# Emma Regina Remish

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## Education:

**Vanderbilt University** – Nashville, TN Expected May 2028
*PhD in Chemistry*
*Concentrations in Computational and Analytical Chemistry*
*Advisors: Zhongyue (John) Yang and John McLean*

**Lake Forest College** – Lake Forest, IL May 2022
*Bachelor of Arts*
***Honors**: Magna Cum Laude*
***Major**: Physics **Minors**: Chemistry and Mathematics*

## Research Experience:

**Physics Research Assistant,** Lake Forest College May 2021 - June 2022
*Supervisor: Dr. Veronika Walkosz*

- Investigated the interactions between surface/subsurface oxygen in Rh(111) surfaces using Density Functional Theory to study chemical reactions with catalytic converters
- Performed calculations with high performance computing on Cori and Perlmutter from the National Energy Research Scientific Computing Center (NERSC), in addition to Stampede2 from the Extreme Science and Engineering Discovery Environment (XSEDE)
- Determined activation energies with NEB (Nudged Elastic Band) method

**Biochemistry Research Assistant**, Lake Forest College February 2021 – May 2021
*Supervisor: Dr. William Conrad*

- Imaged fixed and sterilized zebrafish larvae that were infected with mycobacterium marinum to study tuberculosis pathogenesis and drugs to treat tuberculosis
- Created new method for using fluorescent microscopy to take images of zebrafish larvae
- Processed images with ImageJ software

**Richter Scholar**, Lake Forest College May 2019 – June 2019
*Supervisor: Dr. Naomi Wentworth*

- Conducted research in psychology and neuroscience using eye tracking technology
- Studied and presented project titled, “Bias of Hair Textures in Hiring Practices”
- Analyzed results with IBM SPSS

**Advanced Honors Research Program**, Glenbrook North High School October 2016 – June 2018

- Researched how to destigmatize autoimmune diseases with a case study on Type 1 and Type 2 Diabetes
- Wrote academic paper and gave presentation on findings

## Presentations and Poster Sessions:

**On-surface and subsurface oxygen in Rh(111) investigated with Density Functional Theory**
82nd Physical Electronics Conference June 7th, 2022
*Poster*

**Computational Study of On-Surface and Subsurface Oxygen in Rh(111)**
2022 Steven Galovich Memorial Student Symposium April 5th, 2022
*Poster*

**The Role of Lymphocyte Cytosolic Protein 1 in a Mycobacterium Marinum Infection**
2022 ASBMB (American Society for Biochemistry and Molecular Biology Annual Meeting)
*Poster and published abstract* April 4th, 2022

- https://doi.org/10.1096/fasebj.2022.36.S1.R3029

**Computational Study of On-Surface and Subsurface Oxygen in Rh(111)**
14th AIChe (American Institute of Chemical Engineers) March 1st, 2022
*Presentation*

**Study of Rh(111)/O Systems** November 5th, 2021
2021 Robert B. Glassman Memorial Brain, Mind, and Behavior Symposium
*Poster*

**Bias of Hair Textures in Hiring Practices** November 7th, 2019
2019 Robert B. Glassman Memorial Brain, Mind, and Behavior Symposium
*Poster*

**Process of Destigmatizing Medical Conditions with a Case Study on Type 1 and Type 2 Diabetes**
Glenbrook North Advanced Honors Research Program Symposium May 22nd, 2018
*Presentation*

## Work Experience:

**Vanderbilt University**, Nashville, TN January 2024 – Present
*Physical Chemistry Lecture Teaching Assistant*

- Review concepts from class with undergraduate students
- Teach basics of multivariable calculus and provide homework assistance
- Facilitate review sessions before examinations

**Vanderbilt University**, Nashville, TN August 2023 – December 2023
*Analytical Chemistry Laboratory Teaching Assistant*

- Taught analytical chemistry lab to undergraduate students
- Demonstrated and provided hands-on learning experience to students for titrations, statistical analysis, UV-Vis, Lateral Flow Assay, and Gas Chromatography
- Designed rubrics and graded lab reports

**Pfizer Inc.**, Lake Forest, IL September 2022 – June 2023
*Associate Scientist, Analytical Research & Development*

- Performed laboratory work to support analytical testing on preclinical projects with method development using chromatography, mass spectrometry, Karl Fischer titration, and dissolution
- Developed new computational modeling tools using high performance computing with molecular dynamics
- Used computational predictive tools to support project activities
- Conducted stability testing and executed data verification

