# Raul A. Marquez-Montes

As of October 22, 2024

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## **EDUCATION**

The University of Texas at Austin, Department of Chemistry

Anticipated graduation: June 2025

Ph.D. Candidate, Chemistry, Analytical Chemistry Division

GPA 4.0

Advisor: Prof. C. Buddie Mullins

Thesis: Effects of the reaction environment on chemical transformations in water-splitting electrocatalysts

### Universidad Autonoma de Chihuahua, Department of Chemistry

June **2020** 

M.S. Chemistry, Cum Laude

**GPA 4.0** 

Advisor: Prof. Víctor Hugo Ramos-Sánchez

Thesis: Evaluating and Optimizing Sulfite Electrooxidation in a Parallel-plate Reactor

#### Universidad Autonoma de Chihuahua, Department of Chemistry

November 2017

B.S. Chemical Engineering, Cum Laude

GPA 4.0

Advisor: Prof. Víctor Hugo Ramos-Sánchez

Thesis: Electrochemical Membrane Reactor for the Hybrid Thermochemical Sulfur-Ammonia Cycle

#### **SCIENTIFIC PUBLICATIONS**

Google Scholar page

#### Completed as a Ph.D. student at UT-Austin:

- 24. **Marquez, R.A.**, Kalokowski, E., Espinosa, M., Ramos-Sánchez, V.H., Rodríguez-Pacheco, L.C., Valenzuela-De la Rosa, F., Mullins, C.B. Teaching Electrochemical Energy Conversion and Storage Through Active Learning: Insights from Science Workshops. *Journal of Chemical Education*, **2024**, 101, 8, 3333–3343. Link
- 23. Smith, L.A., Kawashima, K., **Marquez, R.A.**, Mullins, C.B. A Perspective on Protective Carbon Shells for Improved Stability of Alkaline Water Oxidation Electrocatalysts. *ACS Materials Letters*, **2024**, 6, 3190–3201. Link
- 22. **Marquez, R.A.**, Obeso, J.L., Vaidyula, R.R., López-Cervantes, V.B., Peralta, R.A., Marín Rosas, P., De los Reyes, J.A., Mullins, C.B., Ibarra, I.A. From Pollution to Energy Storage: Leveraging Hydrogen Sulfide with SU-101 Cathodes in Lithium-Sulfur Batteries. *Journal of Materials Chemistry A.* **2024**, In Press. <u>Link</u>
- 21. **Marquez, R.A.**, Oefelein, E.E., Le, T.V., Kawashima, K., Le, T.V., Smith, L.A., Mullins, C.B. Redefining the Stability of Water Oxidation Electrocatalysts: Insights from Materials Databases and Machine Learning. *ACS Materials Letters*, **2024**, 6, 7, 2905–2918. <u>Link</u>
- 20. **Marquez, R.A.**, Espinosa, M., Kalokowski, E., Son, Y.J., Kawashima, K., Le, T.V., Chukwuneke, C.E., Mullins, C.B. A Guide to Electrocatalyst Stability Using Lab-Scale Alkaline Water Electrolyzers. *ACS Energy Letters*, **2024**, 9, 2, 547–555. Link
- Marquez, R.A., Kalokowski, E., Espinosa, M., Bender, J.T., Son, Y.J., Kawashima, K., Chukwuneke, C., Smith, L.A., Celio, H., Dolocan, A., Zhan, X., Miller, N.R., Milliron, D.J., Resasco, J., Mullins, C.B. Transition metal incorporation: electrochemical, structure, and chemical effects on nickel oxyhydroxide oxygen-evolution electrocatalysts. *Energy & Environmental Science*, 2024, 17, 2028-2045. <u>Link</u>
- 18. Kawashima, K.,\* **Marquez, R.A.**,\* Smith, L.A., Vaidyula, R.R., Carrasco-Jaim, O.A., Wang, Z., Son, Y.J., Cao, C.L., Mullins, C.B. A Review of Transition Metal Boride, Carbide, Pnictide, and Chalcogenide Water Oxidation Electrocatalysts. *Chemical Reviews*, **2023**, 123, 23, 12795–13208. <u>Link</u> \**Equal contributors*.
- 17. Chukwuneke, C., Kawashima, K., Li, H., **Marquez, R.A.**, Son, Y.J., Celio, H., Henkelman, G., Mullins, C.B. Electrochemically Engineered Domain: Nickel–Hydroxide/Nickel Nitride Composite for Alkaline HER Electrocatalysis. *Journal of Materials Chemistry A*, **2023**, 12, 1654-1661. <u>Link</u>

