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

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About

My passion for sustainability has driven my interest in researching renewable energy practices from a young age. I hope to further improve renewable energy technologies by applying multi-disciplinary engineering principles and management practices. With strong communication and collaboration skills, coupled with a proactive approach to learning and problem-solving, I am committed to contributing to the development of sustainable energy solutions.

Experience

University of Washington **Seattle, WA, USA**
Graduate Researcher Aug '19 - Nov '23

- Led research efforts to improve electrochemical urea oxidation kinetics by 20% by pioneering novel synthesis techniques, fabricating β- and γ-nickel single crystal electrodes using plasmas and electron beams in high vacuum.
- Researched electrochemical principles of urea oxidation and water splitting products with a self-built, ultra high-vacuum residual gas analyzer (RGA) mass spectrometry system, employing electrochemistry software, potentiostat, and signal frequency analyzer, for increasing yield of non-ammonia products by 22%.
- Conducted modeling and finite element analysis using COMSOL to establish fluid system design parameters, such as flowrates, partial pressures, and pH, for a direct urea fuel cell for clean energy production.

Fraunhofer UMSICHT **Sulzbach-Rosenberg, Germany**
Intern May '18 - Aug '18

- Performed hydrotreating experiments for upgrading crude bio-oil to gasoline, kerosene, and diesel resulting in a 3% increase of usable fuel using nickel-cobalt and nickel-molybdenum catalysts in an autoclave.
- Designed and conducted inductive hydrotreating experiments to determine effects of magnetic fields on crude bio-oil samples from a thermo-catalytic reactor to increase the throughput of upgradeable fuel processing by 1%.

Oregon State University **Corvallis, OR, USA**
Undergraduate Researcher Jun'17 - Sep'18

- Designed and implemented high voltage AC electrical circuits to simulate a corona plasma 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 to maximize target product selectivity.

Funai Corporation **Corvallis, OR, USA**
Intern Jun '18 - Sep '18

- Integrated a real-time imaging system within a microfluidic dispensing device for life science applications to read 1,000 cell cultures on a single 3 by 5 inch glass well plate within an average of 30 seconds.
- Used MATLAB/LabVIEW for precise image acquisition analysis and for a graphical user interface, allowing users to easily access scanned images from a cloud-based database.

Education and Credentials

Ph.D. Chemical Engineering: Data Science - University of Washington	Nov '23
Washington State Engineer-In-Training (E.I.T.) certification	Nov'23
M.S. Chemical Engineering - University of Washington	Jun '22
B.S. Chemical Engineering - Oregon State University	Jun '19
Eagle Scout – Boy Scouts of America	Dec'11

Skills

- Proficient in COMSOL, CAD, Fusion360, SolidWorks, LabVIEW, Office, C++, SQL, Python, and Git
- Created a solid-state Tesla coil through controlling a DC circuit with a tunable Schmitt Trigger oscillator and Insulated-Gate Bipolar Transistor (IGBT) components to modulate high voltage for playing music though electrical plasmas
- Designed an external combustion engine with SolidWorks and thermodynamic principles and fabricated the functional model using a combination of materials (brass, aluminum, steel, and Teflon) and mills, lathes, drill presses, and CNC's.