

Christian Sandoval Pauker

Assistant Professor | Department of Chemistry and Biochemistry
University of St. Thomas, TX

Highlights and Experience Summary

- **Inventor on 1 active patent:** Design of a parallel plate reactor for photocatalytic degradation (**PI-2024-021, Ecuador**)
- **5+ years** of experience in **computational chemistry** using VASP, Orca, Gaussian, HPC, Python, R, and Linux
- **5+ years** of **environmental chemistry** experience in **water/wastewater analysis, pollutant degradation, and modeling**
- **Experience** in **organic and inorganic synthesis** and **analytical techniques** (IR, NMR, UV-Vis, GC, HPLC)
- Named among the **Top 100 CAS Future Leaders** by the CAS division of the American Chemical Society (2025)
- Awarded the **J Evans Attwell Welch Postdoctoral Fellowship** at Rice University
- Honored with **Outstanding Doctoral Student** and **Dissertation Awards** at the University of Texas at El Paso
- **Published 41 peer-reviewed papers** and presented at **14+ conferences**, including a keynote and two poster awards
- **3+ years** as a **University Lecturer** teaching General Chemistry and various chemistry lab courses

Education

Doctor of Philosophy in Chemistry – The University of Texas at El Paso, El Paso, TX, USA (Apr. 2019 – May 2024)

Advisors: Dr. Dino Villagrán and Dr. Balazs Pinter

- **Outstanding Doctoral Student in Chemistry** and **Outstanding Doctoral Dissertation of the College of Science**
- Dissertation: Computational investigation of transition metal photoredox catalysts: redox property tuning via ligand modification

Master's degree in Environment, Quality, and Prevention Management Systems – Universidad Internacional de la Rioja, Quito, Ecuador (Apr. 2017 – Mar. 2018)

Bachelor of Science in Chemical Engineering – Escuela Politécnica Nacional, Quito, Ecuador (Mar. 2009 – Apr. 2016)

- Graduated **summa cum laude**

Experience

Assistant Professor (Aug. 2026 – Present)

Department of Chemistry and Biochemistry, University of St. Thomas, Houston, Texas

- Currently teaching Organic Chemistry I and Laboratory of Organic Chemistry
- Performing independent research in environmental science and catalysis using computational chemistry methods

J Evans Attwell Welch Postdoctoral Fellow (Aug. 2024 – July. 2026)

William Marsh Rice University, Smalley-Curl Institute, Houston, Texas

- Studied **adsorption and degradation mechanisms** of **PFAS**, **I₂**, and **Br₂** using nanomaterials like COFs and polymers
- Evaluated **computational methods** to improve the accuracy of predicting **chemical properties** such as reduction potentials
- **Implemented computational chemistry software** on **high-performance computing (HPC) clusters** to run simulations
- **Developed Python scripts** to streamline data analysis and simulation setup
- **Mentored a Ph.D. student** in applying computational chemistry methods to research
- **Published 5 research papers** and **1 review article**

Graduate research assistant (Aug. 2021 – May 2024)

The University of Texas at El Paso, Department of Chemistry and Biochemistry, El Paso, Texas

- Investigated **electronic structures and reaction mechanisms** of metal-based compounds and **pollutant degradation processes** (e.g., PFAS electrocatalysis), identifying key factors influencing **catalyst efficiency**
- Established **computational workflows** to estimate the **electrochemical properties** of photoredox catalysts using Gaussian and ORCA software

- Applied **data analysis techniques** to derive **structure-activity relationships** for catalysts
- Set up and managed **computational chemistry software** on **HPC systems** to execute simulations
- Developed **Python programs** to accelerate data processing and simulation setup
- **Published 12 research papers, 2 review articles**, and contributed to **a book chapter**
- **Mentored 2 undergraduate and 3 Ph.D. students** in computational chemistry research

Research assistant (Jun. 2020 – Aug. 2021)

Universidad Técnica Federico Santa María, Department of Chemistry, Valparaíso, Chile

