(385)-722-0740 | tylerbwilliams97@gmail.com | Provo, UT

**Education**

**Brigham Young University Provo, UT**

*B.S. Chemical Engineering 2022*

*Ph.D. Chemical Engineering Anticipated – 2026*

**Research Experience**

**Pyrochemical Research and Operations Lab**  **Provo, UT**

*Ph.D. Student June 2022 - Present*

* Developed semi-differentiation theory for soluble-insoluble cyclic voltammetry as first author
* Designed and tested a thin-cell electrode for highly concentrated measurements in molten salts as first author
* Tested the realistic viability of electroanalytical monitoring in molten salts with a blind study

**Pyrochemical Research and Operations Lab**  **Provo, UT**

*Undergraduate Research Assistant August 2020 – June 2022*

* Reviewed electrochemical concentration measurements in molten chloride salts as first author
* Refined and tested square-wave voltammetry theory for soluble-insoluble reactions as second author
* Started up an electrochemical lab, purchased and installed instrumentation, materials, and equipment

**Molten Salt Simulations Group**  **Provo, UT**

*Undergraduate Research Assistant September 2018 – June 2021*

* Created the Specific Pair Proximity and Dynamic Radial Distribution Functions to visualize billions of trajectory data points
* Optimized CP2K parameters, resulting in computed AIMD densities for FLiNaK within 1% of expected literacy values
* Automated the production of RDF and density plots, building onto an existing system that used 3 programming languages

**Electrochemical Toxic Agent Detection Group**  **Provo, UT**

*Undergraduate Research Assistant December 2020 – January 2021*

* Conducted a study investigating electrosynthesis of metal organic frameworks
* Implemented U.S. Army chemical safety practices in electrochemical experiments with chemical warfare simulants
* Wrote code to read and store data from an air quality sensor using Python Java on an Arduino IDE

**U.S. Army Dugway Proving Grounds - Chemical Test Division** **Dugway, UT**

*Physical Science Technician – Summer Hire June 2020 - September 2020*

* Worked directly with chemical warfare agents (CWAs), performing 20+ hours of experiments with nerve and blister agents
* Operated the control systems and monitored environmental sensors to regulate and decontaminate the test space
* Earned the certification to work with diluted and non-recoverable CWAs solo, and with pure CWAs alongside a Level III

**Industry Experience**

**Advanced Process and Control Optimization (APCO)** **North Salt Lake, UT**

*Technician (2015-2018), Assistant Integrator (2019) Various periods from June 2015 – September 2019*

* Improved control strategy and upgraded 5 separate Allen-Bradley CompactLogix PLCs for a wastewater treatment facility
* Modified, assembled, and wired 100+ industrial control panels with integrated control for a wide variety of applications
* Wired and mounted hundreds of pumps, valves, flow/temperature meters, along with radio, ethernet, and fiber-optic networks

**Awards and Honors**

*Fulton Fellowship – Brigham Young University 2022*

*Innovations in Nuclear Technology R&D Award – Universities with Less than $600 Million in Research Expenditures 2022*

*Offered – Achievement Rewards for College Scientists Fellowship – University of Utah 2022*

*First Place Nuclear Design – Alpha Tech Research Corporation Competition 2022*

**Peer-Reviewed Publications**

*R. Fuller, T. Williams, M. Schvaneveldt, D. Rappleye. A comparison of square-wave voltammetry models to determine the number of electrons exchanged in metal deposition. Electrochemica Acta, 414, 140220 (2022).*

*T. Williams, R. Shum, D. Rappleye. Review - Concentration Measurements in Molten Chloride Salts Using Electrochemical Methods. Journal of the Electrochemical Society, 168, (12), 123510 (2021).*

*A.D. Clark, W.L. Lee, A.R. Solano, T.B. Williams, G.S. Meyer, G.J. Tait, B.C. Battraw, S.D. Nickerson. Complexation of Mo in FLiNaK Molten Salt: Insight from Ab Initio Molecular Dynamics. The Journal of Physical Chemistry B, 215, 1, 211-218 (2021).*

**Technical Presentations**

*T. Williams, D. Rappleye. High-concentration electroanalytical measurements using a thin-layer electrode in molten chloride salts. ACS (2022)*

*R.G. Fuller, D. Rappleye, T. Williams, M. Schvaneveldt. Analysis on Methods for Determining the Number of Electrons Exchanged in a Metal Deposition Reaction through Square-Wave Voltammetry. ECS Meeting Abstracts, 1921 (2021)*

**Citizenship Activities**

*STEM Outreach Presentation - Viewmont High School - Bountiful, UT 2022*

*STEM Outreach Presentation - Centerville Jr. High School - Centerville, UT 2022*

*STEM Outreach Presentation - Viewmont High School - Bountiful, UT 2021*

*Religious Youth Group Advisor 2021-Present*

*Translator for “Ромско Образование: Светло Бъдеще” (Roma Education: A Bright Future)**2020*

*Bulgarian Speaking Volunteer for a language training center 2017-2020*

*Religious Youth Camp Counselor 2019*

*Religious Youth Group Advisor 2017*

*Minister and Missionary – Bulgaria 2015-2017*

*Eagle Scout 2011*