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112 S Gay St, Apt 308 Knoxville, TN, 37902

### **CURRENT POSITION**

**Postdoctoral Research Fellow** (FSETR, Oak Ridge National Laboratory)

## **EDUCATION**

University of Wisconsin, Madison, WI *PhD, Mechanical Engineering- Engine Research Center Advisors: Dr. Jaal Ghandhi & Dr. David Rothamer Doctoral Minor: Energy Analysis & Policy Minor* 

University of Wisconsin, Madison, WI MS Mechanical Engineering Research Based

Michigan Technological University, Houghton, MI BS Mechanical Engineering Senior Design Concentration

### CONFERENCE SUBMISSIONS AND PUBLICATIONS

**Characterizing Controlled End-Gas Autoignition for Pilot-Ignited Methane/Hydrogen Combustion** *IJER (In-progress)* 

Assessing the Influence of EGR on Diesel Pilot Ignition Combustion with Methane/Hydrogen Blends in a Single-Cylinder Compression Ignition Engine IJER (November 2024)

https://doi.org/10.1177/14680874241305837

**Investigation of Aqueous Ammonia/Hydrogen Blends for Use in Advanced Dual Fuel Combustion** ASME ICEF (October 2024)

https://doi.org/10.1115/ICEF2024-138672

Investigation of Premixed Fuel Composition and Pilot Reactivity Impact on Diesel Pilot Ignition in a Single-Cylinder Compression Ignition Engine

SAE Technical (April 2023)

https://www.sae.org/publications/technical-papers/content/2023-01-0282/

Investigation of Premixed Methane Concentration on Diesel Pilot Ignition

12th US National Combustion Meeting (May 2021)

Contact Angle Measurement of Liquid Hydrogen (LH<sub>2</sub>) in Stainless Steel and Aluminum Cells

Journal of Heat Transfer (Jan 2016)

http://heattransfer.asmedigitalcollection.asme.org/article.aspx?articleID=2484586

### A New Experiment for Investigating Evaporation and Condensation of Cryogenic Propellants

Cryogenics (Oct 2015)

http://www.sciencedirect.com/science/article/pii/S0011227515001423

August 2024-Present

*GPA: 3.96* June 2018-May 2024

*GPA: 4.0* June 2018-December 2019

*GPA: 3.96* August 2013-May 2018

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# **Objective:** Investigate the use of natural gas and hydrogen for the use in advanced dual fuel combustion Design and perform experiments to meet member expectations □ Analyze and prepare data for conference presentations and publications Heavy Duty Diesel Aftertreatment Industry Consortium Program December 2017-May 2018 (Undergraduate Research Assistant) **Objective:** Collect aftertreatment engine data to assist in simulation development and calibration □ Assisted graduate students with engine data collection □ Analyzed and prepared data for weekly meetings □ Conducted routine lab maintenance **3M Funded Fuel Cell Research** September 2016-May 2017 (Undergraduate Research Assistant) Objective: Characterize the reduction in fuel cell performance because of lowered platinum loading Designed and conducted contact angle measurement experiments □ Post-processed images in ImageJ to interpret results □ Attended meetings and conference calls for project updates and brainstorming NASA Funded Cryogenic Propellants Research May 2015-December 2015 (Undergraduate Research Assistant) **Objective:** Determine the condensation-evaporation coefficients of cryogenic propellants Dimensioned experiment components to develop 3-D models and drawings □ Assisted in dry cell and condensation-evaporation testing at NIST neutron imaging facility □ Designed new parts to improve future experimentation Thermal Test Engineering Intern, Battery Abuse Engineering January 2023-September 2023

□ Designed and executed Megapack 2XL/Powerpack 3 deflagration and UL9540A testing

□ Led battery pack pressure pulse testing for Cybertruck and other new vehicle programs

□ Worked cross-functionally with engineering teams to develop strategies for thermal runaway detection

□ Proposed a standard gas sensor calibration rig for battery level testing

<b>Test Engineering Co-op</b>
(Cummins Inc.)

(Tesla Inc.)

May 2017-August 2017

□ Designed a test setup for closed crankcase ventilation (CCV) valve cover performance evaluation

□ Machined and wired data acquisition boxes for lab test stand automation

□ Assisted in documentation work for new lab information management system

June 2018-May 2024

# **INTERNSHIP/CO-OP EXPERIENCE**

**PRIOR RESEARCH EXPERIENCE** 

(Graduate Research Assistant)

**Decarbonized Engine Research Consortium** 

□ Worked on a measurement uncertainty analysis (MUA) model for fractional CV tests

# **Mechanical Development Engineering Co-op**

January 2016-August 2016

# (Mercury Marine)

- □ Conducted bench tests to resolve current product fuel system issues
- □ Analyzed data from competitive engine dyno tests to understand thermostat behavior
- □ Investigated new product cooling system issues and performed tests to come up with viable solutions
- □ Proposed exhaust cooling jacket design modification to resolve system priming issues
- Developed a system level in-cylinder energy balance model in GT-ISE

# **OTHER EXPERIENCE**

### **Engineering Learning Center Coach** (Michigan Technological University)

September 2017-May 2018; August 2015-December 2015

□ Planned and led weekly review sessions with other coaches

- □ Assisted students with questions relevant to Engineering Statics/Thermodynamics
- □ Helped students debug MATLAB scripts
- □ Collaborated with students to advance their problem solving skills

# **NOTABLE ACHIEVEMENTS**

Princeton University – Combustion Summer School Candidate	June 2022
USPTO Patent number 10378423	August 2019
Physical Sciences Fellowship Award	August 2018
Dean's List Nominee	December 2013-Fall 2017
International Ambassador Scholarship Recipient	August 2013-May 2018