- **Developed computational workflows** to estimate **electrochemical properties** of photoredox catalysts using ORCA software
- Investigated **electronic properties** and **reaction pathways** of transition metal complexes
- **Synthesized, purified, and characterized** copper-based transition metal complexes
- **Published 2 research papers and 2 review articles**

Laboratory Technician and Lecturer (Oct. 2016 – Feb. 2019)

Escuela Politécnica Nacional, Department of Nuclear Sciences, Quito, Ecuador

- Conducted **pollutant degradation experiments** using light-based processes, chemical reactions, and adsorption techniques, analyzing water samples with **UV-Vis, HPLC, and GC**
- **Managed laboratory operations**, ensuring equipment maintenance, chemical inventory control, and safety compliance
- Taught **General Chemistry** and **laboratory courses** in Analytical Chemistry, Organic Chemistry, Physical Chemistry, Instrumental Analysis, and Process Modeling
- **Led undergraduate research projects** in **organic synthesis** and **environmental pollutant remediation**
- **Mentored 4 undergraduate students**, providing hands-on training in lab techniques and environmental remediation processes
- **Supervised 4 environmental remediation projects** involving **16 students**, leading to a **first-place award** at the I National Competition of Physics and Chemistry for Sustainable Environmental Management (ESPOCH 2017).
- **Published 12 research papers**

Patents

2. **Provisional patent application** - United States Patent and Trademark Office: Three-dimensional covalent organic frameworks for selective removal of bromide: experimental and theoretical studies. Vardhan, H.; **Sandoval-Pauker, C.**; Senftle, T. P.; Verduzco, R.
1. **PI-2024-021** – Ecuadorian Trademark Office: Parallel Plate Reactor for the photocatalytic degradation of azo dyes with the use of titanium dioxide (TiO₂) and Zinc Oxide (ZnO) immobilized on polymeric supports and its design parameters. **Sandoval-Pauker, C.**; Molina, G.; Pérez, J.; Muñoz, F.

Most Relevant Honors / Awards / Fellowships / Grants

- **Selected, Building Engineering & Science Talent Symposium (BEST)** – The Dow Chemical Company (Jul. 2025)
- **Top 100 CAS Future Leaders** – CAS Division of the American Chemical Society (Mar. 2025)
- **University and Department Honoree at the 2025 Honors Convocation** – The University of Texas at El Paso (Apr. 2025)
- **J Evans Attwell Welch Postdoctoral Fellowship** – Smalley-Curl Institute, Rice University (Aug. 2024 – Present)
- **Outstanding Doctoral Dissertation of the College of Science** – The University of Texas at El Paso (May 2024)
- **Outstanding Doctoral Student in Chemistry** – The University of Texas at El Paso (May 2024)
- **Good Neighbor Scholarship** – Texas Higher Education Coordinating Board (Aug. 2022 – May 2024)
- **National Doctoral Scholarship** – Chilean National Agency for Research and Development (ANID) (Apr. 2019 – Aug. 2021)
- **Initiation to Scientific Research Grant** – Universidad Técnica Federico Santa María (May 2020 – Feb. 2021)
- **Selected, Mi Primer Empleo internship program** – Ministry of Industries and Productivity, Ecuador (Apr. 2014 – Jul. 2014)
- **Awarded, Academic Excellence Scholarship** – Escuela Politécnica Nacional (2010 – 2016)

Peer-Reviewed Publications (37 publications; * 1 corresponding author)

40. Jiang, S.-Y.; **Sandoval-Pauker, C.**; Vardhan, H.; Nance, S.; Saxena, R.; Mutetaire, T.; Wang, A.-S.; Shumard, K.; Wang, X.; Donoso, J.; Chen, F.; Martí, A. A.; Wong, M. S.; Senftle, T. P.; Verduzco, R. Pyrene-Based Covalent Organic Frameworks

With Diacetylene Linkers for Tandem Adsorption and Photodegradation of Perfluorooctanoic Acid. *Adv. Funct. Mater.* **2026**. ([Link](#))

