Anthony Pyka, Ph.D, E.I.T.

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EDUCATION

Ph.D. Chemical Engineering: Data Science - University of Washington **12/2023**
M.S. Chemical Engineering - University of Washington **9/2022**
B.S. Chemical Engineering - Oregon State University **6/2019**

WORK EXPERIENCE

Graduate Researcher - University of Washington - Seattle, Washington **9/2019 – 12/2023**

- Improved electrochemical urea oxidation kinetics of nickel hydroxides by 20% by synthesizing β- and γ-nickel single crystals with plasmas and electron beams in a self-built, high-vacuum system
- Analyzed urea oxidation and water splitting products with a self-built, high-vacuum mass spectrometry system, using CorrWare/Biologic electrochemistry software, potentiostat, and signal frequency analyzer
- Conducted modeling and finite element analysis using COMSOL to establish design parameters, such as flowrates, partial pressures, and pH, for a direct urea fuel cell for wastewater and energy production
- Created GUI software to predict the structure class of Li-ion electrodes using sklearn-machine learning, where the software outputs formation energy, sites, band gap and density with prediction accuracy
- Performed spectroscopy techniques: EDS, EIS, GC, ICP, MS, SEM, and XRD

Intern - Fraunhofer UMSICHT - Sulzbach-Rosenberg, Germany **6/2018 – 9/2018**

- Performed hydrotreating experiments for upgrading crude bio-oil to gasoline, kerosene, and diesel
- Designed and conducted inductive hydrotreating experiments to determine effects of magnetic fields on crude bio-oil samples from a thermo-catalytic reactor

Undergraduate Researcher - Oregon State University - Corvallis, Oregon **6/2017 – 6/2018**

- Designed and implemented electrical circuits to simulate a corona discharge for the conversion of methane to ethane through free radicalization
- Coordinated with graduate students to create a Design of Experiments (DOE) to find relationships between voltage, current, concentration, and single-pass conversion

Intern - Funai Corporation - Corvallis, Oregon **6/2017 – 9/2017**

- Integrated a real-time imaging system within a microfluidic dispensing device for life science applications
- Utilized MATLAB/Simulink for precise image acquisition analysis and for a graphical user interface

ACTIVITES, AWARDS, AND CREDENTIALS PUBLICATIONS

- Washington State Engineer-In-Training (E.I.T.) certification **11/2023**
- McCarthy Award for Excellence in Graduate Student Teaching **11/2022**
- University of Washington Rugby Club **6/2021 – 9/2022**
- Eagle Scout - Boy Scouts of America **12/2011**

PUBLICATIONS

- Catalytic Urea Electrooxidation on Nickel-Metal Hydroxide Foams For Use in A Simplified Dialysis Device, first author – *American Institute of Chemical Engineers Journal,* in review
- Selective Nickel-Oxyhydroxide Phase Growth Through Controlled Electrochemical Cycling Procedures For Improved Oxygen Evolution, first author – *Electrocatalysis,* in review

SKILLS

- Adept with writing technical documents e.g. standard operating procedures, hazard analysis, reviews
- Experience in hardware design and development, starting from computer-aided design (CAD) to product
- Strong communication skills with the ability to convey technical concepts effectively to diverse audiences
- Used advanced techniques in data science, including statistical analysis, data visualization, and machine learning techniques, including pytorch, numpy, scikit-learn, scipy, pandas, matplotlib, tensorflow