- Son, Y.J., Marquez, R.A., Kawashima, K., Smith, L.A., Chukwuneke, C., Babauta, J., Mullins, C.B. Navigating iR Compensation: Practical Considerations for Accurate Study of Oxygen Evolution Catalytic Electrodes. ACS Energy Letters, 2023, 8, 10, 4323–4329. Link
- Marquez, R.A., Kawashima, K., Son, Y.J., Castelino, G., Miller, N.R., Smith, L.A., Chukwuneke, C., Mullins, C.B. Getting the Basics Right: Preparing Alkaline Electrolytes for Electrochemical Applications. ACS Energy Letters, 2023, 8, 2, 1141–1146. Link
- Kawashima, K., Marquez, R.A., Son, Y.J., Guo, C., Vaidyula, R.R., Smith, L.A., Chukwuneke, C., Mullins, C.B. Accurate Potentials of Hg/HgO Electrodes: Practical Parameters for Reporting Alkaline Water Electrolysis Overpotentials. ACS Catalysis, 2023, 13, 3, 1893–1898. <u>Link</u>
- 13. Son, Y.J., Kawashima, K., **Marquez, R.A.**, Smith, L.A., Chukwuneke, C., Mullins, C.B. Key concepts for understanding alkaline oxygen evolution reaction at the atomic/molecular scale. *Current Opinion in Electrochemistry*, **2023**, 39, 101298. Link
- 12. Wang, Z., Diao, J., Kawashima, K., Weeks, J.A., Vaidyula, R.R., **Marquez, R.A.**, Miller, N.R., Henkelman, G., Mullins, C.B. Unveiling the reaction mechanism of capacity reactivation in silver vanadate cathodes for aqueous zinc-ion batteries. *Journal of Materials Chemistry A*, **2023**, 11, 35, 18881-18892. <u>Link</u>
- 11. **Marquez, R.A.**, Kawashima, K., Son, Y.J., Rose, R., Smith, L.A., Miller, N.R., Carrasco-Jaim, O.A., Celio, H., Mullins, C.B. Tailoring 3D-Printed Electrodes for Enhanced Water Splitting. *ACS Applied Materials & Interfaces*, **2022**, 14, 37, 42153–42170. Link
- Son, Y.J., Kim, S., Leung, V., Kawashima, K., Noh, J., Kim, K., Marquez, R.A., Carrasco-Jaim, O.A., Smith, L.A., Celio, H., Milliron, D.J., Korgel, B.A., Mullins, C.B. Effects of Electrochemical Conditioning on Nickel-Based Oxygen Evolution Electrocatalysts. ACS Catalysis, 2022, 12, 16, 10384–10399. <u>Link</u>
- 9. Kawashima, K., **Marquez-Montes, R.A.**, Li, H., Shin, K., Cao, C.L., Vo, K.M., Mullins, C.B. Electrochemical behavior of a Ni<sub>3</sub>N OER precatalyst in Fe-purified alkaline media: the impact of self-oxidation and Fe incorporation. *Materials Advances*, **2021**, 2, 7, 2299-2309. Link
- 8. **Marquez-Montes, R.A.**, Kawashima, K., Son, Y.J., Weeks, J.A., Sun, H.H., Celio, H., Mullins, C.B. Mass transport-enhanced electrodeposition of Ni–S–P–O films on nickel foam for electrochemical water splitting. *Journal of Materials Chemistry A*, **2021**, 9, 12, 7736-7749. Link
- 7. **Marquez-Montes, R.A.**, Kawashima, K., Vo, K.M., Chávez-Flores, D., Collins-Martínez, V.H., Mullins, C.B., Ramos-Sánchez, V.H. Simultaneous sulfite electrolysis and hydrogen production using Ni foam-based three-dimensional electrodes. *Environmental Science & Technology*, **2020**, 54, 19, 12511-12520. <u>Link</u>
- Kawashima, K., Cao, C.L., Li, H., Marquez-Montes, R.A., Wygant, B.R., Son, Y.J., Mullins, C.B. Evaluation
  of a V<sub>8</sub>C<sub>7</sub> Anode for Oxygen Evolution in Alkaline Media: Unusual Morphological Behavior. ACS Sustainable
  Chemistry & Engineering, 2020, 8, 37, 14101-14108. Link