39. Tan, M.; **Sandoval-Pauker, C.**; Takacs, Z.; Reinholdt, A. Metallaphosphinidene Coupling with a Phosphorus Ylide to Form a Phosphavinyl $[P=CH_2]^+$ Ligand. *J. Am. Chem. Soc.* **2026**, 148 (24), 25096–25106. ([Link](#))
38. Tulcán, G.; Morillo, L.; Naranjo, D.; Espinoza-Pavón, I.; **Sandoval-Pauker, C.**; Villacis Oñate, W.; Vargas Jentzsch, P.; Muñoz Bisesti, F. Thiabendazole Removal from Water and Mineralization by Electron Beam Irradiation Combined with Hydrogen Peroxide. *Water* **2026**, 18 (10), 1156 ([Link](#))
37. Chandran, A.; **Sandoval-Pauker, C.**; Pinter, B.; Vosch, T.; Wilhelm, F.; Rogalev, A.; Pedersen, K. S.; Reinholdt, A. A Mixed-Valent and High-Spin Vanadium Phosphide. *J. Am. Chem. Soc.* **2026**, 148 (9), 9629 – 9639 ([Link](#))
36. Jacobs, H. P.; Elias, W. C.; Heck, K. N.; Jiang, S.; Dodson, J. J.; **Sandoval-Pauker, C.**; Foucher, A. C.; Cha, B. J.; Arredondo, J. H.; Chen, L.; Mueller, S. G.; Alexander, S. R.; Senftle, T. P.; Miller, J. T.; Wong, M. S. Dynamic Behavior of Molecular Pd-acetate Trimers and Dimers in Heterogeneous Vinyl Acetate Synthesis. *Nat. Commun.* **2025**, 17, 127 ([Link](#))
35. **Sandoval-Pauker, C.**; Senftle, T. P. Computing standard reduction potentials of solvated species: Accuracy of VASPsol and VASPsol++ versus SMD and COSMO-RS solvation methods. *J. Phys. Chem. A* **2025**, 129 (48), 11222 – 11231 ([Link](#))
34. Calvillo Solis, J. J.; Fabela Robledo, R.; **Sandoval-Pauker, C.**; Yin, S.; Galicia, M.; Padhye, L.; Gonzalez, F.; Villagrán, D. Electrochemical reduction of PFOA in organic media: a step toward environmental remediation. *ACS Electrochem.* **2025**, 1 (11), 2484 – 2494 ([Link](#))
33. Jafari, M. G.; Fehn, D.; **Sandoval-Pauker, C.**; Gau, M.; Meyer, K.; Pinter, B.; Mindiola, D. J.; Reinholdt, A. A titanium redox-switch enables reversible C-C bond forming and splitting reactions. *Chem. Sci.* **2025**, 16, 17714 – 17724 ([Link](#))
32. Edin, S.; **Sandoval-Pauker, C.**; Yutronkie, N.; Takacs, Z.; Wilhelm, F.; Rogalev, A.; Pinter, B.; Pedersen, K. Reinholdt, A. Unleashing Phosphorus Mononitride. *Nat. Commun.* **2025**, 16, 5596 ([Link](#))
31. Mohammadi, S.; **Sandoval-Pauker, C.**; Dorado, Z. N.; Senftle, T. P.; Pankow, R.; Sharifan, H. Fluorescent Sodium Alginate Hydrogel-Carbon Dots Sensor for Detecting Perfluorooctanoic Acid in Potable Water. *Anal. Chem.* **2025**, 97 (18), 10075–10084 ([Link](#))
30. Yin, S.; Calvillo Solís, J. J.; **Sandoval-Pauker, C.**; Puerto-Díaz, D.; Villagrán, D. Advances in PFAS Electrochemical Reduction: Mechanisms, Materials, and Future Perspectives. *J. Hazard. Mater.* **2025**, 491, 137943 ([Link](#))
29. **Sandoval-Pauker, C.**; Molina-Aguirre, G.; Villagrán, D.; Pinter, B. Quantifying flattening distortion on the thermodynamics and kinetics of electron transfers of Cu(I) photoredox catalysts. *Inorg. Chem. Front.* **2024**, 11, 4019-4031 ([Link](#))
