ARTURO LEÓN SANDOVAL

aleonsandoval@sandiego.edu ◇ https://www.linkedin.com/in/arturo-leon-sandoval-phd-04b699132/

OBJECTIVE

Dedicated and multidisciplinary chemist with expertise in process development, photochemistry, electrochemistry, computational chemistry, and organoboron chemistry, seeking a tenure-track faculty position to advance innovative research and contribute to the scientific community through teaching and mentorship. Passionate about promoting diversity, equity, and inclusion in chemistry, with a focus on mentoring underrepresented students and creating a supportive academic environment. Committed to using cutting-edge methodologies and interdisciplinary approaches to address complex challenges in synthetic chemistry and foster the next generation of scientists.

QUALIFICATIONS

- Extensive research experience across multiple disciplines, including organoboron chemistry, oxidative funtionallizations, photochemistry, electrochemistry, and computational chemistry.
- Strong commitment to diversity, equity, and inclusion in STEM education.
- Experienced in community-building and program coordination for minority support initiatives.
- Committed to advancing science education through interdisciplinary research.

EDUCATION

Ph.D. Chemistry, University Connecticut 2023
Dissertation title: "Approaches to Oxidation and Oxidative Functionalization Reactions"
Committee: Nicholas E. Leadbeater (Advisor), Jose A. Gascon, Mark W. Peczuh,Eugene Pinkhassik, James N. Hohman

B.S. Pharmaceutical Chemistry, University of California Davis 2018
Advisor: Dean J. Tantillo

TEACHING EXPERIENCE

Diversity Postdoctoral Faculty Sep 2024 - current
University of San Diego *San Diego, CA*

- Teach Organic Chemistry Lab/ Fall 2024

Instructional Assistant Mar 2024 - Jul 2024
American River College *Sacramento, CA*

- Organic Chemistry/ Spring 2024
- Design, maintain, and organize department chemistry demonstrations

Teaching Assistant Aug 2018 - Aug 2023
University Connecticut *Storrs, CT*

- General Chemistry I/ Fall 2018
- Organic Chemistry Lab/ Spring 2019, Summer 2019, Fall 2019, Spring 2020, Fall 2020, and Spring 2021
- Organic Chemistry Lab for Engineers/ Spring 2019 and Spring 2020
- Honors Organic Chemistry I/ Fall 2021, Summer 2022, and Fall 2022
- Honors Organic Chemistry II/ Summer 2021, Spring 2022, and Spring 2022

RESEARCH EXPERIENCE

Diversity Postdoctoral Faculty Sep 2024 - current
University of San Diego *San Diego, CA*

Major projects focus: Research centers on advancing synthetic methodologies in organoboron chemistry, particularly the development of novel reactions involving diboration and phosphonate-boronic acid couplings. These projects aim to enhance the functionalization of carbonyl compounds and explore new bond formations with potential applications in organic synthesis and catalysis.

- Synthesis of diboronated compounds and coupling of phosphonites with boronic acids
- Worked with glove box

Research Assistant Aug 2018 - May 2023
University of Connecticut *Storrs, CT*

Major projects focus: Research projects included the development of greener solvent- and additive-free oxidation methodology using oxoammonium salts, a metal-free catalytic implementation of **ACT**, and the elucidation of mechanisms through computational chemistry.

- Synthesis of **ACT** and oxoammonium salts.
- Worked with 1 mmol to 1 mol scaled reactions.
- Utilized 1H-NMR, 19F-NMR, and GC-MS to quantify reaction crude conversion for optimization purposes and reaction monitoring.
- Worked with 1 mmol to 1 mol scaled reactions.
- Worked with Schlenk line technique
- Applied computational methods such as Gaussian 16, ORCA, and Schrodinger to discern mechanisms.
- Strong interpersonal skills and ability to collaborate with internal and external collaborators.

Undergraduate Research Assistant May 2017 - Jun 2018
University of California Davis *Davis, CA*

Major projects focus: Research was done to discern the actual molecular structure of oleuropein from its multiple constitutional isomers that come from possible rearrangements.

- Worked on NMR predictions using Spartan and Gaussian.
- Performed single point, optimization, and NMR calculations.
- Performed conformational searches on RDKit, Tinker Molecular, OpenBabel, and Spartan.
- Performed maintenance of the computer cluster recovering four nodes that were down.

Undergraduate Internship Jul 2014 - Aug 2015
California State University Sacramento *Sacramento, CA*

Major projects focus: Research was done to examine local native plants and their efficacy on cancer cells.

- Performed and analyzed disk diffusion to observe antibiotic efficacy of plant extracts on gram negative and positive bacteria.
- Grew cancer cell cultures.
- Performed toxicity assays
- Extracted chemical components of plants using ethanol, hexanes, and ethyl acetate.
- Performed large volume flash column and thin layer chromatography.

PUBLICATIONS

Sharma, M.; León Sandoval, A.; Leadbeater, N. E. Oxidation of Alcohols to Aldehydes and Ketones using a Catalytic Pairing of a Nitroxide and Nitric Acid. *SynOpen* 2023.

Doherty, K. E.; León Sandoval, A.; Politano, F.; Witko, M.; Schroeder, C. M.; Brydon, W.; Wadey, G. P.; Ohlhorst, K.; Leadbeater, N. E. Scale-up of Sodium Persulfate Mediated, Nitroxide Catalyzed Oxidative Functionalization Reactions.*Curr. Org. Synth.* 2023.