#### Papers Prior to Attendance at UT-Austin

- Orozco-Mena, R.E., Marquez, R.A., Mora-Domínguez, K.I., Collins-Martinez, V.H., Herrera-Peraza, E.F., Perez-Vega, S.B., Ramos-Sánchez, V.H. Implementing a sustainable photochemical step to produce valueadded products in flue gas desulfurization. *Chemical Engineering Journal*, 2020, 430, 133072. <u>Link</u>
- Sánchez-Hernández, L.J., Ramírez-Romero, P., Rodríguez-González, F., Ramos-Sánchez, V.H., Marquez-Montes, R.A., Romero-Paredes Rubio, H., Jonathan, M.P. Seasonal evidences of microplastics in environmental matrices of a tourist dominated urban estuary in Gulf of Mexico, Mexico. *Chemosphere*, 2021, 277, 130261. Link
- 3. **Marquez-Montes, R.A.**, Orozco-Mena, R.E., Camacho-Dávila, A.A., Pérez-Vega, S., Collins-Martínez, V.H., Ramos-Sánchez, V.H. Optimization of the electrooxidation of aqueous ammonium sulfite for hydrogen production at near-neutral pH using response surface methodology. *International Journal of Hydrogen Energy*, **2020**, 45, 27, 13821-13831. Link
- 2. **Marquez-Montes, R.A.**, Collins-Martínez, V.H., Pérez-Reyes, I., Chávez-Flores, D., Graeve, O.A., Ramos Sánchez, V.H. Electrochemical engineering assessment of a novel 3D-printed filter-press electrochemical

reactor for multipurpose laboratory applications. ACS Sustainable Chemistry & Engineering, **2020**, 8, 9, 3896-3905. Link

1. **Marquez-Montes, R.A.**, Orozco-Mena, R.E., Lardizábal-Gutiérrez, D., Chávez-Flores, D., López-Ortíz, A., Ramos-Sánchez, V.H. Sulfur dioxide exploitation by electrochemical oxidation of sulfite in near-neutral pH electrolytes: A kinetics and mechanistic study. *Electrochemistry Communications*, **2019**, 104, 106481. <u>Link</u>

#### Manuscripts submitted

Kawashima, K., Milton, A.E.F., Archer, J., Collins, D., Lorenzo Serrat, N., Chukwuneke, C., **Marquez, R.A.**, Smith, L.A., Mullins, C.B. Incidental and Intentional Transformation: Transition Metal Pnictide and Chalcogenide Electrocatalysts for Alkaline Hydrogen Evolution. Submitted to *ACS Energy Letters*, **2024**.

#### Manuscripts in preparation

Marquez, R.A., Bender, J.T., Aleman, A., Kalokowski, E., Espinosa, M., Frederiksen, M.L., Lindquist, G.A., Kawashima, K., Chukwuneke, C., Dolocan, A., Stevens, M.B., Milliron, D.J., Resasco, J., Jaramillo, T.F., Mullins, C.B. Intermittency Intensifies Catalyst Transformations in Liquid Alkaline Water Electrolysis.

**Marquez, R.A.**, Kawashima, K., Brownell, M., Reza-Amaro, D., Mullins, C.B. A Guide to Experimental Practices in Electrocatalysis Research. Proposal accepted by *Chemical Reviews*.

#### AWARDS AND HONORS

- 2025 ECS Energy Technology Division Graduate Student Award sponsored by BioLogic
- 2024 CATL-ChemCatBio Graduate Student Travel Award, The American Chemical Society
- 2024 Edward G. Weston Summer Fellowship, The Electrochemical Society
- 2024 Jeff Byers Memorial Graduate Award in Chemistry and Chemical Engineering, UT-Austin
- **2024** #RSCPoster competition 2024 (1<sup>st</sup> place, Energy category), The Royal Society of Chemistry
- **2024** #RSCPosterPitch Award 2024, The Royal Society of Chemistry
- 2024 Chemistry Department Service Award 2024, UT-Austin
- 2023 ECS Texas Section Travel Award, 244th ECS Meeting, The Electrochemical Society
- 2023 General Student Poster Session Award (1st), 243rd ECS Meeting, The Electrochemical Society
- 2023 ECS Texas Section Travel Award, 243<sup>rd</sup> ECS Meeting, The Electrochemical Society
- **2023** Morton Share Trust Graduate Fellowship
- 2022 Master Thesis Competition (1<sup>st</sup> place), Mexican Hydrogen Society
- **2021** Faraday 2021 Teaching Award, UT-Austin
- **2021** Henze 2021 Teaching Award, UT-Austin
- 2021 Chemistry Department Service Award 2021, UT-Austin
- **2021** International Doctoral Fellowship Program, CONAHCyT
- 2020 Provost's Graduate Excellence Fellowship, UT-Austin
- **2020** Royston M. Roberts Fellowship in Chemistry
- **2020** Maddin Endowed Scholarship in Chemistry
- **2019** Matías Romero Visiting Scholars Fellowship
- 2017 Harry West Student Poster Award (1st place), AIChE Annual Meeting