28. Yin, S.; López, J. F.; **Sandoval-Pauker, C.**; Calvillo Solis, J. J.; Glass, S.; Habib, A.; Lee, W.-Y.; Wong, M. S.; Alvarez, P. J. J.; Villagrán, D. Trap-n-zap: Electrocatalytic Degradation of Perfluorooctanoic Acid (PFOA) with UiO-66 Modified Boron Nitride Electrodes at Environmentally Relevant Concentrations. *Appl. Catal. B: Environ.* **2024**, 355, 124136. ([Link](#))
27. Mrinal, B.; **Sandoval-Pauker, C.**; Fehn, D.; Grant, L. N.; Shuruthi, S.; Gau, M. R.; Ozarowski, A.; Krzystek, J.; Telser, J.; Pinter, B.; Meyer, K.; Mindiola, D. J. Divalent Titanium via Reductive N-C Coupling of a Ti^{IV} Nitrido with π -Acids. *Angew. Chem. Int. Ed.* **2024**, e202404601. ([Link](#))
26. Calvillo Solis, J. J.; **Sandoval Pauker, C.**; Bai, D.; Yin, S.; Senftle, T. P.; Villagran, D. Electrochemical Reduction of Perfluorooctanoic Acid(PFOA): An Experimental and Theoretical Approach. *J. Am. Chem. Soc.* **2024**, 146 (15), 10687-10698. ([Link](#))
25. Bhunia, M.; Mohar, J. S.; **Sandoval-Pauker, C.**; Fehn, D.; Yang, E.; Gau, M.; Goicoechea, J.; Ozarowski, A.; Krzystek, J.; Telser, J.; Meyer, K.; Mindiola, D. J. Softer is Better for Titanium: Molecular Titanium Arsenido Anions Featuring $Ti\equiv As$ Bonding and a Terminal Parent Arsinidene. *J. Am. Chem. Soc.* **2024**, 146 (6), 3609-3614. ([Link](#))
24. Girnt, P.; Molina-Aguirre, G.; Gomez Bustos, D.; ***Sandoval – Pauker, C.**; Vuković, L.; *Pinter, B. Fusion position-dependent aromatic transitions of ligand backbone rings for controlling the redox energetics of photoredox catalysts. *Inorg. Chem.* **2024**, 63 (5), 2586–2596. (***co-corresponding author**) ([Link](#))
23. Ocuane, N.; Ge, Y.; **Sandoval-Pauker, C.**; Villagrán, D. Bifunctional porphyrin-based metal-organic polymers for electrochemical water splitting. *Dalton Transactions* **2024**, 53, 2306-2317. ([Link](#))
22. **Sandoval-Pauker, C.**; Yin, S.; Castillo, A.; Ocuane, N.; Puerto-Díaz, D.; Villagrán, D. Computational Chemistry as Applied in Environmental Research: Opportunities and Challenges. *ACS EST Engg.* **2024**, 4 (1), 66-95. ([Link](#))
21. Eckhardt, R.; Reyes, D.; **Sandoval-Pauker, C.**; Pinter, B. Redox-Active Ligands from a Computational Perspective. **Book Chapter** in Redox-Active Ligands: Concepts and Catalysis. Editor: Desage-El Mur, M. **Wiley** **2024** ([Link](#))
20. Calvillo Solis, J. J.; Castillo, A.; Yin, S.; **Sandoval Pauker, C.**; Ocuane, N.; Puerto-Díaz, D.; Jafari, N.; Villagran, D. Molecular inspired electrocatalyst materials for environmental remediation. *Inorg. Chem. Front.* **2023**, 10, 6160-6175. ([Link](#))
19. Córdor Guevara, I.; Altamirano-Briones, A.; Terán, K.; Espinoza, I.; Ramos Guerrero, L.; Aguilar Mamani, W.; **Sandoval**