Doherty, K. E.; León Sandoval, A.; Mercier, E. T.; Leadbeater, N. E. 3-(4-(Benzyloxy)-3-methoxyphenyl)-[1,2,4]triazolo[4,3-a]pyridine. *Molbank* 2023, M1694.

Schroeder, C. M.; León Sandoval, A.; Ohlhorst, K.; Leadbeater, N. E. Development and Use of a Real-time In-situ Monitoring Tool for Electrochemical Advanced Oxidation Processes. *Chemistry-Metods* 2023, e20202300014.

Wadey, G. P.; Doherty, K. E.; León Sandoval, A.; Leadbeater, N. E. Preparation of novel acyl pyrazoles and triazoles by means of oxidative functionalization reactions. *Heterocyclic Communications*, vol. 29, no. 1, 2023, pp. 20220158.

León Sandoval, A.; Doherty, K. E.; Wadey, G. P.; Schroeder, C. M.; Leadbeater, N. E. Fast, easy oxidation of alcohols using an oxoammonium salt bearing the nitrate anion. *Tetrahedron Lett* 2023, *116*, 154332.

Doherty, K. E.; Wadey, G. P.; León Sandoval, A.; Leadbeater, N. E. (3,5-Di-tert-butylphenyl)(1H-pyrazol-1-yl) methanone. *Molbank* 2022, M1468.

León Sandoval, A.; Doherty, K. E.; Wadey, G. P.; Leadbeater, N. E. Solvent- and Additive-Free Oxidative Amidation of Aldehydes Using a Recyclable Oxoammonium Salt. *Org Biomol Chem* 2022, *20* (11), 2249–2254.

León Sandoval, A.; Politano, F.; Witko, M.; Leadbeater, N. E. Preparation of Nitriles from Aldehydes Using Ammonium Persulfate by Means of a Nitroxide-Catalysed Oxidative Functionalisation Reaction. *Org Biomol Chem* 2022, 20, 667-671.

Politano, F.; León Sandoval, A.; Witko, M. L.; Doherty, K. E.; Schroeder, C. M.; Leadbeater, N. E. Nitroxide-Catalyzed Oxidative Amidation of Aldehydes to Yield N-Acyl Azoles Using Sodium Persulfate. *European J Org Chem* 2021, e202101239.

León Sandoval, A.; Politano, F.; Witko, M. L.; Leadbeater, N. E. Preparation of Hexafluoroisopropyl Esters by Oxidative Esterification of Aldehydes Using Sodium Persulfate. *Org Biomol Chem* 2021, *19* (13), 2986–2990.

Politano, F.; León Sandoval, A.; Uranga, J. G.; Buján, E. I.; Leadbeater, N. E. Using experimental and computational approaches to probe an unusual carbon–carbon bond cleavage observed in the synthesis of benzimidazole N-oxides. *Org Biomol Chem*, 2021, 19, 208-215

Nandi, J.; Vaughan, M. Z.; León Sandoval, A.; Paolillo, J. M.; Leadbeater, N. E. Oxidative Amidation of Amines in Tandem with Transamidation: A Route to Amides Using Visible-Light Energy. *J Org Chem* 2020, *85* (14), 9219–9229.

Miller, S. A.; León Sandoval, A.; Leadbeater, N. E. Oxidation of Alcohols Using an Oxoammonium Salt Bearing the Nitrate Anion. *Tetrahedron Lett* 2020, *61* (6), 151464.

PRESENTATIONS

Arturo León Sandoval, "Versatile, easy methodology for oxidative functionalization of aldehydes using acetamido-TEMPO and sodium persulfate, " American Chemical Society (ACS), August 25, 2021. (presentation)

Arturo León Sandoval, "Isomers of Oleuropein Found in Olive Oil," Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS): The National Diversity in STEM Conference, October 20, 2017. (poster)

Arturo León Sandoval, "Conformational Study of Oleuropein Aglycone Isomers" Richard Larock Undergraduate Research Conference, May 19, 2018. (presentation)

SKILLS

Instrumentation

- 1H-, 13C-, 19F-NMR
- UV-Vis
- FT-IR
- GC-MS
- HR-MS
- Glovebox
- CEM microwaves
- LED photoreactors
- Density Functional Theory (Gaussian 16 and Orca)

Other Skills

- Comfortable with remote work and using video conferencing platforms such as Webex and Zoom.
- Experience working with CAD, and 3D-printing.
- Adept with instrument management and maintenance.
- Communicate and collaborate effectively with other scientists to develop and analyze research projects.
- Experience with high-performance computing resources, Microsoft Excel, Word, and PowerPoint.
- Fluent in Spanish.

LEADERSHIP AND VOLUNTEER EXPERIENCE

- Poster judge at the Miller Symposium held in UC Davis.
- Trained and mentored incoming graduate students.
- Taught and mentored undergraduate students both in and out of the chemistry major on the general principles of chemistry, general lab etiquette, lab techniques, and how to operate lab instruments.
- Help with running the International Chemistry Olympiad.
- Participates as the Lab Safety Officer (LSO).
- Member of Graduate Student Advisory Committee (GSAC).
- MESA program coordinator.