

# Camden Carroll

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## Summary

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- Mechanical engineer with experience in laser and plasma research for diagnostics and renewable fuel synthesis
- Experience in SolidWorks CAD design, FEA applications, and complex MATLAB scripting for data analysis
- Graduate coursework in applied aerodynamics, compressible flow, heat conduction, and project management

## Education

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University of Tennessee, Knoxville, TN

December 2024

**Master of Science in Mechanical Engineering – Thermals & Fluids**

GPA: 3.68/4.00

LeTourneau University, Longview, TX

May 2022

**Bachelor of Science in Mechanical Engineering**

GPA: 3.86/4.00

Accolades: summa cum laude, President's list, Mason award

## Technical Skills

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**CAD Design:** SolidWorks (certified, GD&T, FEA), Onshape, Siemens NX (Basic)

**Software Packages:** MS Office Suite, IBM Maximo, Origin Pro, OceanView

**Programing:** MATLAB, Python (Basic)

**Equipment:** Oscilloscope, Digital Multimeter, Measurement, Pressure Transducers, Chromatography, Lasers, Spectrometers

## Professional Experience

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**Laser Diagnostic Research Assistant, University of Tennessee, Knoxville**

January 2023 – December 2024

- Laser spectroscopy detection of 50-100  $\mu\text{m}$  size metal particles in fluid flow – joint Air Force Lab project
- Low concentration (<100 ppm) detection of ammonia through 1512 nm laser absorption spectroscopy system
- 95%+ accuracy in MATLAB concentration calculation program through noise reduction and curve fitting
- 50-70% improvement in ammonia synthesis through integrating catalysts inside high voltage plasma reactor
- Scripted MATLAB code to process videos from RGB camera sensor, filter, and return spectral domain information
- Modeling of plasma and laser systems using SolidWorks and Onshape CAD to fabricate components and setups

**Intern – Data Systems, Trinity River Authority, Red Oak, Texas**

May 2022 – July 2022

- Improved inventory retrieval time 20% through documentation on IBM Maximo asset management software
- Developed organizational strategy by working with staff to understand grouping and frequently used components

## CAD Project Experience

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**UAV Frame Design (SolidWorks CAD)**

December 2021 – May 2022

- Modeled folding drone frame in SolidWorks, integrated electrical components, and performed FEA analysis
- Fabricated ASTM arm blanks to investigate material and geometry combinations using ANOVA methods
- Completed project documentation including, BOMs, part drawings, and sponsor presentations

## PUBLICATIONS

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**Carroll, Camden.** “Application of Calcium Hydride, Calcium Nitride, and Lithium Hydride Catalysts for Enhanced Ammonia Synthesis in Dielectric Barrier Discharge Plasma”. Plasma Chemistry and Plasma Processing. February 2025: Springer Nature

**Carroll, Camden.** “Enhanced Ammonia Synthesis in Dielectric Barrier Discharge Plasma via Calcium Hydride and Calcium Nitride Catalyst”. AIAA Aviation and Ascend Forum. Conference Preceding. July 2024

## CERTIFICATIONS/MEMBERSHIPS

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**Part 107 Remote Pilot Certification, Federal Aviation Administration**

April 2025

**SOLIDWORKS Associate – Mechanical Design, LeTourneau University, ID: C-RE8UNFGYQM**

May 2022

**American Institute of Aeronautics and Astronautics Member – ID: 1597989**