- Pauker, C.;** Vargas Jentzsch, P.; Muñoz Bisesti, F. Degradation of an Antibiotic from the Fluoroquinolone Group with a New Graphitic Carbon Nitride Photocatalyst. *Bases de la Ciencia* **2023**, 8 (2), 68-87. ([Link](#))
18. Medina, E.; **Sandoval-Pauker, C.;** Salvador, P.; Pinter, B. Mechanistic Insights into the Oxidative and Reductive Quenching Cycles of Transition Metal Photoredox Catalysts through Effective Oxidation State Analysis. *Inorg. Chem.* **2022**, 6 (47), 18923-18933. ([Link](#))
 17. Bhunia, M.; **Sandoval-Pauker, C.;** Jafari, M. G.; Grant, L. N.; Gau, M. R.; Pinter, B.; Mindiola, D. J. Terminal and Super-Basic Parent Imides of Hafnium. *Angew. Chem. Int. Ed.* **2022**, 61 (43), e202209122. ([Link](#))
 16. **Sandoval-Pauker, C.;** Pinter, B. Electronic structure analysis of copper photoredox catalysts using the quasi-restricted orbital approach. *J. Chem. Phys.* **2022**, 157 (7), 074306. ([Link](#))
 15. **Sandoval-Pauker, C.;** Santander-Nelli, M.; Dreyse, P. Thermally activated delayed fluorescence in luminescent cationic copper (I) complexes. *RSC Adv.* **2022**, 12, 10653-10674. ([Link](#))
 14. **Sandoval-Pauker, C.;** Molina-Aguirre, G.; Pinter, B. Status Report on Copper (I) Complexes in Photoredox Catalysis; Photophysical and Electrochemical Properties and Future Prospects. *Polyhedron* **2021**, 199, 115105. ([Link](#))
 13. Reinholdt, A.; Jafari, M. G.; **Sandoval-Pauker, C.;** Ballester-Martínez, E.; Gau, M. R.; Driess, M.; Pinter, B.; Mindiola, D. J. Phosphorus and Arsenic Atom Transfer to Isocyanides to Form π -Backbonding Cyanophosphide and Cyanoarsenide Titanium Complexes. *Angew. Chemie Int. Ed.* **2021**, 60 (32), 17595-17600. ([Link](#))
 12. Vargas Jentzsch, P.; **Sandoval Pauker, C.;** Zárate Pozo, P.; Sinche Serra, M.; Jácome Camacho, G.; Rueda-Ayala, V.; Garrido, P.; Ramos Guerrero, L.; Ciobotă, V. Raman Spectroscopy in the Detection of Adulterated Essential Oils: The Case of Nonvolatile Adulterants. *J. Raman Spectrosc.* **2021**, 52 (5), 1055-1063. ([Link](#))
 11. Cabascango, T.; Ortiz, K.; **Sandoval Pauker, C.;** Espinoza Pavón, I.; Ramoji, A.; Popp, J.; Pérez, J.; Pinto, C. M.; Rivera-Parra, J. L.; Muñoz-Bisesti, F.; Aldás, M. B.; Araújo, C. V. M.; Vargas Jentzsch, P. Assessment of Advanced Oxidation Processes Using Zebrafish in a Non-Forced Exposure System: A Proof of Concept. *Processes* **2021**, 9 (5), 734. ([Link](#))
 10. Sengupta, D.; **Sandoval-Pauker, C.;** Schueller, E.; Encerrado-Manriquez, A. M.; Metta-Magaña, A.; Lee, W.-Y.; Seshadri, R.; Pinter, B.; Fortier, S. Isolation of a Bimetallic Cobalt(III) Nitride and Examination of Its Hydrogen Atom Abstraction Chemistry and Reactivity toward H₂. *J. Am. Chem. Soc.* **2020**, 142 (18), 8233-8242. ([Link](#))