#### **GRANTS AND FELLOWSHIPS**

#### **2024** Edward G. Weston Summer Fellowship, The Electrochemical Society

Proposal: Understanding the Effects of Intermittent Water Electrolysis on Transition Metal (Oxy)hydroxide Oxygen Evolution Electrocatalysts
Research Fellowship | US\$5,000

- **2021** International Doctoral Fellowship, CONAHCyT / University of Texas System
  - Proposal: 3D printing Approaches for Electrochemical Water Splitting: Incorporating Advanced Features into Water Electrolysis Technologies
  - Graduate Research Fellowship | US\$132,000 for over four years
- **2020 Provost's Graduate Excellence Fellowship,** The University of Texas at Austin Graduate Research Fellowship | US\$130,000 for over five years

#### Travel Awards (Totaling US\$2,100)

- 2024 CATL-ChemCatBio Graduate Student Travel Award
- **2024** ECS Texas Section Travel Award (245<sup>th</sup> ECS Meeting)
- 2024 Chemistry Department Professional Development Travel Award
- **2024** Center for Electrochemistry Travel Grant
- **2023** ECS Texas Section Travel Award (244<sup>th</sup> ECS Meeting)
- **2023** ECS Texas Section Travel Award (243<sup>rd</sup> ECS Meeting)

#### PROFESSIONAL ACTIVITIES AND AFFILIATIONS

**Peer Reviewer:** Materials Horizons, Journal of the Electrochemical Society, International Journal of Hydrogen Energy

Materials Horizons Community Board Member, Royal Society of Chemistry (2023–Present)

**Secretary**, UT-Austin ECS Student Chapter (2023–Present)

**Instructor and Ambassador**, Clubes de Ciencia MX (2023–Present)

**Memberships**: Royal Society of Chemistry, American Chemical Society, American Institute of Chemical Engineers, Society of Hispanic Professional Engineers, Electrochemical Society.

#### **INVITED TALKS**

- 2024 PRiME 2024, Honolulu, HI
  - Active Learning Strategies for Teaching Electrochemical Energy Conversion and Storage: Insights from Science Clubs.
- **Fall Seminar Series, Chemistry Department at UACH,** Chihuahua, Mexico The Devil is in the Impurities: Understanding the Influence of Transition Metal Impurities.
- **2023** Electrochemistry Chalk Talks Series, UT-Austin ECS Chapter, Austin, TX Mastering the Art of Composing Scientific Graphics. Recording
- **Fall Seminar Series, Chemistry Department at UNAM,** Mexico City, Mexico The Devil is in the Impurities: Understanding the Influence of Transition Metal Impurities.
- **2023** Chemistry Recruitment 2023, UNAM / UAM / IPN / UANL, Mexico City, Mexico The Road to Grad School. A Guide to Joining the PhD Program in Chemistry.
- **2023** Electrochemistry Chalk Talks Series, UT-Austin ECS Chapter, Austin, TX Understanding Electrochemical Double Layer Capacitance Measurements. Recording
- **Hispanic Engineers Leadership Series, AIChE Chapter at UANL, Monterrey, Mexico Splitting Water with Electrons: Powering a Safer and Greener Future. Plenary Speaker.**
- **2020** Energy and Society Virtual Plenary Session, UABC, Zoom (Online)
  Unraveling Electrochemical Water Splitting: Are Electrocatalysts Truly Stable? Recording
- **2020 ECS Monthly Webinars Plenary Session, UT-Austin**, Zoom (Online)
  Hydrogen from Sulfite Electrolysis: Toward the Rational Design and Optimization of Practical Electrochemical Flow Cell Systems.

#### TALKS PRESENTED AT CONFERENCES

#### 2024 PRIME 2024, Honolulu, HI

Reconstruction and Dissolution of Transition Metal (Oxy)Hydroxide Electrocatalysts Induced By Intermittent Water Electrolysis.

