientific Skills

- Infrared and Visible Transient Absorption Spectroscopy
- Fourier Transform Infrared Spectroscopy
- Raman Spectroscopy
- UV-Vis Spectroscopy
- UV-Vis Spectroelectrochemistry
- Cyclic Voltammetry
- Core/Shell Nanocrystal Synthesis
- Gas Chromatography
- Electron Mediator Synthesis with 2,2'-Bipyridyl Derivatives

Technical Skills

- Igor Pro (data analysis software)
- Inkscape
- R (statistical computer programming language and software)
- EasySpin MATLAB Toolbox (electron paramagnetic resonance spectroscopy data analysis)
- Technical Writing
- LaTeX
- AutoCAD

Students Mentored

1. David White, Ph.D. Student 2020 – present

2. Tiffany Trieu, Ph.D. Student 2019 – 2020

3. Eric Park, Undergraduate Student 2017 – 2018

Community Laboratory Responsibilities

Equipment Maintenance and Trouble Shooting

Infrared and Visible Transient Absorption Equipment 2015 – present

Raman Spectroscopy Equipment 2019 – 2020

Chemical Safety Officer 2019 – 2020

Teaching Experience

Emory University, Atlanta, GA 04 – 12 – 2021

Guest Lecture on Bioinorganic Applications of Infrared Spectroscopy

For Prof. Antonio Brathwaite's Physical Chemistry Laboratory course.

Emory University, Atlanta, GA 2014 – 2015

General Chemistry Teaching Assistant

Ran a laboratory section for two semesters (25 – 30 students); held office hours for laboratory report guidance; graded laboratory reports and general chemistry exams.

Outreach Activities

Atlanta Science Festival, Atlanta, GA 2016

Departmental Booth Volunteer

Demonstrated ferrofluids to the general public.

Science at Hand Day, Atlanta, GA 2015

Departmental Booth Volunteer

Demonstrated combustion reactions with micro rockets to the general public.

Additional Work Experience

Rocky Mountain Excavating, Louviers, CO 2009

Laborer