 9. Sánchez-Moreno, V. E.; **Sandoval-Pauker, C.;** Aldas, M.; Ciobotă, V.; Luna, M.; Vargas Jentzsch, P.; Muñoz Bisesti, F. Synthesis of Inulin Hydrogels by Electron Beam Irradiation: Physical, Vibrational Spectroscopic and Thermal Characterization and Arsenic Removal as a Possible Application. *J. Polym. Res.* **2020**, 27 (7), 184. ([Link](#))
 8. Altamirano Briones, A.; Córdor Guevara, I.; Mena, D.; Espinoza, I.; **Sandoval-Pauker, C.;** Ramos Guerrero, L.; Vargas Jentzsch, P.; Muñoz Bisesti, F. Degradation of Meropenem by Heterogeneous Photocatalysis Using TiO₂/Fiberglass Substrates. *Catalysts* **2020**, 10 (3), 344. ([Link](#))
 7. Espinoza, I.; **Sandoval-Pauker, C.;** Ramos, G.; Vargas-Jentzsch, P.; Muñoz, B. Fenton Process Combined with Precipitation for the Removal of Direct Blue 1 Dye: A New Approach. *J. Serbian Chem. Soc.* **2020**, 85 (4), 547–558. ([Link](#))
 6. Laverde-Cerda, E.; Altamirano-Briones, A.; Zárate-Pozo, P.; **Sandoval-Pauker, C.;** Ramos-Guerrero, L.; Muñoz-Bisesti, F.; Vargas Jentzsch, P. Iron Removal for Kinetic Studies on Fenton Treatments: A New Approach Based on Ferrocyanide. *Rev. Mex. Ing. Química* **2020**, 19 (1), 159-164. ([Link](#))
 5. Garófalo-Villalta, S.; Medina-Espinosa, T.; **Sandoval-Pauker, C.;** Villacis, W.; Ciobota, V.; Munoz Bisesti, F.; Vargas Jentzsch, P. Degradation of Reactive Red 120 Dye by a Heterogeneous Sono-Fenton Process with Goethite Deposited onto Silica and Calcite Sand. *J. Serbian Chem. Soc.* **2020**, 85 (1), 125-140. ([Link](#))
 4. Coronel, S.; **Sandoval Pauker, C.;** Vargas Jentzsch, P.; de la Torre, E.; Endara, D.; Muñoz-Bisesti, F. Titanium dioxide/copper/carbon Composites for the Photocatalytic Degradation of Phenol. *Chem. Chem. Technol.* **2020**, 14 (2), 161-168. ([Link](#))
 3. Picho-Chillán, G.; Dante, R. C.; Muñoz-Bisesti, F.; Martín-Ramos, P.; Chamorro-Posada, P.; Vargas-Jentzsch, P.; Sánchez-Arévalo, F. M.; **Sandoval-Pauker, C.;** Rutto, D. Photodegradation of Direct Blue 1 Azo Dye by Polymeric Carbon Nitride Irradiated with Accelerated Electrons. *Mater. Chem. Phys.* **2019**, 237, 121878. ([Link](#))
 2. Morillo Esparza, J.; Cevallos Cueva, N.; **Sandoval Pauker, C.;** Vargas Jentzsch, P.; Muñoz Bisesti, F. Combined Treatment Using Ozone for Cyanide Removal from Wastewater: A Comparison. *Rev. Int. Contam. Ambient.* **2019**, 35 (2), 459-467. ([Link](#))
 1. **Sandoval, C.;** Molina, G.; Vargas Jentzsch, P.; Pérez, J.; Muñoz, F. Photocatalytic Degradation of Azo Dyes Over Semiconductors Supported on Polyethylene Terephthalate and Polystyrene Substrates. *J. Adv. Oxid. Technol.* **2017**, 20 (2), 2017006. ([Link](#))