#### 2024 PRIME 2024, Honolulu, HI

Incorporation of Trace Metals through in situ Cation Exchange Reactions: Electrochemical and Structural Effects on Nickel Oxyhydroxide Electrocatalysts.

#### 2024 ACS Fall 2024, Denver, CO

Incorporation of trace metals in situ through cation exchange: Electrochemical and structural effects on nickel oxyhydroxides.

## 2024 ACS Fall 2024, Denver, CO

Teaching electrochemical energy conversion and storage through active learning: Insights from summer science clubs.

## 2024 245th ECS meeting, San Francisco, CA

Dynamic Activity and Stability of Transition Metal (oxy)Hydroxide Oxygen Evolution Electrocatalysts Under Steady and Intermittent Operation.

## 2023 244<sup>th</sup> ECS meeting, Gothenburg, Sweden

Understanding the Effects of Transition Metal Impurities on Nickel (oxy)hydroxide Electrocatalysts.

### **2022** ChemE Future Faculty Diversity Seminar Series, Zoom (Online)

Taking the Next Step in Electrocatalysis: Closing Gaps Between Lab-scale Electrochemistry and Electrochemical Engineering.

## 2019 14th HYPOTHESIS International Symposium, Foz do Iguaçu, Brazil

Sulfur dioxide exploitation by electrochemical oxidation of sulfite in near-neutral pH *via* the S-NH<sub>3</sub> Cycle.

## **2017 AICHE Annual Meeting, AICHE**, Minneapolis, Minnesota

Design of an Electrochemical Reactor for Hydrogen Production via the Sulfur-Ammonia Cycle.

#### 2016 Young Researchers Symposium, CONACyT, Guanajuato, Mexico

Design of an Ion-Exchange Membrane Electrochemical Reactor for Hydrogen Production *via* the S-NH<sub>3</sub> Cycle

#### POSTERS PRESENTED AT CONFERENCES

#### 2024 PRIME 2024, Honolulu, HI

Benchmarking Electrocatalyst Stability Tests Using Lab-Scale Alkaline Water Electrolyzers.

#### 2024 ACS Fall 2024, Denver, CO

Testing electrocatalyst stability using lab-scale alkaline water electrolyzers: A guide to experimental practices.

## 2024 245th ECS meeting, San Francisco, CA

A Guide to Electrocatalyst Stability Using Lab-Scale Alkaline Water Electrolyzers.

## 2024 #RSCPoster competition, LinkedIn (Online) Poster Pitch

Trace Metal Incorporation Through In Situ Cation Exchange: Effects on Energy Conversion and Storage Properties.

## 2023 243rd ECS meeting with SOFC-XVIII, Boston, MA

Six Practices to Improve Alkaline Electrolyte Preparation. General Student Poster Session Award.

- 2023 CEC Annual Workshop on Electrochemistry, UT-Austin, Austin, TX Six Steps to Prepare Alkaline Electrolytes for Electrochemical Applications.
- 2022 LatinXChem 2022 Virtual Poster Session, LatinXChem, Twitter (Online) Tailoring 3D-Printed Electrodes for Enhanced Water Splitting.
- 2021 ACS Southwest Regional Meeting Poster Session, ACS, Austin, TX Flow Cell-Assisted Electrodeposition of Ni-S-P-O Films for Electrochemical Water Splitting.
- LatinXChem 2021 Virtual Poster Session, LatinXChem, Twitter (Online) 2021 Flow Cell-Assisted Electrodeposition of Ni-S-P-O Films on Nickel Foam for Electrochemical Water Splitting. Poster Pitch
- 2020 **CEC Annual Workshop on Electrochemistry, UT-Austin, Austin, TX** Simultaneous sulfite electrolysis and hydrogen production in a 3D-printed electrochemical reactor.
- **CEC Annual Workshop on Electrochemistry, UT-Austin, Austin, TX** 2019 Electrochemical Oxidation of Sulfite in Near-Neutral pH Electrolytes: A Kinetics Study.
- 2017 Annual AIChE Student Conference, AIChE, Minneapolis, MN Design of a Novel Electrochemical Membrane Reactor for Hydrogen Production via the Sulfur-Ammonia Water-Splitting Cycle.
- Green & Sustainable Chemistry Conference, Elsevier, Berlin, Germany Design of an Ion-Exchange Membrane Electrochemical Reactor for Hydrogen Production

#### RESEARCH EXPERIENCE

#### Graduate Research Assistant, The University of Texas at Austin

August 2020- Present

Investigated the effects of intermittent water electrolysis on catalytic stability.

