

# ***Daanish. S. Tyrewala***

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**Pg. 1**

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## **CURRENT POSITION**

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

August 2024-Present

## **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

**GPA: 3.96**  
June 2018-May 2024

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

**GPA: 4.0**  
June 2018-December 2019

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

**GPA: 3.96**  
August 2013-May 2018

## **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**  
*12<sup>th</sup> 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>

### **PRIOR RESEARCH EXPERIENCE**

#### **Decarbonized Engine Research Consortium**

June 2018-May 2024

*(Graduate Research Assistant)*

**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

### **INTERNSHIP/CO-OP EXPERIENCE**

#### **Thermal Test Engineering Intern, Battery Abuse Engineering**

January 2023-September 2023

*(Tesla Inc.)*

- ☐ 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

#### **Test Engineering Co-op**

May 2017-August 2017

*(Cummins Inc.)*

- ☐ 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

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

**Mechanical Development Engineering Co-op**  
**(Mercury Marine)**

January 2016-August 2016

- ☐ 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