Invited Keynote Presentations

1. **Sandoval Pauker, C.** Towards the rational design of the redox properties of Cu(I) photo redox catalysts: a computational study of the oxidative and reductive quenching cycles. *2nd Iberoamerican Congress of Science, Education and Technology*. UNAM Cuatitlán – Mexico (Dec. 2022)

Conference Presentations in the Last 3 Years

9. **Sandoval-Pauker, C.**; Jiang, S-Y.; Nance, S.; Saxena, R.; Vardhan, H.; Muteppaire, T.; Wang, A-S.; Shumard, K.; Wang, X.; Donoso, J.; Martí A. A.; Wong, M. S.; Verduzco, R.; Senftle, T. P. Mechanistic Study of PFOA Photodegradation by Pyrene-COFs with Diacetylene Linkers. *Main research talk at the LatinXinChE 3rd Annual Virtual Symposium* (Sep. 2025)
8. **Sandoval-Pauker, C.**; Jiang, S-Y.; Muteppaire, T.; Nance, S.; Wang, A-S.; Verduzco, R.; Senftle, T. P. Mechanistic Insights into PFOA Degradation on Covalent Organic Framework Photo-catalysts. *Poster presentation at the 29th North American Catalysis Society Meeting (NAM29)*. Atlanta – Georgia (Jun. 2024)
7. **Sandoval-Pauker, C.**; Jiang, S-Y.; Muteppaire, T.; Nance, S.; Wang, A-S.; Verduzco, R.; Senftle, T. P. Photocatalytic Degradation of Perfluorooctanoic Acid using Pyrene-based Covalent Organic Frameworks with Diacetylene Linkers. *Poster presentation at the 2025 CHBE Research Symposium – RICE University*. Houston – Texas (May 2024)
6. **Sandoval-Pauker, C.**; Jiang, S-Y.; Muteppaire, T.; Nance, S.; Wang, A-S.; Verduzco, R.; Senftle, T. P. Photocatalytic Degradation of Perfluorooctanoic Acid using Pyrene-based Covalent Organic Frameworks with Diacetylene Linkers. *Poster presentation at the Southwest Catalysis Society 2025 Spring Symposium*. Houston – Texas (May 2024)
5. **Sandoval-Pauker, C.**; Jiang, S-Y.; Muteppaire, T.; Nance, S.; Wang, A-S.; Verduzco, R.; Senftle, T. P. Insights from TD-DFT into the photooxidation mechanism of PFOA by diacetylene-based 2D COFs. *Poster presentation at the 2024 Rice WaTER Institute Annual Meeting*. Houston – Texas (Dec. 2024)
4. **Sandoval Pauker, C.**; Villagrán, D.; Pinter, B. Towards the tuning of the ground and excited state redox properties of transition metal photoredox catalysts via ligand modification. *Oral presentation at the ACS Spring 2024 meeting*. New Orleans – Louisiana (Mar. 2024)
3. **Sandoval Pauker, C.**; Calvillo Solis, J. J.; Yin, S.; Villagrán, D. Insights into the electrodegradation of perfluorooctanoic acid. *Poster presentation at the NEWT 2023 Mid-year meeting*. Houston – Texas (Dec. 2023)
2. **Sandoval Pauker, C.**; Villagrán, D.; Pinter, B. Establishing design principles for photoredox catalysts through a systematic DFT study. *Oral presentation at the 1st International Younger Chemist Network Online Conference* (Oct. 2023)
1. **Sandoval Pauker, C.**; Villagrán, D.; Pinter, B. Establishing design principles for photoredox catalysts through a systematic DFT study. *Oral presentation at the Advanced School of Molecular Simulations Prof. Wilfred van Gunsteren*. State University of Campinas (UNICAMP) (Oct. 2023)

Reviewer and editorial experience

Reviewer: Nature Communications (2), Nature Catalysis (2), Journal of the American Chemical Society (1), Journal of Hazardous Materials: Organics (2), Analytical Chemistry (1), ACS Petroleum Research Fund (1), Environmental Science and Pollution Research (1), Ecuador es Calidad (1), ACI Avances en Ciencias e Ingenierías (4),

Editorial board member: Discover Metals (Springer)

Collaborators (alphabetical order)

Prof. Skye Fortier (University of Texas at El Paso); **Dr. Shuyan Jiang** (Colorado State University); **Prof. Daniel J. Mindiola** (University of Pennsylvania); **Prof. Florinella Muñoz** (Escuela Politécnica Nacional); **Prof. Anders Reinholdt** (Lund University); **Prof. Paul Vargas Jentzsch** (Escuela Politécnica Nacional); **Dr. Harsh Vardhan** (RICE University); **Prof. Lela Vukovic** (University of Texas at El Paso); **Dr. Sheng Yin** (Stony Brook University)