Studied the effects of metal impurity incorporation into water oxidation catalysts.

Developed protocols to test electrocatalyst stability and purify alkaline electrolytes.

Authored a review on water oxidation catalysis from over 890 peer-reviewed reports.

Employed statistical and machine learning methods to analyze catalyst databases.

Designed and built 12+ custom electrochemical cells for *in situ* and *operando* characterization.

Implemented flexible automation to accelerate the electrodeposition of catalytic thin films.

Studied the impact of electrode architecture on bubble growth and detachment.

Collaborated with Mexican researchers to use SU-101 MOFs in lithium-sulfur batteries.

#### Visiting Scholar, The University of Texas at Austin

Fall 2019

Characterized Pd and Ni catalysts for sulfite electrooxidation.

Synthesized transition metal nitride water-splitting electrocatalysts.

#### **Graduate Research Assistant**, UACH

August 2018-June 2020

Designed an electrochemical flow cell for sulfite electrooxidation.

Designed and built 6+ flow cells using 3D printing.

Investigated hydrodynamics and mass transfer properties of electrochemical flow cells.

Studied the kinetics of sulfite ion electrooxidation on Pd electrocatalysts.

## Undergraduate Research Assistant, Universidad Autonoma de Chihuahua Formulated a proof-of-concept process for sulfite electrooxidation.

August 2015-June 2017

Simulated a flue gas desulfurization plant to capture sulfur dioxide.

#### TEACHING EXPERIENCE

### **International Instructor**, Clubes de Ciencia MX

Summer 2022, Summer 2023

Designed and taught two workshops on electrochemical energy technologies. Referred publication

## Teaching Assistant, UT-Austin

Fall **2020-**Spring **2021** 

Taught two terms of Introduction to Chemical Practice and received two teaching awards.

## GRS 097: Fundamentals for Teaching Assistants, UT-Austin

Fall 2020

Completed a semester-long pedagogy course for graduate teaching assistants.

#### **Teaching Assistant**, UACH

Fall **2017**-Spring **2018** 

Taught undergraduate Physical Chemistry and graduate Instrumental Analysis courses.

#### DEPARTAMENTAL SERVICE

#### Graduate Recruiter and Student Host, Department of Chemistry, UT-Austin

2021-2024

Hosted eight visiting students and delivered six recruiting seminars at the top Mexican universities. Mentored 10+ applicants and offered 40+ hours of practice for the TOEFL and IELTS exams.

VOLUNTEERING	Full description
Ambassador, Clubes de Ciencia MX	2024-Present
Secretary, UT-Austin ECS Student Chapter	2023-Present
Young leader, Mexican Red Cross	2009-2013
ENTREPRENEURIAL ACTIVITIES	Full description
Mentor, VirtAgro	2021
Entrepreneurship Training, UNAM/Santander	2019
Entrepreneur Leader, H24U, National Science Foundation / CONACyT	2019
Received training from the NSF I-Corps program.	

#### SCIENCE COMMUNICATION

Full description

Catalastic! YouTube Channel	
Bright Spikes! Electrifying Chemical Reactions, Clubes de Ciencia MX	Summer <b>2023</b>
Electrochemistry: How Do We Transport Energy? Clubes de Ciencia MX	Summer <b>2022</b>
Quantum Chemistry for Kids, UACH	2019
From Photons to Electrons, Clubes de Ciencia MX	2018
Science Podcasts and Talk Shows, UACH	2016

#### STUDENTS MENTORED

**Chloe Williamson**, Undergraduate student, Chemical Engineering, UT-Austin (2024-Present)

**Thuy Vy Le**, Undergraduate student, Chemistry, UT-Austin (2023-2024)

**Daniel Y. Ko**, Undergraduate student, Chemical Engineering, UT-Austin (2023)

Michael Espinosa, Undergraduate student, Chemistry, UT-Austin (2023-Present)

Emma Kalokowski, Undergraduate student, Chemistry, UT-Austin (2022-Present)

Grace Castellino, Undergraduate student, Chemistry, UT-Austin (2022)

**Gravson Constantine**, Undergraduate student, Chemistry, UT-Austin (2022)

#### **CERTIFICATIONS**

#### **2023 IOP Peer Review Excellence**, IOP Publishing