- Worked in a GMP and non-GMP environment with 5S
- Prepared formulations of drug product and performed analytical testing on formulations
- Experienced with electronic lab notebooks, Empower, Jupyter, and GitHub
- Member of the Emergency Control Force team

**Lake Forest Acute Care**, Lake Forest, IL August 2021 – September 2022
*Medical Scribe/Patient Care Technician*

- Kept accurate medical records and recorded examination notes for attending physician
- Processed and administered COVID antigen, strep, flu, urine, and Rapid PCR COVID tests
- Ordered lab testing and communicated with external healthcare providers

**Lake Forest Acute Care**, Lake Forest, IL May 2021 – August 2021
*Intern*

- Took vitals and fully triaged patients
- Enhanced customer service skills by answering phones and scheduling COVID tests
- Registered new and existing patients

**Lake Forest College**, Lake Forest, IL September 2019 – May 2022
*Teaching Assistant*

- Health Professions Program teaching assistant from January 2022 - May 2022
    - Gave guidance to younger students and helped them learn about different careers within the healthcare system
    - Worked alongside faculty and students from Rosalind Franklin University
- Assisted in General Chemistry I laboratory section from August 2021 - December 2021
    - Taught students conceptual concepts such as stoichiometry and molecular geometry
    - Supported students with use of instrumentation including spectrophotometers, MicroLab, filtration processes, Nuclear Magnetic Resonance instrumentation, centrifuges and Spartan software
- Assisted with Introductory Physics I and Introductory Physics II classes from September 2019 - May 2020
    - Graded homework and tutored students

**Mathnasium - The Math Learning Center**, Lake Forest, IL January 2021 – May 2022
*Instructor*

- Worked with kindergarten through high school senior students
- Assisted one to three students at a time
- Provided guidance for students while helping them take an active part in their learning
- Privately tutored advanced high school students
- Assisted with administrative tasks and created a positive and low-stakes atmosphere to enhance learning, improve math skills and comprehension

**Lake Forest College**, Lake Forest, IL September 2020 – May 2022
*Physics Tutor*

- Tutored students in all 100 and 200 level classes offered
- Assisted with homework and preparation for upcoming assessments
- Offered feedback to professors

## Honors/Awards:

**Sigma Tau Delta, Lake Forest College** Spring 2022
*International English Honor Society*

**Omicron Delta Kappa, Lake Forest College** Spring 2021
*National Leadership Honors Society, served as Vice President of chapter*

**Kathleen Byers Smilow '83 Annual Scholar, Lake Forest College** Fall 2021
*Selected by donor for outstanding academic achievement*

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**Live Learn Lead Scholarship, Tri Delta Foundation** January 2019
*Awarded for strong leadership skills and academic achievement*

**Presidential Scholarship, Lake Forest College** August 2018
*Received highest amount of available merit-based scholarship, applicable all four years*

**Glenbrook Scholar, Glenbrook North High School** May 2018
*Distinction for students with cumulative weighted GPA of 4.500 or higher*

**Female Sportsmanship Award, Glenbrook North High School** May 2018
*Female athlete who models good sportsmanship for team and entire school, nominated by coaches*

**AP + Project Lead the Way Student Achievement in Engineering, College Board** 2018
*Awarded for high scores on AP Physics C: Mechanics, AP Calculus BC, PLTW: Introduction to Engineering Design, and PLTW: Principles of Engineering exams*

**AP Scholar with Distinction, College Board** 2018
*Awarded for high scores on AP Physics C: Mechanics, AP Calculus BC, AP Macroeconomics, AP United States History, and AP World History*

## Skills:

**Computational Methods and Languages:** Computational Modeling, High Performance Computing, Molecular Dynamics, Docking, Density Functional Theory, Mathematica, Origin, LabVIEW, Jupyter, GitHub, Excel, ImageJ, Shell, RStudio, Python
**Laboratory Methods:** High Performance Liquid Chromatography (HPLC), Gas Chromatography, Fluorescent Microscopy, UV-Vis, Mass Spectrometry, Stability Testing, Karl Fischer Titration, Good Manufacturing Practice (GMP), Empower, Eye-tracking
**Languages:** English (fluent), Spanish (intermediate)