Skills / Courses

Computer skills: Computational Chemistry (Orca, Gaussian, VASP, NW-Chem), Programming (Python, SQL, Bash, MATLAB), High-performance computers, Linux, Data Analytics, Web Development (HTML, Joomla, WordPress, Moodle), Graphic Design

Laboratory Skills: Organic and Inorganic Synthesis, Wastewater Characterization, Adsorption Studies, Advanced Oxidation Processes, Operating and Building Photoreactors, Analytical Techniques (IR, UV-Vis, NMR, GC, HPLC)

Technical courses: Completed courses or certified in Data Analysis (68 h), Machine Learning Institute at Texas Advanced Computing Center, Advanced School of Molecular Simulations Prof. Wilfred van Gunsteren UNICAMP 2023, Industrial Wastewater Treatment (92 h), NMR (20 h), Heterogeneous Catalysis (16 h), Oilfield Technology and Operations (57 h), Responsible Conduct of Research (CITI), Laboratory Safety

Educational and interpersonal courses: E-learning Applications (16 h), Expert in Virtual Tutoring (272 h), Entrepreneur Workshops (75 h), Design and Creation of MOOCS (40 h), Promoting Active Learning and Creating an Inclusive and Supportive Learning Environment micro-credentials (ACUE), Prepare Future Faculty Program Certification (UTEP)

Volunteer experience

Outreach, Mentoring, and Leadership

- **Mentored a sophomore Chemistry student and a senior high school student** in developing and conducting an independent research project as part of the *Research Girl, Inc. Independent Research Mentorship Program* (Jul. 2025 – Present)
- **Mentored a PhD student** as a part of the *LatinX in Chemical Engineering Mentorship Program* (Jul. 2025 – Present)
- **Mentored teachers** in developing project-based engineering projects on water sustainability as part of the *NEWT NanoEnvironmental Engineering for Teachers Program* (Mar. 2025 – Apr. 2025)
- **Mentored high school students** in the *NEWT Mentoring Program*, fostering STEM interest (Jan. 2024 – Apr. 2024)
- **Served as National Delegate of Ecuador** in the *International Younger Chemistry Network (IYCN)* (Aug. 2023 – Aug. 2024)
- **Served as President** of the Chemical Engineering School Student Association of *Escuela Politécnica Nacional* (Quito - Ecuador). Organized 4 academic events, 10+ social events, and 3 fundraising events (Jul. 2013 – Jul. 2014)

Scientific Service and Public Engagement

- **Member of the Leadership Team** of LatinXinChe, supporting communications, virtual symposium, and mentoring program organization (Nov. 2025 – Present)
- **Member of the Early Career Research Committee** of the *VII Iberoamerican Conference on Advanced Oxidation Technologies (VII CIPOA)* (Sep. 2025 – Present)
- **Member of the Social Media Team** of the *International Younger Chemistry Network (IYCN)* (Jun. 2025 – Present)
- **Chair** of the AI – Development of New AI-driven methodologies and NEW COMP – Machine Learning sessions of the *29th North American Catalysis Society Meeting (NAM29)* (Jun. 2025)
- **Technical Committee member** for the *LatinXChem 2024 conference* (Apr. 2024 – Dec. 2024)
- **Contributed to the design and implementation of the MOOC** Digital Tools for Organic Chemistry hosted by the *Ecuadorian Corporation for the Development of Research and Academia (CEDIA)* (Jun. 2021 – Jan. 2022)
- **Volunteer judge at scientific events and science fairs:** LatinXinChE 3rd Annual Virtual Symposium (Sep. 2025); Wilchester Elementary School 2025 and 2026 Science Fairs (Mar. 2025; Feb. 2026); SCI Summer Research Colloquium – Rice University (Aug. 2024); 2023 Insights' Sun County Regional Science Fair (Feb. 2023); 2022 Annual COURI Summer Undergraduate Symposium – UTEP (Aug. 2022)