Carsten Flores-Hansen

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EDUCATION

PhD in Chemistry **August 2019-Present**
Purdue University, West Lafayette, IN

B.S. in Multidisciplinary Science **August 2015-May 2019**
The University of Texas at San Antonio, San Antonio, TX
Graduated with **Honors** Minors: **Chemistry and Biology** GPA: **3.81/4.00**

WORK & INTERNSHIP EXPERIENCE

Research Assistant- POWER Laboratory
Advisor: Bryan Boudouris **August 2019-Present**
Purdue University, West Lafayette, IN

- Synthesis and functionalization of block polymers into membranes for flow-through purification of water

Undergraduate Research Assistant- Total Organic Synthesis/Medicinal Chemistry Laboratory
Advisor: Oleg V. Larionov **January 2018 – May 2019**
The University of Texas at San Antonio, San Antonio, TX

- Researched cross-coupling mechanisms using stereospecific ring-opening of sulfolenes and regio- and stereoselective palladium-catalyzed dienylation reactions as a method of synthesis of conjugated systems
- Trained in setting reactions, purification using column chromatography, flash chromatography, extraction, recrystallization, and vacuum filtration, data analysis of HRMS/HRGC/IR spectroscopy, operation and data analysis of Bruker/Agilent NMR spectroscopy

Undergraduate Research Assistant – Integrative Cardiopulmonary & Autonomic Performance Laboratory
Advisors: William H. Cooke/ Donovan L. Fogt **August 2015 – August 2017**
The University of Texas at San Antonio, San Antonio, TX

- Researched vagal-cardiac control and cerebral autoregulation in subjects diagnosed with Post Traumatic Stress Disorder and controls
- Managed participant recruitment and ran data analysis on WinCPRS Absolute Aliens and excel

PEER-REVIEWED PUBLICATIONS

- Siefker, Z.A., Hodul, J.N., Zhao, X., Bajaj, N., Brayton, K.M., **Flores-Hansen, C.,** Zhao, W., Chiu, G.T.-C., Braun, J.E., Rhoads, J.F., Boudouris, B.W. **(2021)**. Manipulating polymer composition to create low-cost, high-fidelity sensors for indoor CO2 monitoring. Sci Rep 11, 13237. https://doi.org/10.1038/s41598-021-92181-4
- Jin, S., Haug, G.C., Nguyen, V.T., **Flores-Hansen, C.,** Arman, H.D., & Larionov, O.V. **(2019)** "Decarboxylative Phosphine Synthesis: Insights into the Catalytic, Autocatalytic, and Inhibitory Roles of Additives and Intermediates", ACS Catalysis 2019 9 (11), 9764-9774 DOI: 10.1021/acscatal.9b03366
- Nguyen, V.T., Nguyen, V.D., Haug, G.C., Dang, H.T., Jin, S., Li, Z., **Flores-Hansen, C.,** Benavides, B.S., Arman, H.D., & Larionov, O.V. **(2019)** "Alkene Synthesis by Photocatalytic Chemoenzymatically Compatible Dehydrodecarboxylation of Carboxylic Acids and Biomass", ACS Catalysis, 9 (10), 9485-9498 DOI: 10.1021/acscatal.9b02951
- Nguyen, V. T., Dang, H. T., Pham, H. H., Nguyen, V. D., **Flores-Hansen, C.**, Arman, H. D., & Larionov, O. V. (**2018**). "Highly Regio- and Stereoselective Catalytic Synthesis of Conjugated Dienes and Polyenes", *Journal of the American Chemical Society*, 140(27), 8434–8438. doi:10.1021/jacs.8b05421
- Campalans, Carmen; **Flores-Hansen, Carsten**; Matjeka, Scott; Quezada, Clarissa; Fogt, Donovan L.; and Cooke, William H. (**2017**) "The Valsalva Maneuver for Assessment of Cardiovagal Baroreflex Sensitivity," *International Journal of Exercise Science*. Conference Proceedings: Vol. 2 : Iss. 9 , Article 61.

LABORATORY SKILLS

Basic Laboratory Skills:

- Chromatography (Flash Column/ High Performance/ Thin Layer/ Size Exclusion/Gas Phase)
- Synthesis of Organic Compounds, Polymers, and Casting of Membranes
- Recrystallization
- Extraction
- Reflux
- Distillation
- Titration
- Melting Point Determination
- pH Adjustments
- Filtration
- Inert Atmospheric Synthesis

Instrumentation:

- Fourier Transformed Infrared Spectroscopy (FTIR)
- Nuclear Magnetic Resonance Spectroscopy (NMR)
- Ultraviolet-Visible Spectroscopy (UV-Vis)
- Polarimetry
- Scanning Electron Microscopy (SEM)
- Energy Dispersive X-Ray Analysis (EDX)
- Sputter Coating
- Atomic Force Microscopy (AFM)
- Mass Spectrometry (MS)
- Differential Scanning Calorimetry (DSC)
- Thermogravimetric Analysis (TGA)
- X-Ray Diffraction (XRD)
- Rotary Evaporation
- Probe Tip Sonication
- Potentiostat

TEACHING EXPERIENCE

Teaching Assistant General Chemistry, Purdue University Fall 2019

- Led recitations and laboratory class (24 students)
- Taught students the fundamentals of chemistry and laboratory techniques such as intermolecular forces, nuclear composition, functional groups, acid/base chemistry, and characterization.

Teaching Assistant Organic Chemistry, Purdue University Spring 2019

- Led laboratory class (24 students)
- Taught students the fundamentals of organic chemistry and laboratory techniques such as infrared spectroscopy, recrystallization, extraction, chromatography, and carbonyl chemistry.

Teaching Assistant Organic Chemistry, Purdue University Spring 2021

- Led three laboratory classes (12 students each)
- Taught students the fundamentals of organic chemistry and laboratory techniques such as infrared spectroscopy, recrystallization, extraction, chromatography, and carbonyl chemistry.

AWARDS AND HONORS

- Purdue Department of Chemistry Ross Fellowship Fall 2019

Undergraduate:

- Office of Undergraduate Research Scholarship 2017
- TIFT Scholarship 2015/2016
- College of Sciences President's List Fall 2017
- College of Sciences Dean's List Spring 2017/ Fall 2016
- College of Sciences Honor Roll Fall 2015/ Spring 2016/ Spring 2018